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## **Framing ICT usage in the real estate industry**

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**Abstract:** The presence of agency renders real estate unique from other industries where goods and services trade hands. The rise of various information and communication technologies (ICT) over the course of the past 25 years may have led to new challenges for real estate agents and allied professionals. Some scholars surmise that the increased prevalence of ICTs in various industries can become disruptive to those industries, causing individuals and organisations working within them to either adapt accordingly or become obsolete (Bower and Christensen, 1995; Markus et al., 2006). The authors have examined transcripts of interviews with staff of the National Association of REALTORS® to determine whether agents now view ICTs as a threat to their profession, or instead as tools that are generally beneficial to their business. Their findings indicate that a distinction must be made between ICT usage by consumers and ICT usage by the real estate agents themselves. While the interviews lead the authors to believe that the rise of ICTs has been disruptive but generally productive for agents, more research is necessary to determine the precise extent to which agents are using information and communication technologies to enhance their business model.

**Keywords:** disruption; information and communication technologies; ICT; industry; framing; communication; agency; social media; networks; real estate.

**Reference** to this paper should be made as follows: Jones, S. and Benjamin, Z. (2013) 'Framing ICT usage in the real estate industry', *Int. J. Organisational Design and Engineering*, Vol. 3, No. 2, pp.137–148.

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This paper is a revised and expanded version of a paper entitled 'Framing ICT usage in the real estate industry' presented at the Collaborative Organizations and Social Media COSM 2013, Bowdoin College, Brunswick, Maine, USA, 12 April 2013.

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## **1 Introduction**

The real estate industry, like many, is one based on a competitive consumer culture in which professionals vie for the business and, ultimately, the loyalty of customers. In this case, those customers are purchasing what, for most, is a significant investment, requiring them to navigate various legal and regulatory processes that might be impossible without the assistance of a knowledgeable, seasoned agent. It is the presence of agency that renders real estate unique from retail and other industries where goods and services trade hands. Furthermore, the rise of various information and communication technologies (ICT) over the course of the past 25 years has led to new challenges for real estate agents and allied professionals. Some scholars surmise that the increased prevalence of ICTs in various industries can become disruptive to those industries, causing individuals and organisations working within them to either adapt accordingly or become obsolete (Bower and Christensen, 1995; Markus et al., 2006).

The real estate industry provides an interesting case within which to examine the impact of ICTs. According to Bower and Christensen (1995, p.43), "One of the most consistent patterns in business is the failure of leading companies to stay at the top of their industries when technologies or markets change." Real estate, based as it is on an agency model in which agents and customers may have conflicting interests (e.g., agents seek to maximise commissions, while customers seek reduce cost), would seem particularly vulnerable to disruptive technologies, and several (such as Zillow and Trulia) have arisen to exploit the opportunity. The industry seems particularly vulnerable to the types of transformation Zuboff (1988) describes as a consequence of ICTs, with impacts on all three dimensions of knowledge, authority and technique. Real estate is a field in which agents have found themselves compelled to adapt as technology has encroached on their trade, attempting to maintain a competitive advantage – and generally to stay relevant – as the consumer is increasingly empowered by the technologies at his or her disposal (Crowston and Wigand, 1998; Crowston and Myers, 2004a; Sawyer et al., 2003). Our work therefore seeks to explore the concept of disruptive technologies and how ICT development in real estate may have impacted agents and allied professionals.

In order to understand the impact of ICTs on real estate agents, it is necessary to identify those ICTs that will be examined as significantly impacting the real estate industry. According to Kummerow and Lun (2005, p.175), a "culture of jealously guarding information is deeply ingrained in the real estate industry where the real estate agent is commonly viewed as a living database... This strongly held culture might be changing with the availability of free market information online." The literature focuses on a number of different ICTs to support notions of change, many of which will be

mentioned in the literature review. Our research focuses primarily on social network sites and, secondarily, on consumer-facing property listing sites such as Realtor.com, Zillow, and Trulia (Kummerow and Lun, 2005). While some media scholars have debated the definition of the social network site, we will use the definition put forth by Boyd and Ellison (2007, p.211):

“We define social network sites as web-based services that allow individuals to  
(1) construct a public or semi-public profile within a bounded system,  
(2) articulate a list of other users with whom they share a connection, and  
(3) view and traverse their list of connections and those made by others within the system.”

This definition also meshes well with an affordances approach to understanding the framing of ICTs. As Treem and Leonardi (2012, p.146) wrote, “the most nuanced writings on the relationship between technology and organizational change emphasize the relational character of affordances.” It is, we believe, particularly the affordances of social media, and ICTs generally, that are at stake in the framing of technology occurring in the real estate industry.

## **2 Literature review**

Crowston and Wigand (1998), note that real estate agents, in particular, face unique challenges as providers of a service that is nonetheless secondary to the consumer. They are “pure market intermediaries – connecting buyers and sellers but rarely buying or selling themselves” (p.287). They may be “valued for the information skills they bring to making both listings and sales,” and their expertise might be necessary to help potential buyers become homeowners, but their services provide only a stepping-stone to the purchase, not the good itself.

Real estate agents traditionally enjoyed the advantage of a cornered market on information. They alone had access to the Multiple Listing Services that, in turn, contained the database of properties that consumers sought to purchase (Crowston and Wigand, 1998; Crowston et al., 2001). As a result, they remained relatively secure in their niche as intermediaries, perhaps competing against each other for commissions, but operating relatively unencumbered by the forces of technological or industrial innovation.

However, as the late 1990s gave rise to rapidly developing ICTs, the technological world began to bear down on real estate agents and their relative monopoly on information essential to property buyers. The earliest ICTs that impacted the role of the real estate agent included primarily person-to-person communication technologies, such as pagers and cell phones (Crowston and Wigand, 1998; Sawyer et al., 2003, 2005). While these innovations revolutionised the agent’s mobility and accessibility to clients, it did not necessarily threaten their essential role as intermediaries within the context of a real estate transaction.

According to the literature, real estate agents have been among the most likely professionals within the allied real estate industries to adopt ICTs. An agent’s accessibility to clients initially served as a means to create a competitive advantage over other agents who might be slow to adopt, say, cell phone technology.

Bower and Christensen (1995) and Christensen (2007) note that disruptive technologies do not merely impact a few individuals at a time within an industry. Instead,

true disruption is characterised by an entire industry, or at least an entire organisation, making the decision to adopt a technology almost at once, creating a sea change in the daily experience of its composite professionals (Bower and Christensen, 1995; Christensen, 2007). Christensen (2007) later cautions that the massive, large-scale innovation that most often results in disruption can also result in destruction. However, based on the literature surrounding disruptive technologies and their impact on real estate agents, it is not clear that disruption necessitates destruction – only that the latter can potentially follow the former.

One example of disruption in the real estate professions took place within the mortgage industry between the 1980s and early 2000s, as described by Markus et al. (2006, 2008). Markus' work supports Christensen's notion that disruption is at first an industry-wide phenomenon, but further describes its impact as gradual. Markus identifies framing as a key element of disruption, noting that, "the framing or theorizing of IT innovations is believed to be a factor in their successful or unsuccessful diffusion." [Markus, (2008), p.5]. Markus allows, however, that "framing or theorizing is a process that unfolds over time [and] involves identifying problems; proposing solutions; creating causal arguments linking problems, solutions, and actions proposed to implement solutions; justifying solutions; and rhetorically countering arguments put forth by opponents" [Markus et al., (2008), p.5]. We therefore focus on the framing of IT innovations in real estate as a way to understand the discourse, the justifications for use or non-use, and the appeals involved, as the real estate industry comes to grips with ICTs. While we may learn about actual ICT use by various methods, framing gives us insight into the meaningfulness of use, as well as insight into the collective understandings of choices and rationalisations of ICT use (Benford and Snow, 2000).

As Markus et al. (2008) found in the mortgage industry, framing is an important component of ICT implementation among real estate agents. Like the mortgage industry, the professional world of real estate agents consists of a number of large, dominant organisations, between which operate small brokerages (Hahn et al., 2005; Hawker, 2006). Agents working for large organisations often operate as semi-independent contractors, responsible for their own marketing and for building their own client bases. As a result, one might conclude that implementation among real estate agents, while no less stark than in the mortgage industry, might happen slightly more gradually, as individual agents observe, adopt, and learn to work around ICT.

Much of the literature frames the increased prevalence of ICTs in the real estate industry as potentially destructive, and quite a bit of the negativity concerns the concept of disintermediation. Disintermediation can be defined as the removal of the real estate agent as the provider of information and the hub on which consumers must rely for access to property listings. Crowston and Wigand (1998), for instance, note that "the way IT can be used to disintermediate the traditional agent and broker is of focal interest...as it potentially threatens the traditional relationship between agent and home owner...enabling direct trade with buyers and consumers without agents" (p.2).

An important distinction drawn in much of the literature exists between ICT usage among real estate professionals, and ICT usage among consumers. According to Crowston et al.'s extensive work on the subject of technology usage in real estate, it is the consumer's increased access to information that most significantly threatens the real estate agent's profession. While their findings vary, and they acknowledge that a wide range of eventual outcomes is possible, Crowston and Myers (2004b) identify a worst-

case scenario of “disintermediation of real estate agents (they lose their jobs to IT) and some consolidation of the industry” (p.3).

The concept stems from the fact that web-based applications such as Trulia, Zillow, and Realtor.com place information in the hands of the consumer that was once the sole property of real estate agents and brokers. Prior to the rise of the internet as an essential technology to the real estate industry, consumers’ only access to listings was through Multiple Listing Services, which, in turn, were only accessible to real estate agents (Crowston et al., 1999; Hahn et al., 2005).

The literature suggests that the skill sets agents are perceived as possessing have broadened and become more robust since the advent of ICTs and their increased prevalence in the industry. So, too, has their accessibility. Crowston et al. (2000), note that even early ICTs such as mobile phones and fax, foster ‘weak tie links’ with actors such as ‘inspectors, lawyers, and mortgage consultants’ (p.616).

As the property hunt increasingly moves to the hands of the consumer, agents have begun to rely on assets beyond simple access to listings to maintain a high level of relevance among potential buyers (Crowston et al., 2001). These include their licensing, practical experience, and training. Consumers use ICTs to co-opt the property search itself. As a result, they have begun to view agents as more than merely salespeople. Instead, consumers might be viewing agents increasingly as experts in the field, whose knowledge of real estate laws, regulations, and buyers’ rights is more critical than is simple database access.

The desire for expertise previously viewed by consumers as less essential may have become just as critical for buyers as access to listings had been before they gained the agency to search for properties themselves. The need for agents with listing access was replaced by the need for agents with strong negotiation skills, solid knowledge of regulations, and close relationships with mortgage brokers, real estate attorneys, and other allied professionals able to facilitate the transaction (Crowston et al., 1999; Crowston and Myers, 2004a). Based on Crowston et al.’s ongoing research, which presents an increasingly positive outlook for ICT usage by agents, it appears as though disruptive properties of ICTs in real estate did not eliminate the need for real estate agents. Instead, ICTs seem to have catalysed their adaption – or reintermediation – as essential knowledge sources and members of useful networks.

Later research offers other potential examples of ICTs’ positive impact on the real estate industry. Hahn et al. (2005), identify a number of possible outcomes, including reduction in the cost of doing business and improvements in agents’ ability to market a variety of real estate skills. If their suggestions are accurate, then ICTs have not only brought more consumers into the market as potential clients for agents, but they have also caused agents to diversify their services. This diversification could lead to greater combinations and permutations of services offered, increasing opportunities for agents to offer a la carte and bundled services.

Generally, the body of literature struggles to reconcile the fact that ICTs have impacted the industry both positively and negatively, and that neither the destructive or productive potential of those technologies seems to dominate the conversation. As a result, the relatively intimate community of researchers exploring ICT usage in real estate have yet to establish a unified narrative. For instance, Crowston et al. and Bower and Christensen begin the intellectual conversation in the mid-late 1990s by agreeing in their caution that technology, inherently disruptive, can also be destructive to industry. However, later research, especially Hahn et al. (2005), Markus et al. (2006), and Hawker

(2006), focuses more intently on the potential benefits of ICT usage by consumers and agents. These later works acknowledge the disruptive and destructive potential of ICTs, but they seem to disagree with the earlier premise that disruption of industry necessitates its destruction.

While it is possible to identify framing threads in the literature, little to no information exists on how real estate agents themselves view the rise of ICT usage in their profession. Herein lies the key to the present research and the questions that guide it:

- R1 Is technological disruption framed positively or negatively in the literature on ICT usage among real estate agents?
- R2 Do real estate agents positively or negatively frame the phenomenon of ICT usage in their professional interaction?

### **3 Methods**

This study was conducted with mixed qualitative methods, including framing analysis and analysis of literature (some of which we have already acknowledged and discussed in the preceding literature review). The process of creating the theoretical framework and reviewing the extant literature was itself a critical part of ultimately answering the questions at hand. The first step of conducting this research was a broad survey of the field to determine if previous scholarly work existed on the topic of technology usage in the real estate industry.

The authors performed a search of JSTOR, EBSCO, and Google Scholar, using the following search terms: 'ICT' and 'real estate'; 'information and communication technologies'; 'information and communication technologies and real estate'; 'real estate' and 'social media'; 'social network sites' and 'real estate'. The bulk of the relevant research was conducted between 1998 and 2005, and while enough literature exists to establish a theoretical framework, the body of work is limited.

Once the dominant themes were identified, the authors formulated research questions based on areas of need for future research. The first stage of data collection yielded the themes themselves, revealing to the authors that the literature provided information on how scholars framed increasing ICT usage among real estate agents. However, very few clues exist as to how agents themselves view technological phenomena and their impact on their profession. This observation drove subsequent stages of data collection, including framing analysis of interviews of National Association of REALTORS® (NAR) staff conducted between March and July 2012 by the Creative and Collaborative Information Technology Laboratory (CcIT), a University of Illinois at Chicago (UIC) initiative studying social media usage within organisations.

One of the authors is a full-time staff member of NAR as well as a member of the CcIT research team. He obtained permission from NAR's human resources department for the team to use the organisation as a research site, gaining approval to interview staff and monitor social media profiles associated with NAR. Once this permission was secured, the team identified interview subjects, consisting of staff members from a wide range of departments and hierarchical positions. Subjects' titles included senior vice president, vice president, director, manager, and coordinator, and they work in the global, marketing, commercial, and REALTOR® university departments.

Once a wish list of subjects was created, the research team set about the task of scheduling interviews. The interviews themselves were long-form and consisted of questions on personal and corporate social media usage that were formulated by the team prior to identifying the subjects. Each interview lasted between 30 and 90 minutes and was preceded by the signing of informed consent paperwork and distribution of an interview protocol to subjects.

While the staff members interviewed were not themselves real estate agents, they worked closely with NAR's members and had access to members' social media profiles. NAR staff interacted extensively with agents as they created their online presences, and so were privileged to particular and personal insights regarding how agents viewed new technology and its impact on their profession.

Due to the fact that the authors attempted to gauge agent sentiment from second-hand sources – in this case, NAR staff members – it was necessary to employ frame alignment, and specifically frame extension, to draw conclusions related to the second research question.

Frame extension, or the expansion of one population's perspective to include another's, was appropriate for this project and yielded robust results. The close working relationship between NAR staff and the country's real estate agents – the majority of whom are members of NAR – resulted in insights into real estate professionals' usage of ICTs, and social network sites specifically, to maintain their status as critical intermediaries between buyers and sellers of real property. Previous research did not examine how agents themselves frame the impact of ICTs on their profession, so this work provided an opportunity to explore how members of the studied population – in this case, real estate agents – perceive the rise of new technologies and their consequences or benefits.

#### **4 Analysis**

After an initial reading of the sources, an annotated bibliography was created in an effort to extract theoretical themes from the literature. Once a preliminary set of themes was identified, the authors attempted to explore these intellectual threads in greater detail by creating a chart of the literature. Spreadsheet software was used to divide information on each source into five categories: citation, whether ICT usage in real estate is framed as disruptive or productive, the reasoning behind the framing, and relevance to future research.

The initial reading and charting exercise revealed three themes that run consistently through the literature. The first is that the rise of ICTs is potentially professionally destructive to real estate agents as consumers gain access to information previously owned exclusively by the agent. The second is the notion that disruptive technology is not necessarily destructive to the real estate industry. Finally, a distinction must be made between the impact of consumer ICT usage and agent ICT usage on the broader real estate industry and the real estate agency profession itself.

This distinction is central to scholars' ability to understand how agents view the impact of ICTs on their profession. Additionally, it is important to note that a dual frame seems to exist within the body of academic literature concerning ICT usage in the real estate industry. On one hand, the literature seems to support the notion that consumer ICT usage is potentially disruptive and possibly destructive to the profession, while on the

other hand, agent use of the technology carries with it the potential to enhance the services that they offer and increase their relevance to the consumer.

Disintermediation forms the central thread of the negative academic frame applied to increasing ICT use among consumers. However, agent ICT usage is also often framed as a positive development, and this positivity becomes stronger as time passes (Hahn et al., 2005; Hawker, 2006).

ICTs also seems to have positioned the agent as the hub of the transaction – as network builders helping buyers connect with allied professionals – rather than as traditional marketers (Hawker, 2006). This places real estate agents back into their original roles as intermediaries, albeit intermediaries between nodes of human networks rather than between consumers and real estate listings.

The literature produced by Crowston's team is generally more sceptical of ICTs than that produced by Hahn et al. and Hawker. However, the tone softens as time passes. This indicates that scholars frame ICTs positively in the context of their impact on real estate agents. This is indicated by the fact that, as the pool of data on how agents use ICTs grows, the literature focuses increasingly on the helpful elements of the phenomenon. Thus, the answer to R1, while not entirely conclusive given the relatively short time period in question, is that the frame with which scholars discuss ICT usage in real estate is trending to the positive as the body of data grows.

Similarly to the perspectives stemming from the literature, two complementary, dominant trains of thought also seemed to emerge from the interviews conducted with NAR staff regarding how agents themselves view the disruptive tendencies of ICTs. These interviews focused specifically on social media usage and were conducted with staff members of varying rank in the communication, information technology, marketing, commercial, and global divisions of the organisation.

Ten subjects were interviewed, and only one disagreed with the notion that ICT usage – and social media in particular – are widely used by NAR's one-million-plus member agents. There is some disagreement regarding whether or not members understand the value of these technologies and are using them to increase their own value to the profession. For instance, only one of the ten subjects did not feel that ICTs, and social network sites in particular, play a pivotal role in the professional experience of a real estate agent. Eight of the ten identified social media usage as increasingly central to the day-to-day experience of the real estate agent. Those in higher-ranking positions – in this case, the senior vice president level, which is held by two of our interview subjects – broadly view social network sites as important and beneficial to agents. They provided a high-level, general perspective regarding ICT usage in real estate, while one of the two junior vice presidents interviewed, along with two managers and one coordinator, identify more specific promotional scenarios in which social network sites are particularly valuable to agents. Only the two respondents in internal information technology roles expressed a lack of awareness regarding how ICTs impact the professional experience of NAR's membership.

While opinions of just how agents are using ICTs to their advantage or detriment vary widely, two general approaches are evident in the responses given by interviewees. One school of thought surmises that, while agents are going through the motions of creating social media profiles, evidence does not exist that they are maximising the business potential of these ICTs. Other staff expressed the notion that NAR members are not only connected, but that they are actively engaged, using social media to raise consumer perception of their professional value.

One respondent, who works in an executive capacity in NAR's marketing department, belongs to the former intellectual school and attributes lack of engagement to agents' demographics.

"The mass of our members is a 57-year-old woman," he notes. "...There is a sub group...of younger, technologically proficient members, but the core of our membership right now are not they."

While this respondent, who admits to limited contact with members, did not provide empirical data to support his assumptions regarding the impact of member demographics on perception of ICTs, it is important to note that demographic factors might play a role in the positive or negative connotation that agents assign to ICTs in their professional lives. It is similarly important to note that this respondent's assumptions may play a role in how ICTs are framed and subsequently implemented within the organisation. Practicality, he says – or lack thereof with regard to social media – also drives his belief that agents are not fully engaged and are not developing a positive relationship with new media technologies. He uses Facebook in an extended example:

"The numbers [of members] that are on Facebook, which the majority of them say they are part of social media, the vast majority of them are not engaged. To me from a marketing stand point, when I look at a marketing strategy, I'm looking at I want to get this message out to a million people, but I know a million people don't care about all of this."

The aforementioned respondent's scepticism regarding the average agent's use or value of ICTs reflects the broader school of thought among some NAR staff that members do not value social media as a business tool. Another respondent, however, reflected the notion – also widely held – that agents are opportunistic and positive in their usage of social media to enhance their businesses. This particular respondent is in a member-facing role and works with commercial agents, a narrow subset of the organisation's membership. While she does not cite demographics, she notes that she has a large and growing Twitter-based relationship with a wide cross section of NAR's commercial membership.

The literature discussed expanded marketing and value creation opportunities as ICTs' most likely usage among agents. By contrast, this respondent observes NAR members using social media – primarily Twitter – to build professional networks and gain information, not to market directly to consumers:

"For the commercial real estate practitioner, Twitter is the social network of choice. It is probably the most, aside from using LinkedIn to professionally network, I would say Twitter is where they are getting their information from, where they want to connect with people... I think people are starting to get [LinkedIn]. I think commercial practitioners are starting to get it, especially when you start talking about what you have done. They like to talk about the deals they have done. You should put that on your LinkedIn profile. That is your business. When you say you are a broker at a firm, that is great."

Nonetheless, this respondent is convinced that real estate agents are not only adopting ICTs but that they view these technologies positively.

"They use social media," she says of NAR's membership. "These people are all over, you know, social media stuff. They use it in their business, it's just – it's in their DNA."

Another respondent, who works with members in a customer service capacity, shared this observation and described the need to create a separate professional Facebook profile due to the high volume of friend requests from agents using the page that she administers:

“I’ve come to learn that REALTORS® will just ask to be your friend even if they’ve never met you or anything like that. So [on my professional Facebook profile], I’m friends with a bunch of REALTORS® I’ve never ever met, ‘cause they just know I administer that page...They’re very network savvy, so even if you don’t know them they’ll friend you and contact you six months from now.”

While descriptions of agent social media usage habits indicate a profession that is intrigued by the potential of new ICTs, the industry seems challenged by the specific role that these technologies will play in the relationship between real estate agents and their trade association. However, regarding R2, most NAR staff interviewed indicated a general sense among REALTORS® that ICT usage is a part of their business model, indicating the potential for positive framing of ICTs, specifically social network sites, among agents.

## **5 Discussion**

A number of limitations exist to this research, highlighting the necessity of future work and analysis. The body of literature on ICTs and their impact on the real estate industry is quite limited, as relatively few scholars have chosen to explore this niche within broader information systems literature. While the relatively small amount of material enabled the authors to readily identify frames and themes, it must be noted that it may limit the reliability of the conclusions that could be drawn. Much of the literature was produced by the same few authors, who at times worked together and at other times worked independently. They all drew their conclusions from a single data set, providing the authors of this paper, in turn, with a quite narrow perspective from which to form an analysis.

Additionally, the qualitative data recently collected by UIC only included interviews with NAR staff. It did not include discussions with practitioners in the field. The lack of data directly from the population in question required that the authors draw conclusions from second-hand sources – in this case, the association staff members who, importantly, work closely with real estate agents. This limited the extent to which the authors could develop a detailed and accurate understanding of how real estate agents themselves perceive ICTs and their disruptive or productive impact on the industry.

While significant limitations exist to the current research, it is valuable in supporting the notion that real estate agents are, in fact, using ICTs to generate business and position themselves as hubs of the real estate transaction. The mere fact that agents are using ICTs in the business context that did not exist ten years ago suggests that they have adjusted to the advent of these technologies, as well as to increased access of consumers to information. While it is questionable whether these results amount to broad disruption of the industry, they revealed excellent potential for future research.

Follow-up studies are necessary to update the dataset and add to the small body of literature concerning ICTs and real estate. Interviews must be conducted with real estate agents in order to gain a more accurate sense of how technologies are being framed within their professional community. While the extant literature deals almost exclusively

with the industrial consequences of rising ICT usage, it is also necessary to identify a number of as-yet unexplored independent variables that could impact how agents use these technologies. These variables include, but are not limited to, demographic information – age, gender – geographic location, and number of years in the field. Additionally, while it is important to identify frames and thematic patterns regarding ICT usage in real estate, it will be important to explore exactly which technologies agents are using and how they are using those technologies to enhance their business.

## 6 Conclusions

While we were able to confirm from both the literature and empirical research that ICTs are disruptive to the real estate industry, more research is necessary to determine how these technologies' impact is being framed by real estate agents themselves. This research should include new interviews with a representative sample of agents and an analysis of their responses. Such data would provide a more accurate sense of agents' attitudes toward new ICTs and could gauge the impact of specific technologies – such as social network sites – that did not exist when previous interviews were conducted by Crowston and his colleagues.

Based on the extant data and literature, we can assert that ICT have impacted countless industries and professions, not to mention the daily lives and routines of people around the world. The real estate industry is no exception, and indeed the professional lives of real estate agents have changed as a result of technology's entrée into their business world. Increasing consumer access to technological resources previously reserved for agents has proven disruptive and potentially destructive to members of the profession. However, just as important is the potential for technology to enhance agents' ability to market their businesses, to provide critical services to clients, and to serve as the hub of the client's network.

Agents are proactive in adopting technologies, and while scholars have expressed concern regarding ICTs' disruptive tendencies, cautious optimism seems to exist among professionals that ICTs will positively impact the real estate industry.

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