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December 2003

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### Recommended Citation

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<http://aisel.aisnet.org/amcis2003/28>

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# COMPLEMENTING SELF-SERVE TECHNOLOGY WITH SERVICE RELATIONSHIPS: A STUDY OF CUSTOMERS' REASONS FOR GOING ONLINE<sup>1</sup>

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## Abstract

*The adoption of self-service technology by customers is arguably the hallmark of a successful dot-com venture. The more customers go online to fulfill their service needs themselves, the more scalable and cost-effective the business model. However, in the business-to-business (B-to-B) environment in particular, embedded relationships between customers and providers (e.g., sales representatives) have traditionally been key in generating repeat business and financial success. While some regard electronic networks and service relationships as substitutes, others have explored their complementarity (e.g., Benasou 1997; Kraut et al 1999; Grover et al 2002). However, this research is based on cross-sectional surveys and customers' reactions to strategies of complementarity have not yet been explored in situ, i.e., in customers' everyday dealings with their providers.*

*In this paper we explore customer's situated perceptions of service designs in which self-serve technology and service relationships are used in a complementary fashion. Representing the strategy of complementarity as a continuum with "customer's exclusive reliance on service relationships" and "customer's exclusive reliance on self-serve technology" as the poles, this research explores what differentiates customers who are located in three different zones of this continuum (i.e., those who use self-serve technology 1-33%, 34-67% and 68-100% of the time online). An understanding of the differences in the way technology and service relationships are perceived by each of these customer groupings, promises to provide some insights into the optimal mix of IT and relationships in a service design.*

Much of the research on the impacts of electronic communication networks such as the Internet presents as competing substitutes personal, embedded relationships and computer-mediated, arm's-length relationships between exchange partners. Proponents of transaction cost economics highlight that communication technologies like the Internet reduce transaction, coordination, and search costs, thus favoring the development of electronic markets characterized by arm's-length transactions between buyers and sellers (e.g., Brynjolfsson, Malone, Gurbaxani, & Kambil, 1994; Malone, Yates, & Benjamin, 1987). In contrast, proponents of social embeddedness theories (Uzzi & Gillespie, 2002) challenge the rational actor assumptions inherent in transaction cost economics. They maintain that transactions embedded in social relationships are more efficient than arm's-length relationships (e.g., Granovetter, 1985; Uzzi, 1997), thereby suggesting that embedded relationships will remain important despite changes in communication media.

More recently, the complementarity of such rational and relational theories has been recognized in such areas of research as media choice (Webster & Trevino, 1995), virtual organizing (Kraut, Steinfield, Chan, Butler & Hoag, 1999) and market structures (Uzzi, 1999). Particularly relevant to the current study is the prior IT research on the complementarity of electronic networks and social relationships in the business-to-business (B-to-B) environment. This is because *service relationships* (Guttek, 1995), that is, a

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<sup>1</sup>I am deeply indebted to WebGA for participating in this research project. This research is funded in part by the National Science Foundation, grant # IIS-0085725.

service delivery strategy whereby a customer conducts repeated business with a specified provider such that a socially embedded relationship can be established, are particularly prevalent in the B-to-B setting. While insightful, the extant IT research in this area (i.e., Benasou 1997; Kraut et al 1999; Grover et al 2002) is based on cross-sectional surveys, leaving customers' situated perceptions of technology-relationship complementarity unexamined.

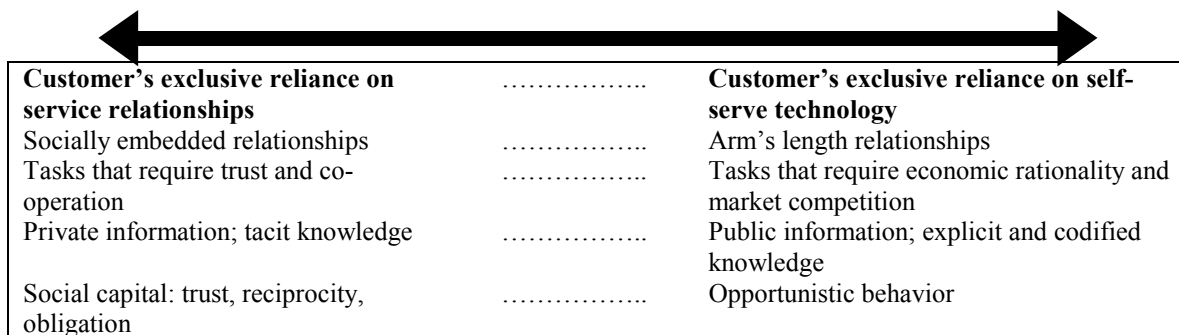
Thus, the purpose of this paper is to explore how, based on their everyday dealings with self-serve technology and their providers, customers account for their reliance on a particular mix of self-serve technology and embedded relationships. Representing the strategy of complementarity as a continuum delimited by "customer's exclusive reliance on service relationships" and "customer's exclusive reliance on self-serve technology," this research relies primarily on 60 customer interviews conducted as part of an ethnographic field study of WebGA (a pseudonym), a dot-com "general agent"<sup>1</sup> operating in the small group health insurance industry in the United States. WebGA lends itself well to the study of the complementarity, not only because it offered both self-serve technology and service relationships, but also because social capital, i.e., the sense of obligation and reciprocity, characteristic of embedded relationships, was crucial to WebGA's success.

### The Self-Serve to Service Relationships Continuum

Network theorists distinguish between weak and strong ties (e.g., Hansen 1999), which maps onto the distinction social embeddedness theorists make between arm's-length and socially embedded relationships (Granovetter, 1985; Uzzi, 1997). Arm's length relationships characterize exchange relations in which rational actors with purely self-interested motives engage in calculative, opportunistic behavior. Due to the lack of a social contract, arm's-length relationships are typically associated with relatively formal, explicit contracts (Poppo & Zenger, 2002). They are considered ideal for tasks that require economic rationality and market competition (Uzzi, 1997), such as broad information searches, which depend on the identification and transfer of non-redundant, public information or codified knowledge (Hansen, 1999).

Embedded relationships, in contrast, are characterized by relational contracting (Poppo & Zenger, 2002) as they embed commercial transactions in a web of social attachments such as friendship and kinship (Uzzi & Gillespie, 2002). These social attachments carry with them norms of behavior and expectations of trust and reciprocity, i.e., social capital (Adler & Kwon, 2002). Embedded relationships rely on social contact between exchange partners and are particularly conducive to tasks that require trust and cooperation (Uzzi, 1997), as well as the transfer of sensitive, private information and tacit knowledge (Hansen, 1999).

While electronic networks and self-serve technology create the conditions for arm's-length relationships, service relationships, i.e., repeated social interactions between a specific customer and provider (Guterk, 1995), create the conditions for embedded relationships. In light of our interest in the complementarity between self-serve technology and service relationships, the key insights from network and embeddedness theory can be summarized in the form of the following continuum (Figure 1):



**Figure 1. Continuum of Relationship–Technology Complementarity**

<sup>1</sup> Double quotes denote emic and industry-specific terms.

## Research Method

### Site

WebGA is a “general agent” in the small group health insurance market. As such, it mediates between independent insurance brokers and “insurance carriers” by providing brokers with “proposals” for health insurance plans from multiple carriers, sales advice, and sales material such as enrollment forms and benefits packages. In addition to such pre-sales services, general agencies also “scrub” the completed “cases” prior to submitting them to the insurance carriers. Case scrubbing involves identifying missing information that brokers have to supply before the insurance carrier will underwrite the case. Just as brokers are compensated by the insurance carrier through a percentage-based commission, general agents earn a percentage-based “override” from the carrier on “written” cases.

WebGA can be categorized as an “intermediary” (Weill and Vitale, 2001: 182), which implies that it owns customer relationships and customer data, but not the customer transaction, which occurs between the health insurance carriers and the small business. Adapting Weill and Vitale’s (2001) representation scheme, WebGA’s business model can be summarized as follows (Figure 2):

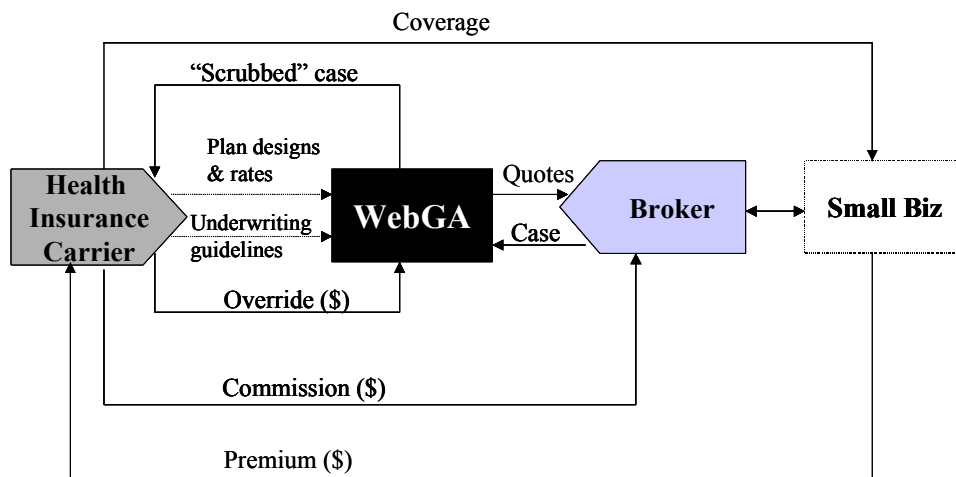


Figure 2. Web GA’s Business Model

WebGA was founded in the late 1970’s as a traditional general agency. It embraced technology early, and its initial quoting and case-management system won a Microsoft technology award. In 1999, WebGA extended its technology investments, deciding to more aggressively utilize the Internet to “provide a web-based infrastructure to support and rationalize the highly fragmented and inefficient distribution of employee benefits to the rapidly growing small business (100 employees or less) market.” In its business plan, WebGA highlighted the attractiveness of the small business market, which represented 80 million lives, or 40% of the US workforce. Furthermore, industry estimates suggested that the small group health market was \$115 billion in 2000, and that Internet technology could reduce by 60% insurance distribution costs, which amount to about 2% of every Dollar spent on health insurance. In fact, WebGA’s business plan described the traditional sales process as taking 45 days, and claimed that this process could be completed in 45 minutes with WebGA’s Internet technologies.

Despite its interest in rationalizing the small group health insurance market through Internet technology, WebGA recognized the importance of embedded relationships, especially between brokers and small business owners. Hence it developed a “broker-centric” business model and a mission of “helping brokers sell more health insurance” by making them more efficient and effective through web tools. The web technology central to WebGA’s strategy was a self-serve, online quoting engine. Instead of brokers faxing “census” information to their WebGA sales rep, so that the rep or a “proposal analyst” would generate the proposals “in house,” brokers could go online, provide information on their client, and select from all available plans the ones they wanted to include in a consolidated “proposal.” The online quoting engine then generated a proposal in the form of a pdf file (and from August 2001, an Excel spreadsheet) that was emailed to the broker almost immediately.

All of WebGA's services were free for the broker. However, WebGA expected brokers who had received information, quotes, and help from their sales reps, to "submit through" WebGA the cases that they sold. This was because WebGA only earned a carrier override on the cases it submitted on behalf of a broker. Since there was nothing preventing a broker from submitting a case directly to a carrier even after consulting with a WebGA's rep on it, it was important for brokers to feel some sense of obligation towards WebGA that would prevent them from cutting WebGA out of the deal when it came to submitting a sold case. The WebGA sales reps therefore actively sought to develop strong relationships and social capital with their brokers.

The reps also followed up with the brokers that used the WebGA online quoting engine. Every time a broker generated an online quote, an alert email was sent to his/her rep. During the follow up phone call, sales reps asked brokers whether they 'got what they needed' from the proposal. This follow up call also gave reps the opportunity to learn more about the broker's sense of the case, i.e., when it was going to be written and which plan the client was most likely to choose. This information allowed the sales rep to offer suggestions that might increase the likelihood of a successful sale. Additionally, this information was key to "checking status" on the case, a process intended to ensure that the broker would write it through WebGA.

From the brokers' perspective, developing relationships with WebGA sales reps was beneficial also. For instance, the pace of change in the health insurance industry was so fast (with changes in plan designs, rates and regulation) that most brokers found it hard to keep up, especially since many of them worked alone. Their desks were generally piled high with mostly unread brochures, policies, newsletters, and trade magazines. This meant that brokers relied on general agent and carrier sales reps for information and market intelligence. For example, brokers learned about changes in carriers' underwriting guidelines and what plans were competitive from their WebGA reps.

As of March 31, 2000, WebGA had over \$1 billion in annualized premiums under management. It had 18,000 insurance brokers signed up for its service, and they had sold health insurance to over 65,000 small businesses covering over 450,000 lives. It had contracts with over 100 insurance carriers offering a variety of health, life and dental plans, and it offered multiple products in 50 states. In May 2001, WebGA employed about 350 people full time across 21 sales offices in nine states. Some of these offices were virtual, consisting merely of one field sales representative working out of his/her home. WebGA employed about 90 sales representatives.

### ***Data Collection and Analysis***

The data analyzed in this paper were collected as part of a 7-month ethnographic study of WebGA. The study was conducted in the latter part of 2001. Thirty- to fifty-minute phone interviews were conducted with 60 brokers in an effort to understand what explained their reliance on mostly service relationships, mostly self-serve technology, or a combination of the two. The interview participants were selected as follows. From WebGA's databases, the brokers who had quoted online at least once in the 12 months ending September 2001 were identified. The resulting list of 4247 brokers was then divided into three groups:

- Group 1: brokers quoting online 1-33% of the time (692 brokers; 16%)
- Group 2: brokers quoting online 34-67% of the time (660 broker; 15%)
- Group 3: those quoting online 68-100% of the time (2894 brokers; 69%)

After sorting each group in ascending order of the percentage of quotes generated online, a random sample of 50 was generated for Groups 1 and 2. From Group 3, a random sample of 100 was selected. Starting with the first group, emails explaining the research and soliciting participation were sent to the selected brokers. On average 10% of the emails were answered, either positively or negatively. The emails were then followed up with phone calls, wherein the researcher attempted to schedule half-hour phone interviews with the brokers who agreed to participate. At the scheduled time, the researcher called the broker to conduct and, with the broker's permission, tape-record the interview.

In Table 1, quantitative differences between the groups are highlighted. Where possible, population means are presented. Statistically significant differences are also noted. Most noteworthy among these are the population-level differences related to the sales performance exhibited by brokers in the different groups. Table 1 highlights that Group3 brokers submit a statistically significantly lower number of cases than the other brokers. Furthermore, the average premiums -- both active and past-12-months -- generated by a broker in the Group3 population is significantly less ( $p < .0001$ ) than premiums generated by the brokers in the other groups, whereas the difference in premiums between Group1 and Group2 brokers is not statistically significant.

Regarding the sample, there are no statistical differences between the groups' demographics except with regard to the brokers' reliance on assistants. Group1 brokers were more likely to work on their own with part-time assistance, where Group2 and Group3 brokers were more likely to employ at least one full-time assistant. The apparent lack of statistical differences between the three groups of interviewees suggests a response bias. Even though a random, stratified sampling method was used to select participants, the brokers who ultimately agreed to be interviewed differed only with respect to in their online quoting behavior.

**Table 1. Quantitative Summary of the Three Groups of Brokers Interviewed**

	<b>Group 1</b> 1-33% online quoting (N=17)	<b>Group 2</b> 34-67% online quoting (N=17)	<b>Group 3</b> 68-100% online quoting (N=26)
Average Cases in last 12 months	7.18 (pop mean=7.03)	5.12 (pop mean=6.54)	6.69 (pop mean=0.89) <sup>a,b</sup>
Average Proposals in last 12 months	13.24 (pop mean=19.71)	22.94 (pop mean=12.66) <sup>b</sup>	28.38 (pop mean=8.75) <sup>a,b</sup>
Average Internet Proposals	19% (pop mean= 19%)	52% <sup>c</sup> (pop mean= 52%) <sup>b</sup>	92% <sup>c,d</sup> (pop mean= 98%) <sup>b</sup>
Average Number of Assistants	0.43	1.92 <sup>e</sup>	1.91 <sup>e</sup>
Average Yrs of Experience as Independent Broker	13	7	7.5
Average Yrs in Insurance Industry	17.5	15	14
Average Yrs w/ WebGA	3.2	3.8	2.2
Have Websites for their Brokerage?	8-Yes 9- No	8-Yes 9-No	14-Yes 12-No

**Legend:** a=different from Group1 population at p<.0001 (t-test)  
 b=different from Group2 population at p<.0001 (t-test)  
 c=different from Group1 sample at p<.0001 (Chi-square test)  
 d=different from Group2 sample at p<.0001 (Chi-square test)  
 e=different from Group1 sample at p<.05 (Chi-square test)

After transcribing the interviews, inductive, qualitative techniques were used to analyze the data. In particular, multiple readings of the interview transcripts as well as coding in QSR's NVivo were relied upon to develop themes that distinguished brokers in one group from brokers in the other groups. The results of this analysis are presented in the next section.

## Findings

### Themes from Group 1

#### Dependence on Rep for Domain Knowledge

One reason brokers preferred relying on a WebGA rep to do the quoting for them, was because they did not possess and/or did not want to possess the requisite knowledge about the health insurance industry. The latter was particularly true for brokers who rarely sold group health insurance, and who therefore did not want to invest the time learning about it. As suggested in the following quote, these brokers relied on their WebGA rep to gain the information and knowledge they needed to sell health insurance:

BROKER: I tried it [online quoting] but ... I still found it better, easier for me to just write down the information, like on their quote sheet and fax it to them, then talk to [my rep] or whoever was over there. And I found that personal type of interaction much better and it satisfied my need for information and knowledge better, being able to talk to somebody, than doing it on the Internet. ... whatever [the online quoting system]

came back [with], I had questions about it. It wasn't really completely explained what it included, that kind of thing. And for me it was better just, like I'm saying, to get more of the information, of the questions that I had, a quicker, immediately, when I had somebody on the telephone and we went over it together. They answered all my questions and then I had more assurance in what I was doing than doing it on the Internet.

### **Online Technology as a Safety Net**

The fact that the brokers in this group had the fewest number of assistants and generated among the highest premiums, presented a compelling justification for the WebGA reps to pay them a lot of attention and to do a lot of work for them. It is in this context, that this theme of using self-serve quoting primarily in exceptional circumstance must be understood. As the next quote suggests, brokers in Group1 regarded self-serve technology as a back-up tool:

BROKER: [the online quoting system] it's a really good safety net, because say I ... need a quote, particularly on the small group, say 20 lives, and I did a quote, and ... either three people got fired between when I got the information or three people got hired between when I got the information, and so there I am, the day before my appointment, or two days before my appointment, and you know, I realize something's wrong with my proposal. This [online quoting system] at least gives me the ability to go in, without having to interface with WebGA and say, '[rep], please, please, please save me.' It allows me to go in and get the information I want, to adjust the quote, to adjust the census, to adjust whatever. I really use the tool that way.

### **Insufficient Computer Self-Efficacy**

There were a number of brokers in this group that expressed frustration with using information technology and a lack of confidence when it came to using computers. The quote below is indicative of this apparent lack of computer self-efficacy:

INTERVIEWER: So, you don't really use the Internet to get quotes.

BROKER: No. I'm not that good. I never really got set up to use the WebGA [site], you know, they sent me the disc from WebGA, but nobody ever showed me how to use it. [LAUGHTER] ... I'm not real computer savvy but if somebody showed me how to do that, I'd probably do it. ... And I hate to say it, but you'd have to sit me down like a second grader and say 'alright, this is what you do.'

## ***Themes from Group 2***

### **Partnering with the Rep**

Many of the brokers in this group maintained that they generally went online to generate the quotes themselves, but that there were conditions under which they would call on their reps to do the quoting for them. These brokers had developed tacit agreements to pass the quoting work to their reps if they themselves were too busy, under extreme time pressure or unable to get to a computer. The following quote illustrates an example of this partnering behavior under specific conditions:

ASSISTANT: The only time I send it to them is if I don't really have time to put it in myself, if I'm really, really swamped. Then, you know, I work with [outside rep] and [inside rep], I'll email it to [the inside rep] because I know that she'll turn it right back around. She'll do it just as fast as I do, but I need her to do it this time [LAUGHTER].

It was also interesting to note that, while brokers in all groups complained that it was time-consuming to enter the census information into the quoting system, the theme that distinguished this middle group was that the brokers identified a group size of 10 as the threshold condition at which they would stop quoting online. As the next quote suggests, once the group being quoted was larger than 10, the brokers would hand the quoting work over to their reps:

BROKER: [In] most of my practices the employees are under 10; so for 10 people I would be more than happy to jump on the Internet, but if it was a 40 person group I would probably be lazy and just fax it to them. ... [Online quoting] It's more efficient for everybody's time, however, there's no substitute for picking up the

phone in a hurry and saying ‘I’m running to my office. I just found out they’re going to include their kids. Will you make the adjustment and email me what the change is going to be?’

### **Valuing the Rep’s Involvement**

Another theme that stood out in the interviews with the brokers in this middle group was that the brokers valued their rep’s involvement in their quoting activities. Even though these brokers embraced the self-serve technology, they nevertheless expressed gratitude for their rep’s involvement. The following quotes present examples of this:

BROKER: But I really appreciate on a specific level the fact that if I either request a proposal via fax, or for paper, or if I go on line and do a proposal, I appreciate the fact that [my rep] follows up a few days later, a week later, to see what’s going on. It’s nice to know that someone’s watching that screen.

INTERVIEWER: So, in terms of working with WebGA, what would you say you value the most?

BROKER: Actually, it’s how quickly the field rep in my area has worked with me on whatever projects I’ve been hitting them with. So, believe it or not, in the high tech world, it’s still the human touch.

### **Transitioning to More Efficient, Technology-Enabled Processes**

This middle group of brokers distinguished itself from the other two groups in terms of the brokers’ interest in changing their business practices. There were a number of brokers who indicated that they were trying to transition from traditional processes to more efficient, technology-enabled ones. The quote below illustrates this theme:

BROKER: I’m not technically oriented so I have a tendency to hold on to old ways. We maintain some rating software for some of the carriers that we do most of our business with. ... And I’m so a relationship oriented person also. I mean I know [my rep] over at WebGA and she is a sweetheart, I’ve known her for years. We have a telephone relationship. ... However that being said I also tend to go direct to carriers. But that’s sort of done in the past. But I think in the future, I think that’s going to change because I think organizations like WebGA are going to continue to add services which help the broker acquire business and therefore I think it’s going to direct us back to those types of organizations [GAs] for those alliances.

## ***Themes from Group 3***

### **Constraints of Service Relationships**

While the brokers in the first two groups tended to praise the positive aspects of their relationships with their reps, the brokers in this last group highlighted the constraints that these service relationships imposed. One limitation of service relationships was that brokers were expected to pay the reps back for their efforts in the form of submitting cases through WebGA. As the following quote indicates, brokers did not feel the same burden of obligation when they relied on self-serve technology:

BROKER: First off, I’m a shopper. I just shop. That’s how I buy my stuff and so that’s how I do it. And I think health insurance lends itself to that. It’s not an emotional sale necessarily like life insurance is. It’s really kind of a benefit versus price sale. And so I have always been a shopaholic and I’ve always felt guilty about going to my brokerage reps because there would be years where I wouldn’t give them business. I’d get their stuff. ... And I think it’s unfair for the person that I’m shopping, but I wanted the information, but I wasn’t giving them the business. ... But it kind of eliminates that need now because now I can go to the Internet and do it myself.

Furthermore, brokers in this group indicated that they enjoyed the greater control over the timing and content of their quote when they used self-serve technology. For instance, they had the “freedom” to experiment with their proposals and to prepare them in a way that reflected their own, independent and emergent thinking:

BROKER: Do I like it [quoting online]? Yes. I like it very much because I can do it at my convenience and also the fact of maybe I’m going to make it a quote for one type of benefit, for example, and then decide, well,



maybe I want to look at something just a little bit different, maybe change some options, or tweak it a little bit. Then that way if I can do the quoting, then I can go in and I can make those changes myself. And I can get it done just the way I'm thinking in my mind that I want to have it. Where if I have to send it to a marketing office [like WebGA], then I'm at their mercy of when they can get to it to get it done, get it back to me. And then they didn't do it either the way I had asked for it. Or, if I've changed my mind since that time and want to look at something different, then I have to go back to them. To me, it's just a lot simpler to be able to do it on line myself.

### **Centrality of Technology to Business Strategy**

Many brokers in Group3 regarded information technology as central to their business strategy. As the quote below suggests, Internet technology's promise of efficiency and flexibility gave this broker the impetus to go independent after being a captive agent:

BROKER: I've been real familiar with the Internet, ... and the power of some of the things I can get from there. So that's one of the reason why I started this company [independent brokerage]. I was a captive agent with [a carrier] for a number of years and just from a technology point of view, I understand it and I know how it [the Internet] can work.

In a similar vain, the following quote illustrates the centrality of information technology in being successful as an insurance broker:

INTERVIEWER: So what would you say it takes to be successful in this business?  
BROKER: Well, I think a lot of perseverance and very good organizational skills because you just have to follow up on everything. And then, oh, we have good internal processes and we do use a lot of automation that has really, really helped us keep track of things and stay on top of what's going on out there. ... And I jumped on that WebGA bandwagon initially because the concept is awesome.

### **Importance of Speed**

Related to the theme of IT's strategic importance is the theme of speed. Many of the brokers in this group highlighted that they were facing some tough challenges: there were more brokers vying for the same business and there were fewer carriers, which meant that all the brokers were essentially showing the same plans. One response to these challenges was to use speed as a differentiator, that is, to be the first broker to present a proposal to the client. As the quote below highlights, speed was regarded as a competitive advantage and technology was a means of achieving it:

BROKER: I try to do as much as possible on line, and as far as rating goes, I like companies that I can rate immediately on line, so I can get an idea of which direction to go in. ... Either that, or I have a relationship with a company person that I can get a response back fairly quickly.  
INTERVIEWER: What is to you the advantage of having that speed and immediacy of the Internet in this [economic] climate?  
BROKER: You don't have to fax it somewhere and then wait for a week to get a response back. You know immediately which direction to go in. A lot of times, you don't have that much lead time, especially on a small group to where if you get it quickly, it helps you out quite a bit.

### **Conclusion**

Table 2 is a summary of the themes derived from the interviews:

**Table 2. Summary of Themes**

	<b>Group 1</b>	<b>Group 2</b>	<b>Group 3</b>
<b>Role of Service Relationships in Broker's Business</b>	- Dependence on Rep for Domain Knowledge	- Partnership with Rep - Valuing Rep's Involvement	- Constraints of Relationships
<b>Role of IT in Broker's Business</b>	- Lack of Computer Self-Efficacy - IT as Safety Net	- Transitioning towards more Efficient, IT-Enabled Processes	- IT is Central to Business Strategy - Importance of Speed

Comparing the themes that emerged from the interviews with our theoretical model presented in Figure 1, i.e., the continuum of relationship-technology complementarity, we notice that the data is reflective of the theory in a number of ways:

- Group1 brokers, who relied primarily on service relationships, were particularly dependent on their sales reps for domain knowledge that went beyond the public information that they could get from the online quoting system. While this desire to interact with the reps personally can be understood in light of the fact that Group1 brokers were the most likely to work alone, it is also noteworthy that Group1 brokers were among those that generated the most cases and premiums for WebGA. This suggests that the socially embedded relationships and the social capital, i.e., the sense of goodwill and obligation, inherent in them, made the Group1 brokers to comply with the expectation that they submit through WebGA the cases, for which they had received information and assistance.
- Group3 brokers, who relied primarily on self-serve technology, highlighted the limitations of service relationships. These brokers valued the freedom that online quoting gave them: not only could they get quotes more quickly and at the time they wanted them, but they could also generate proposals that reflected their own emergent thinking. For these brokers, quoting represented a task that required economic rationality and access to a broad array of public information, as provided by WebGA's online quoting system, satisfied this requirement. Furthermore, the Group3 brokers felt freedom from their obligation toward WebGA when they ran quotes themselves, which promoted opportunistic behavior, the consequences of which were evidenced by the significantly lower premiums and cases they generated.

Comparing Table 2 with Figure 1, we notice that the interviews revealed a set of themes relating to the role of information technology in the brokers' business. While distinguishable from the relationship theme in the data, the technology theme serves as a useful complement to the relationship theme. For instance, Group1 brokers who lack computer self-efficacy are more likely to rely on service relationships for information that an online quoting system might otherwise provide. Similarly, Group3 brokers who regard information technology as key in gaining competitive advantage are more likely to replace embedded relationships with self-serve technology as self-sufficiency through IT represents a strategic goal for them.

In closing we can address one of the questions motivating this research: what constitutes the optimal mix of technology and relationships in a service design? Based on the research findings, we can conclude that a service strategy that has customers using self-serve technology between 34% and 67% of the time is optimal. Our results show that brokers in Group2 were not significantly different from Group1 brokers with regard to cases and premiums written through WebGA. This, together with the interview data, which highlights that these brokers value their rep's involvement in their quoting and selling activities, suggests that Group2 brokers are sufficiently embedded in social relationships with the sales reps to honor the social contracts governed by rules of trust, obligation and reciprocity. At the same time, this behavior does not come at the price of the rep having to do all the work, as can be the case with Group1 brokers. Instead, Group2 brokers engage in partnering behavior or co-production (Moon & Frei, 2000), which specifies the conditions under which they rely on either self-serve technology or service relationships. Thus, firms seeking to implement a service design in which interpersonal service relationships and self-serve technology complements each other would be well-served to negotiate these conditions with their customers such that these customers rely on either channel about 50% of the time.

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