Technology, COVID-19 procedures, and the appraisal profession: a survey

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Abstract

The practice of real estate appraisal has always had a strong reliance on accurate data collection. Traditional real estate valuation requires the ability to provide a sound measurement of value with little variability between similar properties. However, appraisers cannot compete with the automation and data collection abilities of machines. Technological innovations can perform these tasks faster and more accurately than humans. How much do appraisers rely on technology? Can the field be sustained without human intervention? During the summer and fall of 2020, a survey was sent via email to hundreds of appraisers in the United States to gauge their reliability upon technology and their opinions on its use. The following paper describes the results of this survey.

Key words: automated valuation models, technology, appraisal, artificial intelligence, real estate

INTRODUCTION

Technology has gained a strong foundation in everyone's life today. It can perform many routine tasks more efficiently and accurately than a human. This can be observed in many professions, including the appraisal profession. Appraisal duties have changed to accommodate advances in technology. An appraiser once used a tape measure to estimate the square footage of an improvement; today, an application downloaded onto a smart phone can produce instantaneous and accurate results. Preparing a written report by laboring over a typewriter with a bottle of white-out has been replaced by the use of a computer. The internet has put general and specific data at their fingertips, available 24/7. Even the age-old lockbox used to enter a property is now Bluetooth-enabled. However, in an industry with an aging workforce (the median age of an appraiser is now mid-fifties; Sisson, 2017), to what degree has advancements in technology been embraced by its practitioners?

The appraisal practice has a strong reliance on measurability and data collection. All of the factors included in the pricing of real estate requires the ability to provide a sound measurement of value with little variability between similar properties, or "comparables." However, appraisers cannot compete with the automation and data collection abilities of machines since they can perform these tasks faster and more accurately than humans. Furthermore, much to the chagrin of some, automated pricing models (AVMs) have become a valuable tool in the real estate industry. How much do appraisers rely on technology? Can the field be sustained without human intervention?

A global pandemic upended the business model for many business establishments, including those in the real estate industry. Lenders and agents began to lean on technology to accomplish what was once done face-to-face. Appraisers were also forced to do the same. In response to lockdown mandates, drive-by or exterior only appraisals were accepted for transactions. This meant minimal effort was exerted to determine value. How would appraisers, and more importantly, their clients, accept this change? Will practices born of the pandemic change the profession?

This paper presents the findings of a survey of real estate appraisers regarding their views on technology and its effect on the future of their profession.

BACKGROUND INFORMATION

Licensed and certified appraisers must engage in a systematic process of developing an opinion of value for each and every assignment. There are three traditional approaches to value in the appraisal process: the sales comparison approach, the cost approach, and the income approach. The sales comparison approach involves comparing the property being valued, otherwise known as the subject, to three to five similar ("comparable") properties that have recently sold. The cost approach calculates value by estimating the cost new of a building then subtracting any loss in value due to physical, functional or external depreciation factors. The depreciated cost is then added to the value of the land upon which the building sits. The income approach discounts a property's potential future income in order to find its value today. As long as adequate and accurate data can be found, the sales comparison and cost approaches can be applied to any type of property. However, the income approach is only used with properties producing rental income
for its owners.

The development of the appraisal profession in the United States has always been closely related to certain major economic events. Modern appraisal practice dates back to the Stock Market Crash of 1929 and the Great Depression when unbiased value opinions of real estate were in high demand (Munizzo and Musial, 2007). Post-WWII prosperity gave way to an expanding middle class and homeownership became part of the Great American Dream. "Excessive lending, speculation and risk taking," as well as fraud and manipulation by insiders and appraisers led to the savings and loan crisis of the 1980s (Kenton, 2021). As a result, the profession became regulated thanks to Title XI of the Financial Institutions Reform, Recovery, and Enforcement Act of 1989. Appraisers could now be licensed or certified by the individual states, a condition necessary for practice. Economic chaos in the new millennium related to the subprime mortgage crisis was partly due to inflated appraisals. The Dodd-Frank Act subsequently ensured appraisals were factual while preventing unscrupulous lenders, clients, or brokers from pressuring them to provide higher valuations (Zagorski, 2011). By 2017, Fannie Mae and Freddie Mac began accepting loans without a traditional appraisal; instead, in-house automated valuation models (AVMs) estimated collateral value (Peck, 2017). Afterward, the Comptroller of the Currency, the Federal Deposit Insurance Corporation and the Federal Reserve declared homes valued under $400,000 exempt from a traditional appraisal (Harney, 2018). The latest financial catastrophe, the COVID-19 global pandemic, deemed drive-by or exterior only appraisals acceptable, as market participants increasingly relied on technology to complete transactions (Appraisal Foundation, 2020).

RESULTS OF SURVEY

During the summer and fall of 2020, a survey was sent via email to hundreds of randomly selected appraisers in the United States to gauge their reliability upon technology and their opinions on its use. Email addresses were culled from the Appraisal Institute's public database available on its website. The survey was built using Qualtrics. Respondents could answer using a computer or smartphone during the 3-week time period the survey was open. One week before the survey closed, a reminder email was sent. A total of ninety-seven appraisers completed the survey. The following is a synopsis of the results of the survey. Its findings have been broken down into various sections.

General Information

Appraisers were queried on the size of their organizations in terms of appraiser workforce and the majority of appraisal assignments performed. Table 1 (Appendix) presents this data. Over eighty seven percent of respondents were employed by appraisal practices with 10 or less appraisers; most assignments involved commercial property valuation.

Technology

Table 2 (Appendix) includes information about each practice's technology investment and support issues. Over 66% of those surveyed spend less than $10,000 a year on their IT budget, 20% over $25,000 per year. Few (17.12%) keep a dedicated IT person on staff, while the remainder of respondents are equally split when resolving IT issues: use of outside vendors or they "figure it out" themselves. Overwhelmingly, most appraisers surveyed rely on a

Windows-based operating system (78.38%). When on the go, cell phones and laptops are the most popular type of mobile technologies.

Cybersecurity

Most appraisal practices use a combination of methods to ensure their work is saved. However, when asked which is their predominant method, 33% use computer hard drives, as well as cloud storage; twenty percent still use hard copy files. An overwhelming majority of appraisers – 91% - have not experienced a security breach, but 60% of those surveyed say they have an IT recovery plan in place. However, the security employed may be less than ideal: 30% of those surveyed use anti-virus software, 25% use firewalls, and only 20% use encryption technology. Eighty percent do not have a formal IT policy regarding its usage. Table 3 (Appendix) presents
these results.

Internet Marketing

Of those that responded to this part of the survey, approximately 72% have a website, but most do not use social media as a marketing tool. Of those that do use social media, LinkedIn - the social media outlet for business professionals – is preferred (see Table 4, Appendix).

COVID-19 Procedures

Quarantine denied appraisers the ability to lay eyes on the interior of structures. Hybrid, drive-by or exterior-only valuations replaced site observations. Table 5 includes the results from this part of the survey. Most of those surveyed – over 95% - believe that these valuations are not as accurate as traditional appraisals. Furthermore, practitioners felt that these exterior-only inspections also reduced their credibility (RealQuantum, 2020). Almost 60% feel as though changes in practice attributable to the pandemic are fleeting and the industry will revert to pre-March 2020 processes. While many industries post-pandemic have come to realize the importance of technology and its ability to streamline operations, ninety-one percent of appraisers surveyed reveal that the pandemic has not changed their views regarding technology and the power it holds to automate operations.

Artificial Intelligence, Big Data, and Automated Valuation Models

The following sections will present the results from a rather touchy subject: artificial intelligence (AI), big data, and automated valuation models (AVMs). See Table 6 (Appendix) for details.

Artificial intelligence. Within advanced homes and commercial buildings, technology can evaluate construction defects, as well as test HVAC systems and electrical components for proper operation. In the field of artificial intelligence and robotics, human appraisers and property inspectors cannot compete: such technology has the ability to obtain property information more accurately and more efficiently than humans. Even relatively low-tech aerial drones provide "the ability to share property data without ever needing to step foot on the

property" (Nordstrom, 2020). While data collection and analysis have always been the cornerstone of the appraisal profession, data will become more accurate and accessible due to technological advancements. In this survey, over 85% of respondents feel as though artificial intelligence will pay a significant role in the future of the profession.

Big data and AVMs. The data collected via artificial intelligence is not only meticulous, but available in massive amounts. With such data, appraisers are "moving toward the role of analyst, remaining in their offices, analyzing data to develop a desktop appraisal, and utilizing property information provided by a third-party property inspector to develop appraisals" (Kok, 2017). Through the use of sophisticated software programs with machine-trained algorithms, accurate valuations can be estimated using automated valuation models (AVMs). AVMs are rooted in hedonic pricing models which use multiple regression; yet, only about 40% use regression in their practice. When queried, over 82% of those who responded felt as though AVMs would never replace traditional appraisals (see Table 6, Appendix). Antidotally, appraisers had very strong feelings about this subject. Here are some comments from those surveyed:

- "It's a bad idea to replace traditional appraisals with data generated results."
- "The AVM discussion has been ongoing for decades. . . but, as an appraiser for 35 years, [I] do not think humans can be replaced."
- "The appraiser's eyes on the ground can never be duplicated with automated valuations from computers. There will be more errors if no eyes on the ground are present."
- "AVMs are much more suited to residential appraisals than commercial appraisals."

Touchy subject, indeed.

However, the advantages of using AVMs have been accepted by other market participants. For example, "appraiser regulators are recognizing . . . the competent and compliant development of credible appraisals using advanced technology programs" (Stephens, 2017). Furthermore, the efficiency of these programs cannot be beat: "By eliminating time spent driving to and from appraised properties, such a system will reduce the amount of time it takes an appraiser to produce an appraisal and will, no doubt, have broader usage in the short term, as well as the long term" (Stephens, 2017). It is estimated that AVMs will become the market standard for lenders and "eventually grow to represent the valuation method of choice for upwards of 70% of all originations" (Ramirez, 2019). Hence, how can traditional appraisals with a handful of comps compare with models "continuously being trained on a daily basis to become more sophisticated and accurate" (Sisson, 2017), "specifically designed to accommodate and utilize ever-growing datasets" (Ramirez, 2019), representing hundreds, if not thousands, of similar properties?

While AVMs have gained popularity in residential valuation, commercial properties are almost never identical; thus, models cannot be trained on such limited data and still be highly reliable, or can they? In 2017, researchers developed an "automated, machine-based valuation model for the commercial real estate sector. It uses demographic and economic variables, as well as hyperlocal metrics (such as distance to restaurants and crime rates) in combination with assisted machine learning models that rely on stochastic decision trees" (Kok, 2017). Kok maintains that such models are as accurate as traditional in-person appraisals, but offer two distinct advantages: (1) they are quick, and

(2) they are cheap (Kok, 2017). Thus, commercial AVM models are "directly applicable for real estate lenders and investors, and have important implications for the traditional appraisal industry" (Kok, 2017).

CONCLUSION

This paper presents the findings of a survey of real estate appraisers regarding their views on technology and its effect on the future of their profession. Respondents to this survey have embraced technology in their practices, whether it be via smart phone or cloud computing. However, there is much hesitancy in regard to future practice because advances in technology seem to support the replacement of the appraiser; yet, there is no risk of their extinction. The real estate appraiser will likely never be completely replaced; however, their job description will look nothing like it does today. Appraisers will be required to redefine their role and obtain the proper training and expertise needed to remain relevant as they become data scientists. In fact, it is the ability to adapt and change that will keep the appraiser from becoming extinct.

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APPENDIX

Table 1: General Information

Question: How many appraisers does your organization employ? If you work for a financial institution or governmental entity, answer for the physical office to which you are assigned, not for the entire organization.

Less than 10 appraisers	87.63%
10 – 20 appraisers	5.15%
Greater than 20 appraisers	7.22%

Question: Complete this statement with the appropriate answer. The majority of my appraisal assignments involve the following:

Residential properties	28.13%
Commercial properties	57.29%
Industrial properties	2.08%
Agricultural properties	3.13%
Special purpose properties	4.17%
Public use properties	0%
other	5.2%

Table 2: Technology

Question: What is your organization's annual budget for information technology (IT)? This includes software, web-based subscriptions, hardware, training and support. If you work for a financial institution or governmental entity, answer for the physical office to which you are assigned, not for the entire organization.

Less than $5,000	34.83%
$5,000 - $10,000	31.46%
$10,000 - $25,000	13.48%
Greater than $25,000	20.22%

Question: How does your organization address information technology issues (this includes purchasing decisions, installation, training and maintenance)?

Employ a technical support person/people on staff	17.12%
Use of outside vendors for support	41.44%
We figure it out ourselves	41.44%

Question: Why is the dominant type of device/operating system does your organization use in the appraisal of real estate?

Windows based computers and/or devices	78.38%
iOS based (Apple) computers and/or devices	18.02%
other	3.60%

Question: What is the dominant type of mobile technology do you use in the appraisal of real estate?

Smart phone	40.91%
Tablet	15.91%
Laptop computer	35.23%
Other	7.95%

Table 3: Cybersecurity

Question: How does your organization predominately save its appraisal files?

Computer hard drives	33.46%
External devices such as USB thumb drives	13.70%
Cloud based storage such as Google Drive, Dropbox, etc.	32.84%
Hard copy/paper files	20.00%

Question: Has your organization experienced an IT security breach in the last five years?

Yes	8.99%
No	91.01%

Question: Does your organization have an IT disaster recovery plan in place to protect against such things as ransomware, hacks, etc.?

Yes	59.55%
No	40.45%

Question: What predominant form of technological security does your organization employ?

Email and/or file encryption	20.00%
Virus scanning software	30.19%
Mandatory passwords	22.26%
Firewalls: hardware and/or software	25.66%
Other	1.89%

Question: Does your organization have a formal policy addressing technology usage?

Yes	20%
No	80%

Table 4: Internet marketing

Question: Does your organization have a website advertising its appraisal services?

Yes	71.59%
No	28.41%

Question: Does your organization use social media sites for marketing its appraisal services?

Yes	36.05%
No	63.95%

Question: If the answer to the last question is yes, which social media site does your organization use predominately?

Facebook	38.33%
Twitter	8.33%
Instagram	5.00%
LinkedIn	45.00%
Snapchat	0.00%
Other	3.33%

Table 5: COVID-19 Procedures

Question: Do you think hybrid appraisals and exterior-only appraisals are as accurate as traditional appraisals?

Yes	4.65%
No	95.35%

Question: As related to appraisal practice, do you think COVID-19 related change is here to stay?

Yes	42.35%
No	57.65%

Question: Has the coronavirus pandemic made you change your views on which are the most promising types of technology for appraisal practice?

Yes	8.24%
No	91.76%

Table 6: Artificial intelligence, big data, and automated valuation models

Question: Do you think artificial intelligence will eventually play a significant role in the practice of real estate appraisal?

Yes	85.88%
No	14.12%

Question: Do you use multiple regression in your practice of appraisal to estimate the value of adjustments?

Yes	38.37%
No	61.63%

Question: Do you think automated valuation models will eventually replace traditional appraisals?

Yes	17.65%
No	82.35%