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INFORMATION AND COMMUNICATION TECHNOLOGIES IN THE REAL ESTATE INDUSTRY: RESULTS OF A PILOT SURVEY[1] [RESEARCH IN PROGRESS]

Rolf T. Wigand

School of Information Studies, Syracuse University , 4-206 Center for Science and Technology, Syracuse, NY 13210
Tel.: +1 315 443 5608, Fax: +1 315 443 5806
rwigand@syr.edu

Kevin Crowston

School of Information Studies, *Syracuse University*, 4-206 Center for Science and Technology, Syracuse, NY 13244-4100
Tel.: +1 (315) 443 1676, Fax: +1 (315) 443 5806
Crowston@syr.edu

Steve Sawyer

School of Information Sciences and Technology, The Pennsylvania State University,
513 Rider I Building, 120 S. Burrowes St. University Park, PA 16801
Tel.: +1 (814) 865 4450, Fax: +1 (814) 865 5604
sawyer@ist.psu.edu

Marcel Allbritton

School of Information Studies, *Syracuse University*, 4-206 Center for Science and Technology, Syracuse, NY 13210
Tel.: +1 (315) 443 4508, Fax: +1 (315) 443 5806
mmallbri@syr.edu

ABSTRACT

We have been studying the growing use of information and communication technologies (ICT) in the residential real estate industry and the effects of this use on how realtors work. Earlier stages of our project involved qualitative research to develop a better understanding of the industry, the work of realtors and their use of ICT. In this paper we report on the results of qualitative research and a pilot of a survey intended to gather large-scale data on realtors and ICT use.

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1. INTRODUCTION

We have been studying the growing use of information and communication technologies (ICT) in the residential real estate industry and the effects of this use on how real estate agents work. First we present our overall research project and the theoretical framework for this study. The bulk of the paper is devoted to the theoretical and methodological approaches undertaken and initial findings. Specific research questions are addressed by a survey questionnaire administered to realtors in a single region as a pilot for a national survey. We conclude by discussing the results of this phase of our study.

Over the past several years, we have observed and conducted multiple interviews with individual realtors concerning their work and adaptations to the introduction of ICT. To test the insights gained from these qualitative efforts, we are planning to survey a large, national sample of real estate professionals. As a pilot for this survey, we surveyed realtors in a single region of the United States. In the next section we will discuss the theoretical framework of the overall project and initial findings from qualitative research before turning to the specific research questions to be addressed by the survey, and its results.

2. THEORETICAL FOUNDATIONS

Since the object of our study—ICT use and its effects—is multi-faceted and spans multiple levels of analysis, our overall project adopts multiple research perspectives. At the individual level, we focus on realtors' work design (Hackman, 1977; Hackman and Oldham, 1980) and social capital (Tsai and Ghoshal, 1998). We are especially interested in changes in work design and social capital related to the use of ICT. At the organization and industry levels, we apply ideas from transaction cost (Williamson, 1981; Wigand et al., 1997) and coordination theory (Malone and Crowston, 1994) to examine changes related to increased ICT use. Tying these perspectives together is the notion of a business process and the view that ICT has an impact by changing the relative desirability of different ways of working, that is, by making different activities and processes more or less attractive.

The overall framework that guides our study focuses on uses of ICT that are enacted by individuals who change the conduct of their work in response to the availability of ICT. These changes include replacement of some activities by an automated system (e.g., calculations of closing costs) or increases in activities made cheaper by technology support (e.g., daily automated searches for potential properties instead of one manual search). Communication technologies can provide information that changes the basis for decision-making or contacts to individuals performing related activities. Individual-level uses of ICT lead in turn to changes in the organizations in which the work is done. These effects manifest themselves first as changes to organizational processes and eventually to changes in organizational structures. Organizational structures include how people are organized for reporting and dissemination of information and organizational processes reflect the choice and sequencing of tasks to accomplish intended outcomes. Changes in process also have implications for industrial structures and value-chains (Baker, 1990). Industrial structure includes participation of and division of work among companies (i.e., the position of firm boundaries). The industrial value-chain is seen as processes extended across firms.

In other words, as individual workers use various forms of ICT in their work, they alter both how they conduct their work and how they participate in the organization's structure, and thus indirectly how their organizations participate in the industry-wide value-chain. Conversely, there are organizational and industry-wide forces shaping how work is done. These forces also affect how individuals do their work. The interaction of these forces is what shapes the uses of ICT, new forms of work and new ways of organizing (Markus and Robey, 1988; Orlikowski and Robey, 1991). Finally, changes to organizational processes and industrial structures, arising in part from how individual workers use ICT in their work, lead to changes in organizational and industrial outcomes such as productivity or performance. The implication of this chain of relations is that the use of ICT is not directly related to changes in the outcomes, nor mediated in a simple way. As a result, the eventual outcomes are impossible to predict in general. Instead, to understand the ways ICT can and is changing work, our research framework suggests the need to understand the individual, organizational and industrial levels, and the underlying processes, simultaneously.

In the phase of our project presented here, we are trying to test the insights we gained from the qualitative work more broadly. To do so, we developed a survey to gather large-scale data on those aspects of our framework seen by individual realtors. Specifically, the survey addressed: 1) realtors' use of ICT, 2) the nature of their individual work and participation in the process of a real estate transaction, 3) aspects of organizational structure, and 4) individual outcomes. Data from the surveys have been analyzed and compared to data obtained from other methods. In the remainder of this section we will discuss the setting of the project, the initial findings of the earlier phases of our project, and the specific research questions that the survey was designed to address.

3. INITIAL FINDINGS FROM QUALITATIVE RESEARCH

From our qualitative data collection, we can offer some initial findings about the nature of agents' work and their use of ICT (see also Crowston, Sawyer, and Wigand, 2001; Crowston and Wigand, 1999). First, we observe that the realtors' traditional role as an information intermediary is being contested. While agents once had complete control over access to the Multiple Listing Service (MLS) listings, this control has been weakened by the development of alternative sources of listing information, such as Web sites or for-sale-by-owner (FSBO) guides. Second, we observe that agents seem to play an increasing role in "process support." That is, given the contractual complexity of the real estate process, agents are valued for their ability to guide the buyer and seller through the transaction.

Finally, we found some examples of the active management of weak ties and an agent's social capital (see also Sawyer, Crowston and Wigand, 1999). Social capital means the set of social resources embedded in relationships (Tsai and Ghoshal, 1998, p. 464). Social capital has three components: structural, relational, and cognitive (Wellman, 1988, pp. 31-40; Tsai and Ghoshal, 1998). The structural dimension involves social interaction that the agent uses to gain access, information, or resources. The relational dimension encompasses aspects that arise from the interactions (such as trust and loyalty). The cognitive dimension includes attributes such as shared norms, codes of action, and convergence of views. Understanding how the three components of social capital are affected by ICT use provides a means to relate the work of agents to their roles as an intermediary during the buy/sell transaction. ICT use can affect all three components of social capital. For example, agents can use ICT (especially when they link together voice mail, pager and cell phone) to develop and maintain their social structures [i.e., their network of weak ties (Granovetter, 1983)]. Use of ICT can also alter the relational aspects of social capital. Agents who use ICT to buffer themselves from clients (not returning calls, not checking/responding to email, not maintaining a current Web site) will weaken relations. As well, ICT use can alter what is expected of an agent. For example, many prospective sellers expect that an agent will provide a Web presence for their listing—going beyond traditional advertising media.

4. RESEARCH QUESTIONS

Drawing on our work to date, we have developed a series of more specific research questions for the survey phase of our study. These questions fall into two major categories: descriptive questions regarding real estate agents, their work and their use of ICT and questions about the relationships between these constructs. Because of space limitations we will present only the first category of questions in this paper. Specifically, we posed the following descriptive research questions:

- Which ICT do real estate agents use?
- Where in the process of a real estate transaction do real estate agents use new forms of ICT ?
- With which other individuals involved in a real estate process do real estate agents interact and how?

5. METHODS AND DATA

Data were collected using a self-administered mail questionnaire completed by residential real estate agents. Items for the questionnaire were based in some cases on survey items in the literature or were developed based on the interviews with real estate agents. The questionnaire was pre-tested with a focus group of real estate agents to refine the questions prior to administration.A major goal of the pilot was to test these new items. Most questions are closed-ended (e.g., 7-point Likert scales), although a select number of opened-end questions were offered to elicit additional concerns.

The questionnaire was administered to 868 licensed real estate agents in a single metropolitan area in the Northeast United States. The local real estate agent association assisted in data collection by providing access to the association's mailing list and also helped to publicize the survey.

To encourage response, we sent announcement and follow up letters, following Dillman's (1978) total design method. Some local real estate agencies provided time during regular meetings of their real estate agents to administer the questionnaire, which also promoted responses. For privacy reasons, we elected not to identify survey respondents, which made it impossible to target follow-up requests or thoroughly investigate non-respondent bias. A total of 153 surveys were received, for a total 18% response rate. After coding, 150 responses were usable. Given their assistance, the response rate for agents associated with the four large agencies was substantially higher, 24% (121 out of 512); for other agents, the response rate was only nine percent (32 out of 356).

6. ANALYSIS AND RESULTS

Findings resulted in the development and analysis of scales for ICT use in general, ICT use in the real estate process, and patterns of interaction among agents and other participants in the real estate process. Due to space limitations, detailed information on the procedures for factor analysis are not included in this paper. Further information about survey data analysis is available upon request from the authors.

Based on our examination of the descriptive statistics and an exploratory factor analysis, we divided fourteen ICT into four groups based on frequency of use: 1) a small number of ICT for which usage is universally high (telephone, cell phone, voice mail, MLS), 2) ICT for which usage was nearly universally low (PDAs and forms), 3) Internet and computing technologies (e-mail, e-mail with attached files, WWW resources, WWW posted page, and PC access), which were moderately used, and 4) mobile communication technologies (integrated cell phone and pager, voice mail and pager), which were heavily used.

To further explore the ways in which new forms of ICT were being used, we asked about their use in each stage of a real-estate transaction. Exploratory factor analysis resulted in two general stages: 1) the support stages, comprised of the listing, marketing, finding and selecting stages in the real estate process, and 2) the legal stages, comprised of negotiating, contract contingencies, and closing stages in the group.

Another focus of our survey was the interaction between agents and other professionals and groups (which we will refer to collectively as players). Analysis resulted in three factors, which we interpreted as representing: 1) professional contacts, comprising title companies, newspapers, community development organizations, the local real estate association (a professional organization), and the national real estate professional association, 2) customers, both buyers and sellers, and 3) attorneys and agents, both agents inside and outside of a given agency.

The finding that real estate agents value and use mobile communication technologies a great deal more frequently than Internet and computing-based technologies suggests a strong social aspect to the job of a real estate agent. Thus, a critical use of ICT for real estate agents relates to those who allow for mobility and communication. Findings have suggested a distinction in terms of the types of ICT used, where the ICT are used in the real estate process, and what organizations or players in the real estate process use ICT in a given context. We anticipate that further analysis will yield findings on ICT use primarily to manage and maintain relationships with other players.

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