TRUST BASED MARKETING ON THE INTERNET

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ABSTRACT

In this paper we propose that the Internet enables trust based marketing through accurate and complete information and advice. We concentrate on shopping advice and develop a virtual personal advisor as an important aspect of trust building. We describe a Bayesian choice model and dialogue based computer interface to instill belief and confidence in the advisor's recommendations. A prototype system, called Truck Town, is developed for pickup truck purchasing. Consumer testing of the proposed site indicates it can build trust. Most customers would consider buying a vehicle through Truck Town and would be willing to pay for the service. A combination of the advisor site and an information intensive site (Microsoft Carpoint) together dominated the existing dealer system in terms of customer acceptance and trust by a factor of 4 to 1. The preference for the two Internet sites was equal. Analysis indicates segmentation in the site preferences. Consumers who are not very knowledgeable about trucks, who visited more dealers, and are younger and more frequent Internet users have the highest preference for the virtual personal advisor. This paper closes with a discussion of future research and strategic marketing issues raised by a virtual advisor based system. We predict that trust based Internet capabilities will be a major factor in future marketing.

INTRODUCTION

The Internet has great ability to increase the quality and quantity of information available to customers, remove time and distance constraints from shopping, and reduce the costs of information dissemination. Many sites are tapping these benefits through substitution for their existing catalogue operations and creating new integrated information resources to support on-line purchasing. Others have created full retail stores on the Web. CUC Shoppers Advantage offers over 250,000 items available but holds no inventory, does no conventional advertising, and sells over $100 million per month. Forrester Research reports 1997 sales on the Internet as $19.6 billion ($17.4 in business and $2.4 billion to consumers) and over 75% growth per year is predicted for the next five years. Over 400,000 companies have sites on the Web. Activmedia reports in a 1997 survey that 30% of sites are profitable and one in ten have more than $10,000 a month in sales revenue with those reporting over $1,000,000 in revenue per month accounting for 90 percent of the total Web revenues. Cisco is the biggest business to business site and sells over $2 billion a year. Dell Computer sells over 25% of their computers on the Web based on good technical information about their computers, easy ordering, and fast delivery and expects to sell $2 billion in 1998 and over $5 billion per year by 2001 (phone

conversation with Michael Dell, CEO and Scott Ekart, Director of Internet Marketing). Computer Science Corporation reports 20 percent of retailers in their 1997 survey currently offer on-line shopping and an additional 39 percent plan to do so by 1999. Most are supplementing their existing catalogue and retail strategies by implementing them on the Internet and many are still in experimental mode (e.g. Macy's, J. C Penny, Toys R US, CompUSA). Over 70 million people in the USA use the Internet (according to CommerceNet/Nielsen) and 27% of those have purchased something on-line. A Georgia Institute of Technology 1998 survey indicates the demographic profile of users of the Internet as approaching the general demographics (Gatech.edu/gvu) and that users are spending $300 on average over the last six months. Internet penetration and shopping is growing. Some positive results have been achieved, but as is true in the early phases of diffusion of new technologies many of the potential functions and benefits are not yet evident.

While most companies are digging through the problems of generating content, implementing software plumbing systems, and designing computer interfaces, some leading edge sites have identified new dimensions that can create additional value for customers beyond substituting for existing retailing practices on the Web. Recent advances in enhancing the benefits of a Website beyond its current use as an information source include the addition of: 1. expert advice (Virtualvin.com), 2. increased variety (amazon.com - over a million titles), 3. convenient ordering and home delivery of groceries (peapod.com) 4. agents who will browse the Web for the lowest cost for an item adding value for customers (Jango and Compare.net), and 5. auctions of items like airline tickets and antiques are enabled by the Internet and we may soon have agents that bid for us by specified decision rules (Maes, 1998).

Similarly advances have been made in the information that is being presented. Many sites supply extensive information about products and allow users to develop comparison matrices across relevant subsets of products. Attribute specification and the search of a product space to find candidate products is evident on many sites (e.g. CUC.netmarket, Carpoint, Killerapp), but Personal Logic is one of the most advanced in terms of screening products (bikes, cars, etc.) to help customers eliminate products that do not fit their attribute requirements. FireFly pioneered collaborative filtering (Shardanand, Maes, 1995, Resnick, Iacovou, Suchok, Bergstrom, Riedl, 1994) as a way to understand what products a customer might prefer. In collaborative filtering customer preferences for an item (e.g. CDs or books) are used to cluster customers (see Barnes and Noble). Then other items preferred by the members of the cluster are presumed to be of interest to the potential customer on line. These value-added features provide a platform for creation of the next generation of Internet sites that further promote the diffusion of the innovation of shopping on the Web. Haubl and Trifts (1998) have found that such information and comparison capability dramatically reduces search costs for consumers, increases the quality of consideration sets, and improves the quality of decisions.

Academically, Alba, et.al. have described the potential for interactive shopping and the behavioral information processing it can provide (Alba et. al., 1997). Lynch and Ariely (1998) have reported that making prices easier to search does increase price sensitivity, but contrary to the expectations of some retailers, lowering the cost of search

for quality reduces the price sensitivity. Shankar, Rangaswamy, and Pusater, (1998) found price sensitivity increases with perceptual price oriented Web site messages but decreases with increased range of product options at the Web site. In this paper we build upon this behavioral research to explore potential new consumer quality value added dimensions that may be implemented on the Web.

TRUST, MARKETING AND THE INTERNET

A major potential dimension of value that could be added to the Internet is trust. We know anecdotally that some of the very best marketing is done based on trusting relationships between the customer and the provider. For example in banking, very high net worth clients are served by a "personal banker" who understands their needs, represents them in the complex world of financial decisions, and builds long term trust relationships through continued high quality service. In industrial selling often the best sales people use consultative problem solving techniques that are based on understanding the customer's needs and working to solve them in an atmosphere of confidence and trust. All marketing should be done this way, but two problems exist. First, good consultative selling skills are rare (the top twenty percent of sales people often sell over 80% of a firm's volume) and secondly, personal trust based selling is expensive. Private bankers spend many hours with their clients and have to be highly trained and paid. They can usually be cost justified only for clients with over one million dollars of investment assets. If the Web can be tapped to enable this trust based marketing process by the use of virtual advisors, costs could be lowered and customers provided with better decision making support. Marketing productivity could increase and customers could be better served.

Trust has many aspects that draw from the fields of philosophy which see trust as a central force in societal functioning (Barber, 1983; Fukuyama, 1995), transaction cost theory which argues trust reduces contracting costs (Hill, 1990), and marketing concepts which argue trust is essential for successful selling (Smith and Barclay, 1997; Doney and Cannon, 1997, Morgan and Hunt, 1994, Moorman, Deshpande and Zaltman, 1993). For our purposes here we concentrate on the belief and confidence aspects of trust and how it can build a reliance on information and recommendations. For example, we would like belief in information and enough reliance on a virtual expert's advice to limit search to the recommended alternatives. If this is done, the search cost to reach a good decision is reduced for the customer. In some cases expert interaction may build enough trust over time so that the consumer delegates the decision making increasingly to the agent (e.g. for a personal shopper at a department store a customer may say, "You know me so send over a gift for my wife -- it's her birthday."). While an Internet system may build trust, it is unlikely to have complete delegation. We do aim for belief and confidence in an advisor's information and advice. Trust may operate in different ways depending on a consumer's state of knowledge. When consumers know a lot about a purchase decision, consumers will trust the salesperson/source if they respect the consumer's intelligence by speaking the truth and adjusting the level of their conversation to the level of knowledge of the consumer. Conversely, if consumers are limited in their product knowledge, they are more likely to develop trust when the salesperson recognizes their concerns, attempts to listen to their needs and takes on the role of a consultant. This suggests that

knowledgeable consumers may have a lower preference for using a Web-based advisor than less knowledgeable consumers. Knowledgeable customers may prefer an information intensive site that they directly search.

Trust must be established with respect to the 1. Internet and specific site, 2. expert advice and information, and 3. delivery fulfillment and service. Internet trust is highly dependent upon privacy and security. Hoffman, et. al (1997, 1998) found that customers expect the Internet exchange to be based on a social contract built on a relationship of trust and cooperation. If customers do not trust that their personal data will be kept private and that payment is secure and executed only with appropriate authorization, they will not use the Internet. This may mean that sites need explicit permission from the customer ("opt in" systems) before taking their cookie (computer location and I.D.) and personal data. After site trust is obtained, accurate and complete information must be made available with a direct search capability or through an advisor. The advisor must establish empathy with the customer and generate confidence in the recommendations. This means understanding how the recommendation is made (transparency) and backing it with good analysis and logic. Finally the system must fulfill the trust expectations by high quality delivery and service so the customer can rely on the advisor's recommendations. Trust is difficult to earn and easy to lose by not meeting expectations.

Figure 1 lists some of the cues that may be used by customers to sense a trusting environment. We conducted over 50 qualitative interviews with customers across many products (e.g. auto buying, books, appliances) and services (e.g. insurance, banking, health care). We asked the respondent to identify someone they trusted and what led them to trust that person. The most frequent answer was past experience, which demonstrated that the person did what they said they would do and were honest. Trust is built over time, but initial trust must be established before any experience can be recorded. Figure 1 gives some of the cues customers indicated led to initial trust with real advisors and Internet shopping sites (the cues indicated by an "*" were found to be qualitatively most important). Some of these are general (e.g. complete and accurate information, friendly, warm), but their specific importance may vary by customer.

While all three areas of trust shown in figure 1 are important, we concentrate in this paper on the second box -- Expert Advice and Information. It is our hypothesis that good quality and quantity of information and expert advice can build trust on the Internet and lead to interest in shopping. Some customers may get little value from an advisor because they are price-only shoppers and search the Web for the very lowest prices, but many current and probably even more future shoppers will come from households where time is in short supply (e.g. dual career homes with children). These people are likely to be looking for a fast and efficient way to find products that fit their needs at prices that represent good value, but not necessarily the very lowest prices (Peapod and other home grocery shopping services are tapping this segment now). They have substantial discretionary income and are looking for advice they can trust so that the time necessary to reach a quality buying decision is small. It is an open question as to how large this advisor segment is, but in the authors' opinion it is likely to be as large as the segment looking only for information on specific product alternatives. The advisor's recommendation should match the customer's true preferences well, and represent an

attractive tradeoff of price, quality, and search costs. We aim to create such an advisor by integrating and extending state-of-the-art features manifest in the diverse leading edge sites on the Web through a trust building process. We extend the advice dimension by creating virtual advisors that use expert systems (Horowitz and Russo, 1989), rule-based programming, and Bayesian updating. We extend collaborative filtering by segmenting on demographics and attitudes as well as product preferences and developing assignment rules using discriminate analysis. We refine target markets by using micro-segmentation to define affinity groups that share relevant values and demographics so that meaningful information and recommendations can be exchanged securely within small subsegments of the overall group. We integrate screening methods within our virtual advisor by building on the behavioral research that suggests consideration sets are formed before utility tradeoffs are made (see Hauser and Wernerfelt 1990). We use concepts of Information Acceleration (Urban, Weinberg, and Hauser, 1996) to create purchasing environments where customers can easily access full information on new and existing products (e.g. product specs, ads, sales people, magazine articles, consumer new evaluations, and word-of-mouth communication). We combine these capabilities in a recommendation engine and computer interface that builds customer trust and gives them the confidence to take action based on the information.

In this paper we develop our advisor design criteria, lay out the analytics of our recommendation model, and present a prototype trust based personal advisor site for pickup truck purchasing called "Truck Town". We outline results of consumer testing of Truck Town and an information intensive site (Microsoft's Carpoint site - Carpoint.msn.com) versus existing buying experiences and examine segments of Internet users who prefer an advisor (Truck Town). We close with a consideration of some marketing strategy implications and limitations of trust based marketing.

DESIGN OF A PERSONAL SHOPPING ADVISOR

Design Criteria

The first set of criteria is that the system must be easy, natural, and engaging for the customer to use through a dialogue with a virtual expert advisor. Using the system should engender a feeling of trust like talking to a real personal shopping consultant. Second, the system must generate meaningful utility measures so that the expert can recommend products that meet the customer's detailed preferences. One could conceive of a detailed market research study based on conjoint analysis (Green and Srinivasan, 1990) to measure the attribute importances for a customer, but these repetitious measurements would violate our on-line dialogue design criterion. However we would like the system to benefit from past market research studies. The third criterion is that the system must strive to supply full information about all products in the class. Finally the system interface must promote trust through user control and easy navigation around the site.

Overall Structure

The overall design structure is shown in Figure 2. Three input sources are used: on-line dialogue, product database, and marketing data. The on-line dialogue establishes trust while collecting need and use measures. The product database contains detailed specifications (values of attributes) of all products in the market. The marketing database is a historical repository of market research studies, so the system can benefit from detailed attribute tradeoff data, but not suffer the burden of collecting the detailed inputs on line. The three input sources drive two recommendation components: an expert system and a micro-segmentation procedure. The recommendations engines generate a product set for evaluation by the customer; they are contained in a personalized virtual store based on Information Acceleration shopping procedures. Finally a fulfillment module establishes delivery and service of the product. Exploring this information-rich environment may lead the customer to revisit their inputs through iteration prompted by their desire to change requirements or a dialogue with the expert on why all requirements can not be meet. We describe the analytics of the recommendation model and then the computer interface that uses trust cues to establish the dialogue.

Expert System Recommendation Model

The recommendation model is designed to identify the consideration set and as sure that it contains the product that maximizes the customer's utility. This is an easier task than predicting the one product they will buy. It begins by eliminating products by attributes that customers would definitely not consider to form a consideration set. For example a customer might not consider purchasing a particular brand of auto because of poor service experience in the past. One might also eliminate products based on the lack of a required feature. For example requiring four doors in a car would eliminate all two-door cars. A maximum price limit would eliminate all products over the stated price constraint.

A strict elimination model assumes that customers fully understand the implications of constraints. Many commercially available attribute search programs on the Internet often lead to no feasible alternatives because they treat customer constraints as rigid. In our system the expert alerts the customer when an opportunity cost of a constraint is large and eliminates alternatives that might be attractive to the customer on an overall basis. For example, if the price constraint were raised by $500, the expert might find a car that fits perfectly the other specifications. By calculating the opportunity cost in terms of utility (see below) the expert has the basis to "discuss" with the customer the option of changing the constraints. If the customer wants only a small truck but also wants to carry five people, the advisor would discuss the tradeoffs before eliminating all large trucks.

After elimination, the evaluation task is to find the alternative with the greatest utility. Measuring a full set of product attributes (e.g. 10-20 attributes and 3 or more levels) is not possible while maintaining a dialogue format, but it is possible to collect constant sum preferences on aggregate perceptual dimensions (e.g. 3-5 dimensions like quality, performance, style, and value for autos; see prototype in figure 6 for input screen). These preference weights can be aggregated into utilities by a Logit function:

(EQ. 1)

$$P(A_a) = \frac{\exp^{\sum_d \alpha_d D_{d,a}}}{\sum_a \exp^{\sum_d \alpha_d D_{d,a}}}$$

$P(A_a)$ = probability of purchase of product alternative a

α_d = constant sum importance of dimension d given by customer

$D_{d,a}$ = standardized database value of dimension d for alternative a

$D_{d,a}$ values are from secondary sources (product database in Figure 1). For example, horsepower per pound may be a designated surrogate for performance in autos and standardized across all autos in the database (i.e., mean zero and standard deviation of one). While it would be desirable to use consumer generated ratings, the burden of collecting detailed ratings from each consumer for all autos is considered too large and would interrupt the trust based dialogue with the expert by a repetitious market research task.

While Equation 1 captures utility through aggregate tradeoffs, sometimes we may want to include specific attribute effects. It would be most desirable to have the complete function which integrates the attributes into perceptual dimensions (e.g. Urban and Hauser, 1993), but we can not do this without violating our criterion of maintaining a dialogue. However for specific attributes we can use sequential Bayesian procedures to update the prior probabilities of purchase from Equation 1.

(EQ. 2)

$$P'(A_a) = P(A_a|R_{r,q}) = \frac{P(A_a)P(R_{r,q}|A_a)}{P(R_{r,q})}$$

$P'(A_a)$ = updated probability of buying alternative a

$P(A_a|R_{r,q})$ = probability of buying alternative a given a customer response r to on-line question q

$P(R_{r,q}|A_a)$ = conditional probability of answering question q with response r given true preference for alternative a

$P(R_{r,q})$ = marginal probability of response r on question q, where

(EQ. 2A)

$$P(R_{r,q}) = \sum_a P(A_a)P(R_{r,q}|A_a)$$

For example, if four wheel drive were important (say 4 on a 5-point importance scale) for a sports/utility vehicle, but not absolutely necessary, we could calculate the posterior probability of buying each vehicle with Equation 2 given the priors and the conditional probability that the customer would indicate 4 on the 5-point scale if they truly preferred a specific vehicle. This conditional probability could be obtained by managerial judgment or custom market research studies that links responses to this question to actual purchase. We could also observe what fraction of people who have a first choice for or buy each specific vehicle at the end of the shopping experience on the internet, checked 4 on the four wheel drive importance scale (we might find 80% of those who choose a Chevrolet S10/4WD Blazer check 4 on the importance scale). This procedure allows sequential updating for specific product attributes while maintaining a low input demand on customers.

Given the updated probabilities, we can select the top two or three alternatives based on their utilities for inclusion in the customer's personal virtual store. The tradeoffs of limited measurement (conjoint vs. perceptual dimensions, data base vs. individual perception measures) to enable a user friendly dialogue are acceptable when we realize that the output is not a single choice prediction, but a recommendation set that we hope will contain the customer's best choice immediately or after customer to expert advisor interaction and segment recommendations.

Micro-segmentation Recommendation Model

The expert system based recommendation is supplemented by micro-segment product preferences. Often in past market research customers have been clustered into segments based on attitude, demographics, and preferences and discriminant analysis conducted to determine segment membership criteria. These assignment rules usually need few inputs and these can be obtained on line (e.g. in autos, membership in a sporty family segment may be may be defined by: 1. own their home, 2. enjoy cornering performance, and 3. income over $75,000). Given specific customer segment assignment rules we can examine the products the population in that segment have purchased (e.g.

33% purchased a Corvette, 25% a Firebird, 20% Toyota Supra, etc). We can add the most popular products for that segment that have not been already identified by the expert system to the set for evaluation in the virtual store. The recommendations from the segment analysis may be different than the expert's recommendations because the segment recommendations are based on purchase after the customer has gone through the full shopping experience.

When the historical marketing data base contains detailed conjoint or choice based studies, product utilities can be calculated for each segment based on the historical attribute importances and attribute values for each product contained in the product data base (e.g. in cars attributes might include: disk brakes, leather upholstery, 5-speed automatic transmission). The product alternatives with the highest utility in the segment could further supplement the virtual store. The increased precision from the detailed attribute tradeoffs may add new alternatives to the store.

The final step in the segmentation model is to divide the customers assigned to overall segments into micro-segments of two to three hundred people. The purpose is to establish a community of people who can interact on the Internet to exchange information and give advice to each other on product purchasing. An exclusive chat board ("newsroom") would be established so posted questions could be processed and simultaneous conversation through the group's buddy list could take place. This community would not be open to the public and since all those assigned to the micro-segment would have similar attitudes, demographics, and preferences, we could expect considerable sharing of ideas. If the product were autos, we might think of this as an auto club that might exchange views not only on auto purchasing but also travel and insurance. These communities may take on activities much wider than just purchasing a product (Turkle, 1995).

Virtual Store

The recommendations from the expert system and segmentation analysis comprise the personalized store for the customer. Full information would be provided in a virtual shopping format (Burke, 1996; Urban, et. al., 1996). The easy access to all information from ads, brochures, technical specifications, magazine articles, consumer service evaluations, sales personnel, and word-of-mouth from other customers makes the evaluation of alternatives very efficient. A highly screened consideration set is proposed by the recommendation model and an easy-to-use interface allows information to be browsed or analyzed quickly. The word-of-mouth information would include posted evaluations for the product from the overall users of the system as well as restricted inputs and Q&A from the customer's micro segment.

For each alternative an option is available to ask the virtual expert why they recommended the product. The expert also can initiate discussion with suggestions of other cars based on relaxing constraints or small changes in preferences. Likewise the customer can initiate revisions of their inputs to generate a new set of recommended products to be displayed in the virtual store.

Exit from the virtual store may be made by an ordering or buying procedure that leads to direct shipment of the product or in the case of products like cars, visit a dealer or central test drive and fulfillment center. Alternatively the customer may store their responses for future consideration on their computer or through a computer on site at an actual retail store.

Trust Based Interface

The on-line interface identifies the uses the product will serve, elimination criteria, constraints, specifications, and importances of overall perceptual dimensions. But this interaction must take place in a trusting atmosphere. This trust is based on creating a dialogue similar to talking to an actual sales advisor who is your advocate and is an expert in the product category. Figure 1 outlines some of the advisor trust building cues that can be used. These need to be established in a calm confidence building set of computer screens. Choice of color and format is important (Johnson, Lohse, and Mandel, 1998). For example, a blue background with clouds may be a calming environment for risky decisions while advisors may be shown in their work environment (e.g. mechanic advice with shop as background) to enhance their realism. In no case should ad banners or flashing promotions be evident. The interface should try to establish a warm, friendly, open and consultative atmosphere. Some cues are easy to implement. Honesty and accurate information can be designed into the data and dialogue; facial expression and eye contact to establish friendliness are more difficult, but can be approximated by pictures and moving images along with audio voice.

PROTOTYPE TRUST BASED SITE

Pickup Truck Purchasing

We selected pickup truck purchasing as our prototype environment for feasibility testing of a trust based site. Autos reflect an important purchasing decision with a high level of information processing complexity and perceived risk. In 1998 pickup trucks comprised over fifteen percent of the consumer vehicle market and therefore are a significant segment of the vehicle market. Auto executives we talked to judged pickup trucks to be the most separable segment of the market. The scale of the prototype in this area is feasible (e.g. about 80 major product alternatives), but still captures the key issues underlying implementing a personal shopping advisor and building trust. Figures 3 to 8 show a set of selected screens from the prototype.

Trust Cues

In each of the screens we try to tap the key trust cues. While all the cues listed in Figure 1 are important, the asterisks in that figure show the most significant cues and we place special emphasis on these.

In our site the expert advisor is part of a larger site architecture called "Truck Town" (see Figure 3) in which the potential buyer can be guided completely by the advisor

or navigate the site independently visiting dealers (specific model information available for the dealer's brand), news stand (for magazine and book information), coffee shop (informal conversation), or visit an expert advisor. An avatar in the form of a friendly and smart owl helps guide the customer to site features and answers questions about information sources, but refers the customer to the town hall and the personal advisor for specific product information and recommendations. The Truck Town architecture allows the user to have considerable control over information acquisition (an important trust cue). We begin by legitimizing the site (we assume trust in the Internet has been established for the purposes of this prototype). Figure 3 shows the welcome screen that explains the objectives and establishes a link to the customer by understanding the customer's problem. The second screen takes place at the town hall where the mayor of truck town explains our source of knowledge and answers queries on the satisfaction guarantee, return policy, and system audits.

Recommendation

Next the customer selects and meets the expert of their choice. The choices are 1. mechanic, 2. retired editor of an auto magazine, or 3. contractor who has purchased many trucks. The selected expert gives a personal introduction and answers queries on how they are paid, their strengths and weaknesses, and past customer comments. Figures 4 and 5 give some of the questions and answers Craig, the mechanic, asks in a dialogue to determine constraints and preferences. In each screen customers can use the hypertext to ask more detailed questions about the elements of the decision. Other screens (not included here) discuss the number of people to be carried in the truck, engine and bed size preferences, commercial uses, and brands the customer would not consider. Figures 6 shows the screen collecting constant sum preferences on the perceptual dimensions of pickup trucks ($P(A_a)$ in Eq.1).

Information Acceleration Showroom

The expert questions and customer answers along with the community micro-segmentation values obtained by the dialogue are used to create a virtual showroom as shown in Figure 7A. In this case four trucks are recommended (two from the expert and two from the micro-segment model) and the customer can obtain more detailed information by clicking on a specific truck (e.g. magazine articles, brochures, technical specifications). For example, Figure 7B shows the Dodge Dakota and the options to obtain the available information as well as the reasons why this truck was recommended. The site has other information sources. The potential buyer can visit the newsstand (for magazine articles), or directly to "Dealers Mile" if they know what specific truck they want. The combined effect is a full information site capability.

Community Interaction

The exit from the showroom can be to "meet other people like me" (upper right corner), configure the detailed options and order the truck, arrange for a test drive, or go "back to the expert" to ask more questions or revise inputs. If "meet others" is selected, the potential customer is led to the "coffee shop" (of course they could also go directly to

the "coffee shop") to meet others in their micro-segment and observe their conversation. (See Figure 8)

Consumer Concept/Use Research

We conducted a concept/use study in order to assess: 1. the viability of a personal advisor based , 2. the ability of the Internet to build trust and preference relative to existing purchasing experience, and 3. the proportion of customers who would prefer an advisor based site to an information intensive site. Respondents evaluated Truck Town after use (average 30 minutes on line) in terms of trust, quality of recommendations and willingness to use and pay for the service. Respondents also used an information intensive site -- Carpoint's pick-up truck section (the order of site use was rotated). We also compared the Internet sites to their last purchasing experience at an auto dealer and measured constant sum preferences relative to Truck Town and Carpoint. Respondents were from the Boston metro area, had purchased a truck in the last 18 months and were computer or Internet users (80% had Internet experience). This is not a representative sample of the nation and is advanced in terms of internet/computer use. However for this lead user group, it does provide an evaluative basis for assessing the strengths and weaknesses of Truck Town. 250 respondents completed the study and their results are presented here.

82% of the respondents said they trusted the Truck Town advisors ("yes" to the question "did you trust the advisor") and 76% agreed that the information provided was trustworthy (top three boxes on 7 point scale). On seven point scales 88% agreed that the advisor recommended trucks that fit their needs. However, we must be cautious in interpreting this figure because the respondents had purchased a truck in the last 18 months. The recommendations may fit needs that represent confirmation of that past purchase. More importantly, 60% agreed that the advisor suggested new alternatives. They would not have agreed to this if they were confirming past behavior. 88% would consider buying a vehicle through Truck Town and on average they would be willing to pay $50 for the service via an increase in the price of the vehicle. These are encouraging results and suggest that the Truck Town site did build trust and acceptance.

Given that Truck Town is a viable advisor site, we compare the two Internet sites to existing dealers (last dealer the person bought a vehicle from) by asking respondents to choose between the Internet and dealers on dimensions of trust, advice and information. Table 1 shows that the information intensive site (Carpoint) and the advisor site (Truck Town) together are viewed as superior to existing dealer shopping experience. 81.7 % viewed the Internet sites as more trustworthy than the dealer and over 80% viewed the information quality and quantity as better. 71.9% would use the advice of the Internet rather than the dealer and 60.9% were more likely to schedule a test drive over the Internet. 80.8% would recommend the Internet based on their test useage versus 19.2% who would recommend the dealer from whom they last purchased a vehicle. While this is only one product category, this data indicates the potential of the Internet to create trust.

Next we compared the two sites to determine the relative preference of an advisor to an information-based site on the Internet. Table 2 shows the results of constant sum chip allocations between the two sites. The overall preferences between the two sites are almost equal in terms of overall preference with a slight (but insignificant) advantage to Carpoint. The only significant difference in other measures is objectivity of information with an advantage to Carpoint. Overall both sites were evaluated well, so we wanted to determine if some segment of consumers preferred strongly one site to another. We ran stepwise regressions of constant sum preference for Truck Town against individual attributes and covariates of site evaluations (confidence, understanding concerns and quality of information) for those who preferred Truck Town. Table 3 shows the results and indicates a significant relationship (R squared = .53, F = 5.7, significant at 1%, N = 89) of higher preference for consumers who rated their knowledgeability of trucks lower, visited more dealers, were younger and more frequent users of the Internet. These correlates are consistent with the priors that advice is more valuable to those who are less knowledgeable and these less confident buyers visit many dealers to check information. The demographic differences were in addition to preference increases due to more respondent confidence in the site and ability to convey concerns. Therefore although the overall preferences of the two sites are equal, an identifiable segment prefers Truck Town.

It appears that the trusted advisor appeals to approximately one-half the Internet truck shopping market, but the others would prefer a more direct information access capability. Open-ended responses indicated people who liked Truck Town liked the advisor capability, personalness of the advisor, and the easy-to-use and fun nature of the site. Those who disliked the site felt the town analogy was like a game, child-like and unprofessional. Those who liked Carpoint liked the depth of information, professionalism, and direct access and control. Carpoint criticisms were of the push nature of the site and sponsorship. One hypothesis that suggests itself from this research is that there are two different buyers: 1. those who have confidence and knowledge of what they want and therefore want easy direct search and 2. those who have less knowledge and want help and advice in making their choices. If this hypothesis were true and one wanted to design a site to appeal to both segments, a Carpoint format could be adopted but supplemented by a trust advisor button that provides a personal shopping advisor. Alternatively, a Truck Town format could be adopted that morphs into a direct search site if the customer goes directly to auto mall and frequent access to specific car data, but a format that stays in the advisor mode if the customer selects and continues an advisor dialogue.

Prototype Extensions and Future Research

The first future research task is to determine if there are at two segments of buyers differentiated by their cognitive processing. The regressions suggest this, but careful behavioral experimentation and control of all variables except the process of information gathering could provide more definitive evidence of differences. Basic behavioral research on the trust process also would be useful because although we have investigated various trust cues, we have little understanding about the process of building trust and the role of each cue in formulation of trusting relationship. This study has shown the existence of a segment of consumers who would like to trust expert advice, but it has not defined the underlying process of creating a trusting relationship.

The site shown in figures 3 to 8 can be extended along several dimensions. First, in a straightforward way, the scope could be extended to include all autos. Second, the interface could be enhanced to include full motion and audio as bandwidth increases to the home. As suggested above, the interface also could be elaborated to allow alternate styles of information gathering and further within the trusted advisor segment elaborations are possible. For example, some members of the trust segment may be particularly risk averse and require even more information and care. This might be observed by noting the customer searched almost all the information in the hypertext advisor dialogues. For this person, more information options might be made available and the expert might adopt a more expansive dialogue that stresses assurance and in depth information. Third, in the current system the alternate advisors ask the same questions so it would be useful to have dynamic questioning (ask questions first that generate the most value of information in a Bayesian sense) and a style of communication that differentiates the personalities of each advisor. The consumers could get a "second opinion" (in the prototype more than 1/3 of the people visited more than one advisor). Finally, the current prototype ends with a referral to a dealer or a test drive appointment. An extended system might allow a test drive at a special central test drive facility (e.g. rental car company or super dealer who maintains all models for a manufacturer like GM or Ford) and then ordering on line and delivery direct to the home.

The analytic structure could be extended to updating at the attribute level. Now probability of purchases of specific products are updated, but it would be possible to extend the model so the probability of purchase is a function of importance weighted features. This would require priors on importance weights based on data from micro segmentation conjoint studies of part worths. Then each importance weight would be updated (e.g. 1 to 7 importance values) based on responses to each dialogue question (e.g. indicating the use of hauling a boat would update the importance of durable frame and towing capacity). Although this extension requires more prior data (importance weights for features by segment) and product specifications at the feature level, it may be worthwhile in terms of recommendation quality and specificity in dialogue about consumer needs.

The dialogue presents an interesting opportunity to learn about customers' unmet needs. This reverse sensing would allow improved product design and development of a line of products that would dominate competition in a fair comparison. The sensing could occur at three levels. First, the customer's choice of showroom vehicles and time spent searching them unobtrusively provides preference measures that could be used in Logit analyses across homogeneous customers to estimate importance weights. Secondly, infeasibilities can be identified in the dialogues by studying the pattern of probability updates. For example if the customer wanted a small truck for efficiency but also indicated that they wanted to carry six people, the model would first raise the probabilities of all small trucks and lower those of large trucks to reflect efficiency preferences. Then the model would lower probabilities for small trucks and increase those for large trucks to indicate the need to carry six people. If all trucks followed these patterns, an opportunity for a mid-size truck that could be efficient and carry six people would be indicated. Examining the structure of updates and finding no truck were the probabilities go up after

each need designation would identify current infeasibilities and unmet needs that might be design opportunities. Finally if a relationship has been built with the customer, conventional market research studies (e.g. conjoint or choice-based analysis), product evaluation studies (e.g. concept tests and focus groups) could be efficiently and quickly accomplished. In addition some of the newest techniques could be conducted on the Web. For example, we could ask our customers to participate in Information Acceleration studies for new products, design their own car with CAD tools, or participate in more free form creative visualization efforts (Zaltman 1997) as individuals and through their micro communities.

STRATEGIC MARKETING IMPLICATIONS AND LIMITATIONS

If the trust based Internet methodology described here attracts a significant segment of the market as indicated in our research, it will offer manufacturers considerable potential for increased sales. These rewards can be gained by building more lasting relationships with these customers through trust based marketing. Also it provides protection against destructive price competition on the Web that prevents value added marketing. For customers it offers a more efficient way to process information to make a decision and a more effective way to identify alternatives that maximize their utility.

Our results show that marketers will be able to establish trust and loyalty among their customers. This will lead to more sales of existing products, but also development of new products based on these customer needs and technologies that could lead to higher growth rates by better products and a mechanism to achieve rapid diffusion of innovation through on-line word-of-mouth communication in micro segments. Of course the other side of this Web capability is rapid diffusion of negative experience. Manufacturers will need to have very high quality products that fit needs and superlative service and fulfillment capabilities if they re to succeed. Given a franchise of trusting customers, expansion of the product offering to associated services also could produce large gains. For example, auto manufacturers might build on the trust earned in auto buying to cross sell insurance, travel plans, and auto repair services.

One important strategic decision manufacturers and retailers have to make in setting up a trust based advisor site is how much trust to design into the system. Figure 9 contrasts three strategies from "push" to fully trust based. A push strategy is pressure selling to get business based the sellers own set of products: information may be slanted to get sales; advertising would include flashing banners and messages pushed down the network based on the user cookie; promotion would be used to push out excess inventory or stimulate sales of high margin items; service would be at a minimum; and the results would be measured in the short term. In contrast a fully trust based strategy is based on building a relationship by advocating for the customer across all product alternatives; full and accurate information would be presented; advertising would be only on demand and a calm consultative atmosphere would be maintained; premium prices would be justified based on value added; service would guarantee user benefits of the life cycle of use; and benefits would be measured by long term loyalty of the franchise. A partial trust strategy

would be possible based on offering some products and information, but not on all products in the market.

Manufacturers and intermediaries need to consider how the Internet marketing relates to their existing channels. Should a separate division be established to sell products on the Web or should the Internet be complimentary to the existing sales and distribution system? CompUSA has a separate division called CompUSA Direct but Auto-by-Tel sales take place at the same dealership as conventional selling (although in some dealers a separate desk is set up for Internet customers). A separate Internet division allows prices and policies to be set independently of the existing channel and provides maximum flexibility in meeting new Internet competitors, but it may demoralize the existing channel because of Internet cannibalization. A complementary strategy would encourage customers to take their Internet information and advice and go to a physical store to complete the purchase by viewing the product and utilizing their immediate delivery and installation services. Complementarity is attractive, but if the store channel costs are higher, maintaining similar prices on the Web could put the Internet site at a considerable price disadvantage. For example if CUC Shoppers Network sells a TV based on direct factory shipment and no inventory, its price may be lower than Circuit City's store price and therefore Circuit City's Internet price if complementarity is to be enforced. In the end the choice may be whether to cannibalize your own store sales or let new Internet sellers cannibalize them -- not a very attractive choice for retailers. One way out of this dilemma may be to have an Internet price that meets the low cost suppliers, but also have a value added package at the store price that includes store services like immediate delivery, selection from inventory, installation, service, and product returns. If customers want the additional services, they will pay for them.

Trust based Internet marketing through virtual personal advisors can be a major innovation in marketing, but there are several limitations to this approach. First, the bandwidth available to most homes limits the quality of images and information that can be delivered. 56.6 kilobits is the standard today, but this limited bandwidth is likely to improve with the widescale availability of ISDN (128 kilobits per second) and T1 speeds through cable modems and corporate intranets (1.5 million bits per second). The technology is moving to lower costs and making these capabilities available in the home. Teledesic Inc. is planning to offer broad band (T1) capability throughout the world by 2003 via low orbiting satellites. Second, the nature of the interaction between the expert and the customer is currently limited by fixed questions and answers. Wider bandwidth would allow motion and image details such as eye contact, emotions, and facial expression that are so important in real person to person trust building. But equally important, future software improvements in nontextual communication will enable natural spoken two-way communication instead of printed and fixed dialogue. Third, the current technology is limited to two dimensions. In the future we can expect software that will allow 3D imaging and free directional motion through the environment (Funkhouser, et. al. 1995). For example, the shopper could walk through the showroom and open doors and inspect the motor. We can simulate this with fixed video sequences (see Burke, 1996; Urban, 1996), but advancements will allow free format movement; precursors of this exist in computer games today. Another concern is that although the market for trust based sites may exist, it might be small. If most of the new users are interested in disintermediation or

want to employ agents to scan the Web (e.g. Jango) for lowest prices, sites that build trust through advisors may be little used. If on the other hand new adopters of the Web are short of time (e.g. busy parents with higher incomes who have limited time for information gathering and shopping) and are willing to pay a little more for trusted advice and a fast way to make a good decision, the trust based segment may be large and growing. Our data suggests for autos that the majority of buyers prefer the Internet and one half of these prefer a trusted advisor site, but the size of the advisor segment is yet to be determined in other product categories. A final limitation to the methodology proposed here is that the trust cues may be different in non-USA cultures. The new software could help, but primary research would be necessary in other countries and dialogues created that are compatible with those cultures.

If Internet experience shows that virtual personal advisors capture the characteristics of the best sales people, the potential for trust based marketing is very large. The Internet could then become a new trusted channel and even though it is not likely to completely replace existing channels, this new layer of marketing could be a major part of effective trust based marketing in the future.

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Table 1: First Choice of Two Internet Sites vs. Existing Dealers

	Internet	Existing
Most trustworthy	81.7	18.3
Greatest quantity of information	86.9	13.1
Highest quality of information	82.5	17.5
Best opportunity to evaluate options	77.0	23.0
Most likely to use advice of	71.1	28.9
Most likely to make an appt. to test drive	60.9	39.1
Most likely to recommend	80.8	19.2

Table 2: Constant Sum Preferences Across Internet Sites

Point Allocation	Actual	TruckTown	Carpoint
Overall preference for the purchasing process	38.9	30.3	31.0
Understanding how a recommendation was made	32.4	33.9	33.5
Amount of freedom you had in choosing the type of inform	29.5	36.0	37.7
Amount of control over the information you provided	28.6	36.3	35.2
Objectivity of the information you received	22.4	37.4*	41.8*
Independence of the source information	20.3	39.8	40.1
Trustworthiness of the process	25.1	37.3	36.8
Likelihood that you would consider a purchase	34.1	32.1	33.9

* Sig @ 10% Level

Table 3: Regression of Truck Town Preferences

Variable	Parameter	F
Intercept	11.3	0.2
Knowledgeability of Trucks	-6.7	5.1*
Number of Dealers Visited	4.2	4.4*
Frequency of Use of Internet	2.7	3.6*
Visit Advisor First in Truck Town	3.4	0.63
Gender	4.7	1.09
Marital Status (1 = single, 2 = married)	-4.7	0.85
Age	-4.2	3.1*
Income	1.9	0.63
Total of Vehicles in Household	2.5	1.72
Number of Trucks Owned	2.4	1.83
Confidence in Truck Town Information	5.7	5.4*
Could Convey Concerns in Truck Town	2.8	2.9*
Quantity of Information in Truck Town Better Than Carpoint	4.3	0.5
Quality of Information in Truck Town Better Than Carpoint	9.5	2.2

*Sig @ 10% level

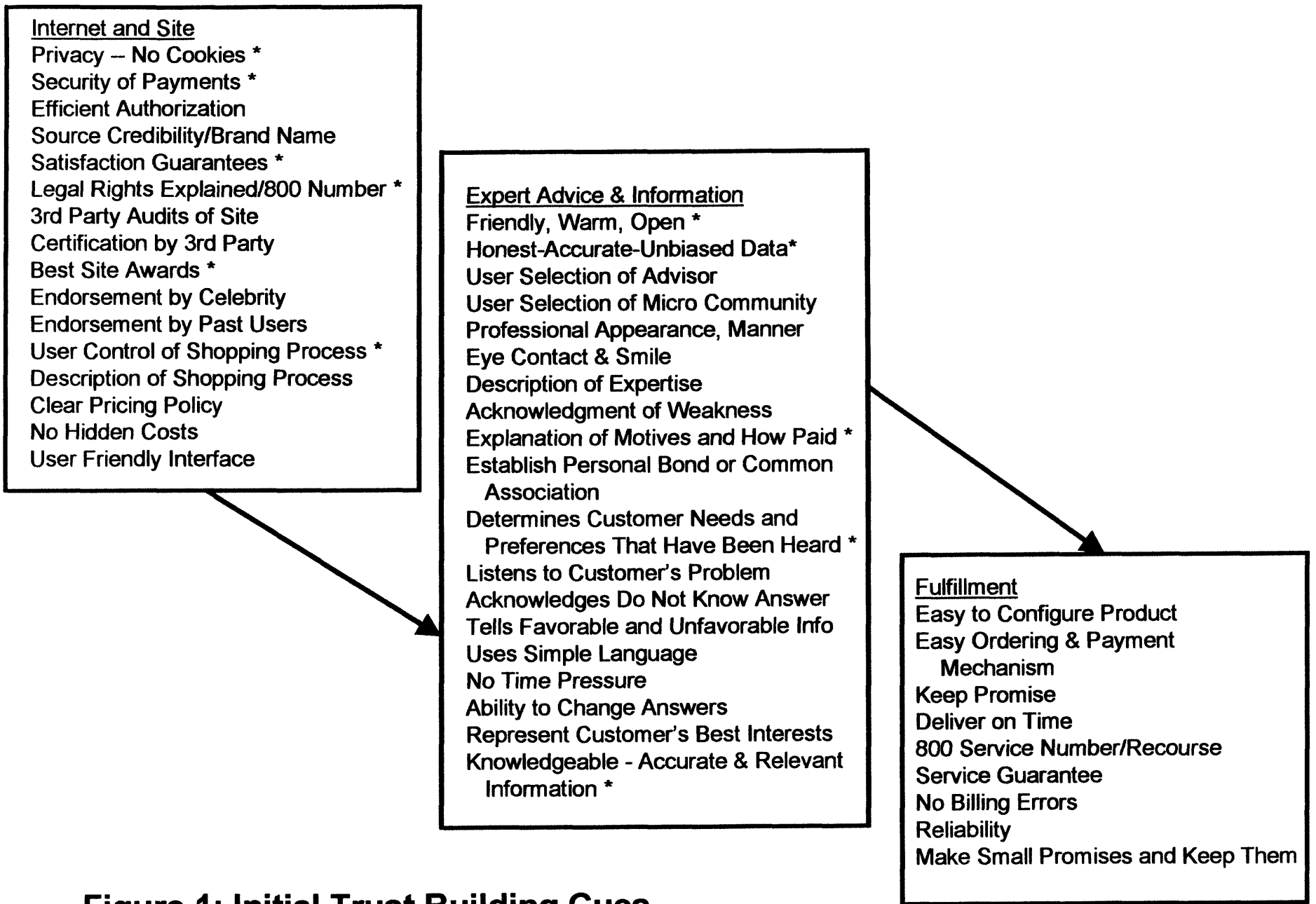


Figure 1: Initial Trust Building Cues

* See prototype application

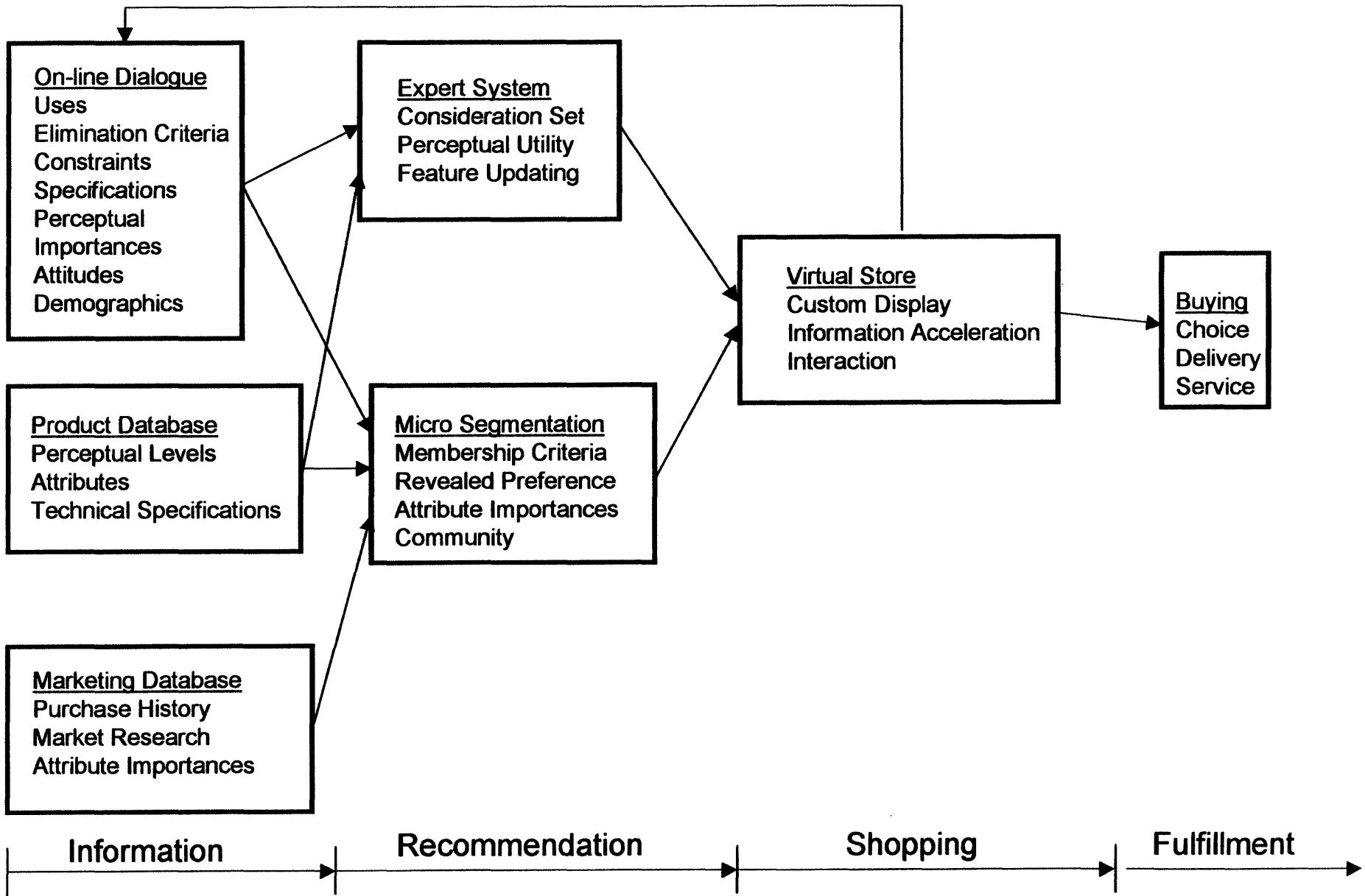


Figure 2: Trust Based Internet System

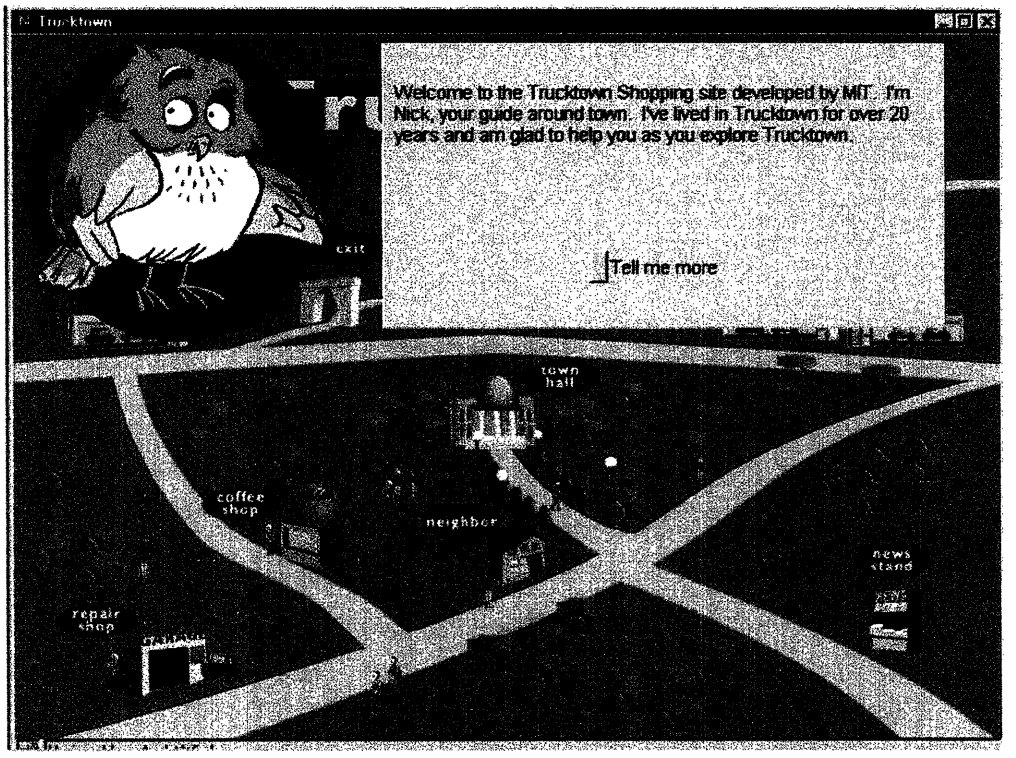


Figure 3A. Overall Architecture

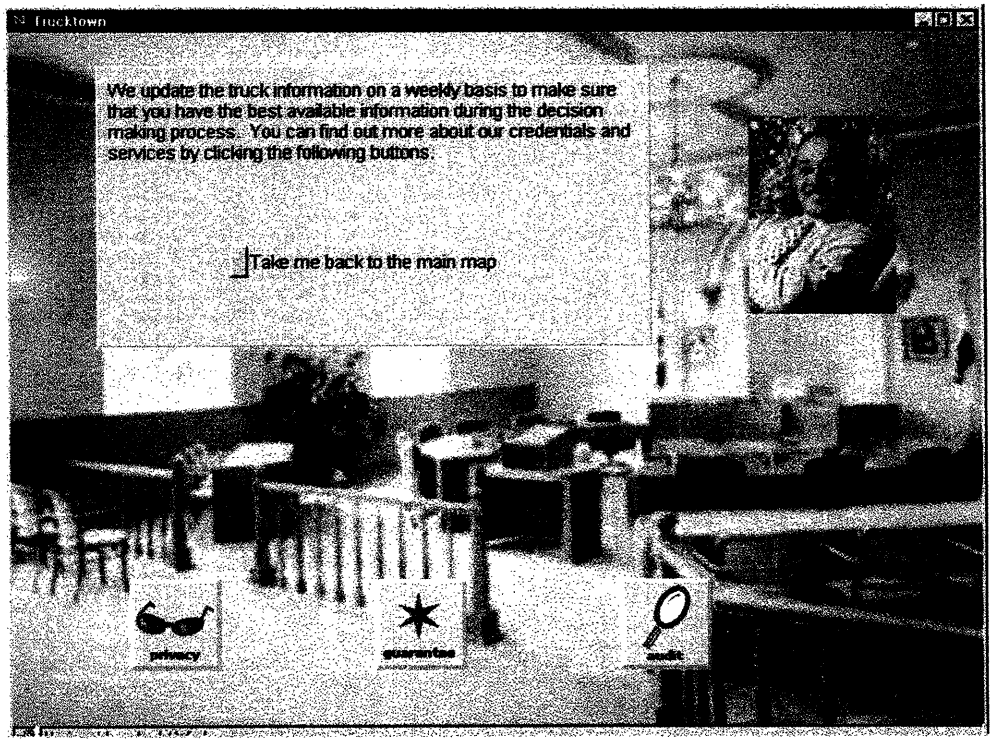


Figure 3B. Meet the Mayor

Figure 3

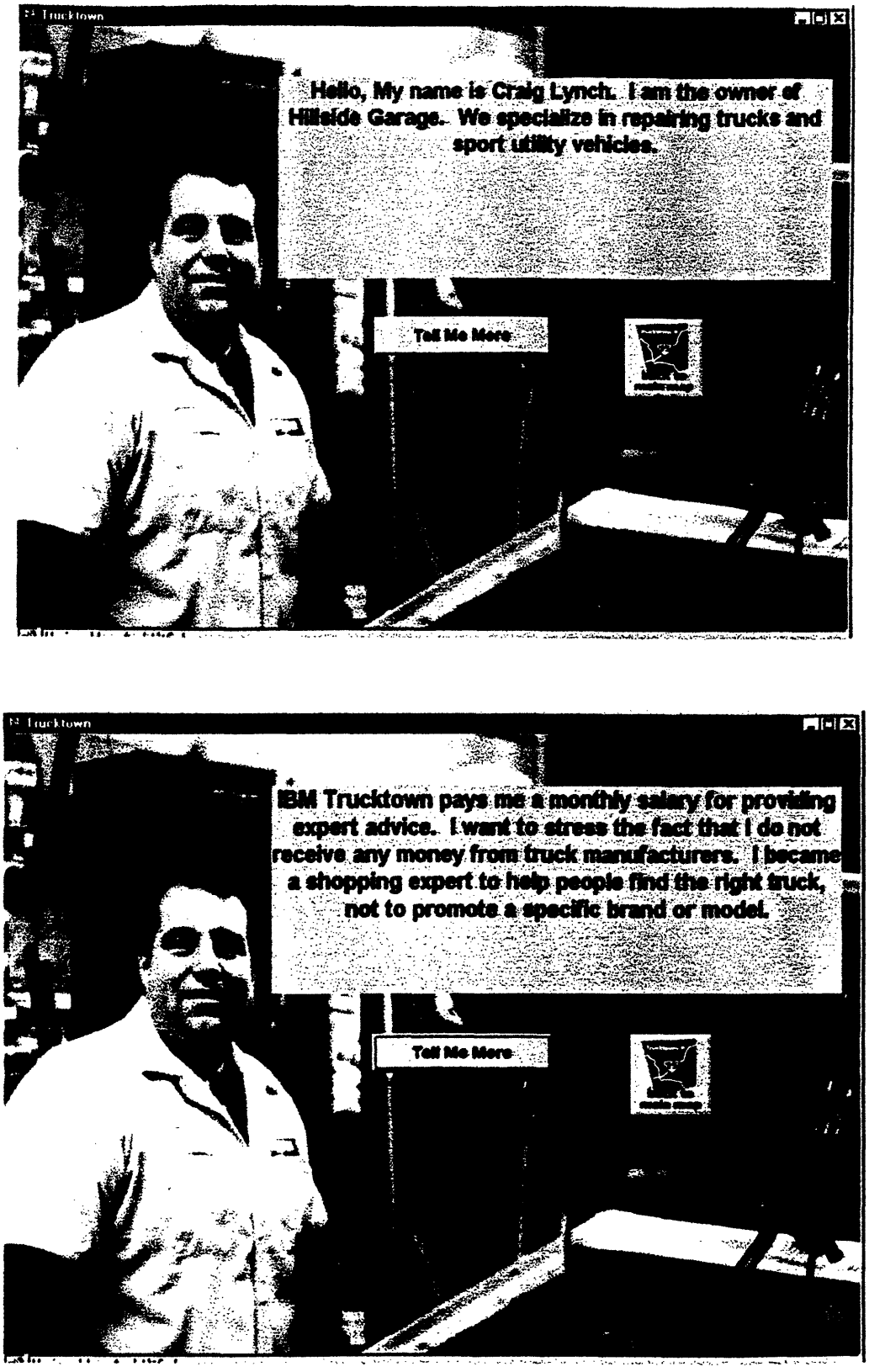
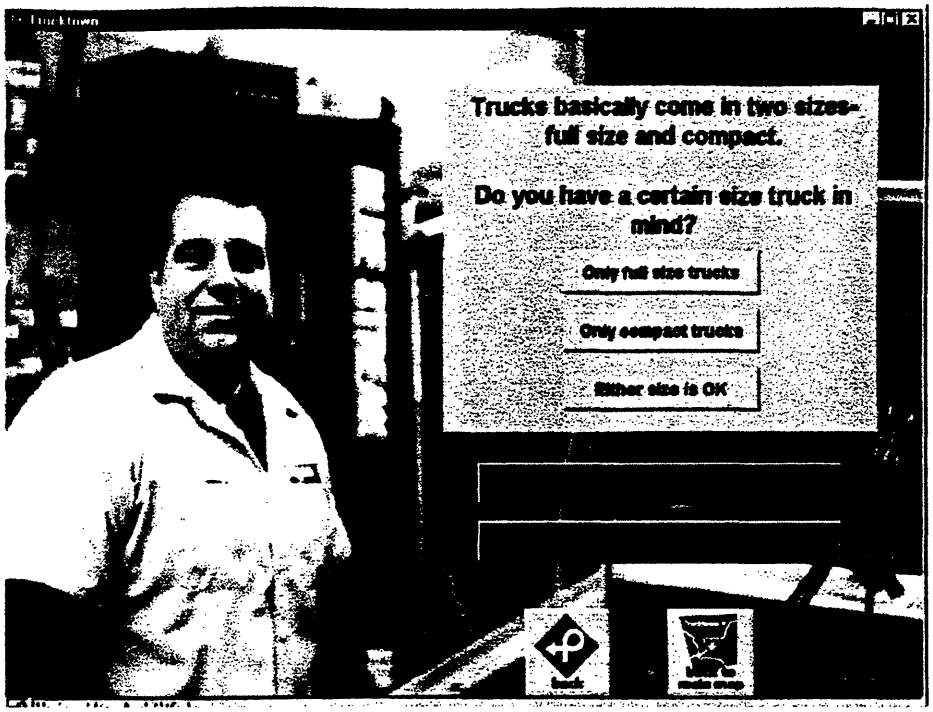


Figure 4. Mechanic Introduction



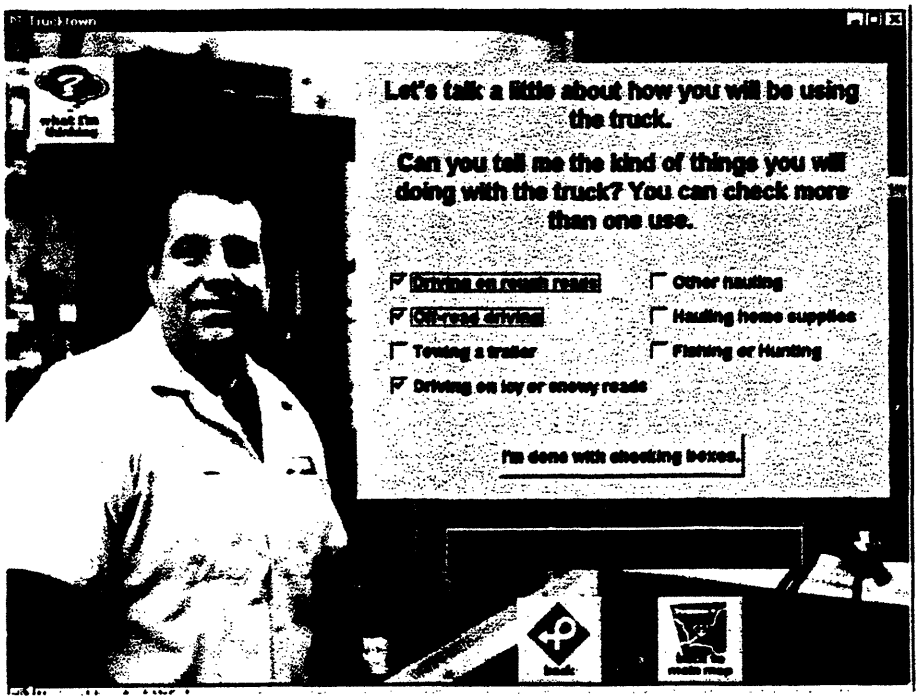


Figure 5. Advisor Dialogue

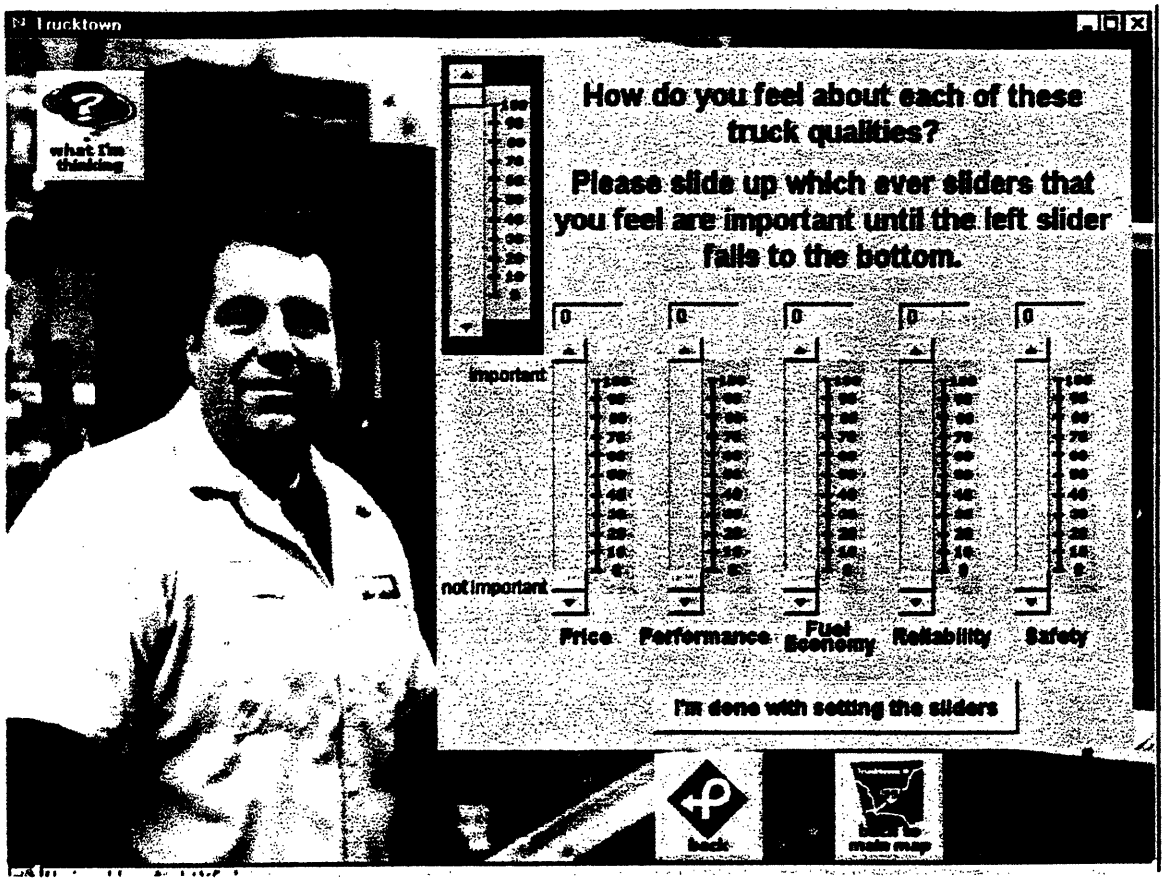


Figure 6. Constant Sum Preferences

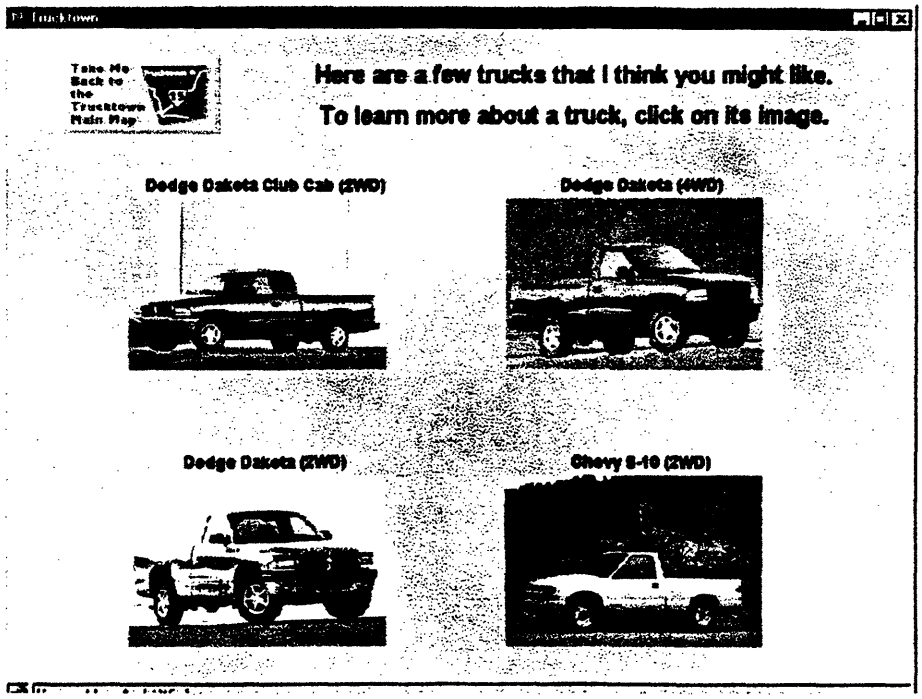


Figure 7A. Personal Showroom

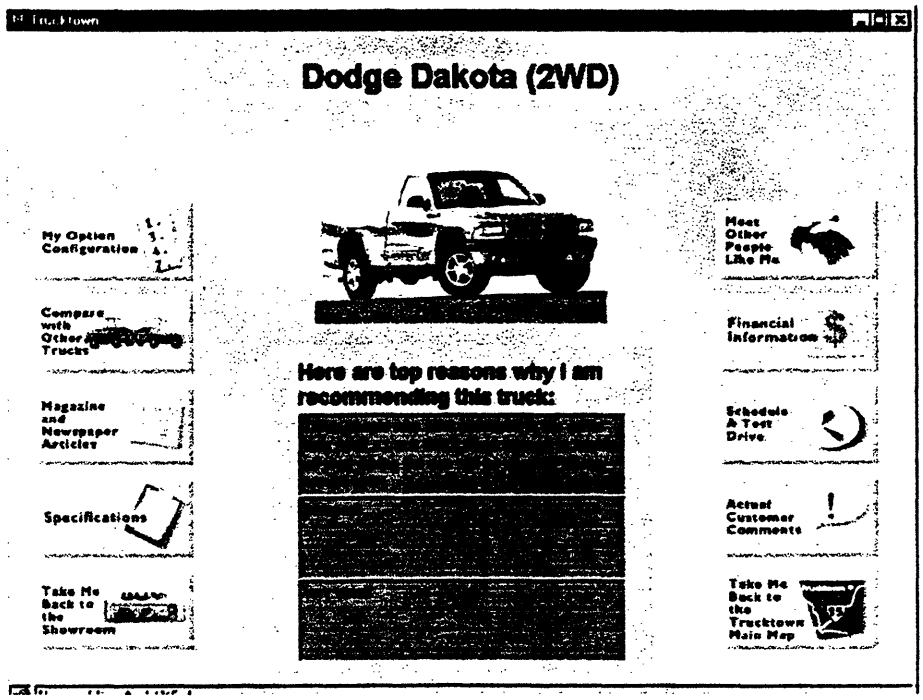


Figure 7B. Information Options

Figure 7. Showroom

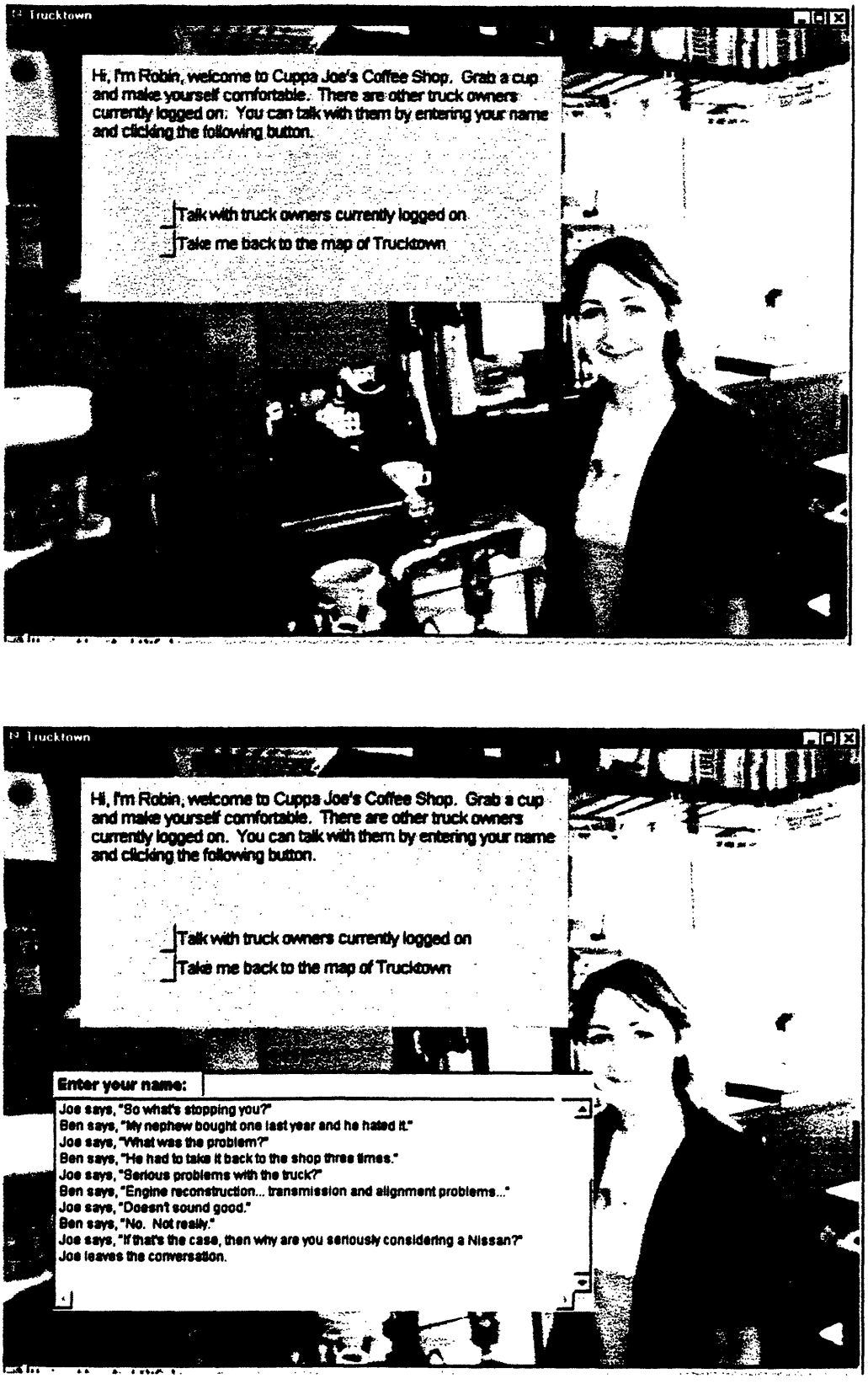


Figure 8. Community Interaction

	PUSH/SELLING	PARTIAL TRUST	FULLY TRUST-BASED
SALES APPROACH	Get Business However Can	Honest Matching to Customer Needs	Build Relationship as Customer Advocate
PRODUCTS	Manufacturer's Products Only - Sell Highest Margin	Manufacturer's Products Link to Other Sites	All Products
INFORMATION	Manufacturer Slant	Unbiased/Complete for Manufacturer's Products	Full/Open
ADVERTISING	Flashing Banners	Ads Available	AdsOn Demand
PRICE	Low/Promotion	Honest/Value-Based	Value Added Premium
SERVICE	Minimum	Guarantees	Life Cycle Delivery Benefits
TIME FRAME	Short	Intermediate	Long Term

Figure 9. Push Selling to Trust Strategies