

ESSAYS IN ALTERNATIVE SOLUTION SELECTION USING
SEARCH TECHNOLOGIES

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ESSAYS IN ALTERNATIVE SOLUTION SELECTION USING
SEARCH TECHNOLOGIES

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DISSERTATION ABSTRACT
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With the growth of data storage reaching exponential rates, search technologies are critical components of today's information systems. Understanding how individuals use these search technologies and what individual factors influence success in searching for solutions will allow improved design and training in the use of search technologies. The series of essays in this dissertation strive to address these issues.

Essay 1 explores how motivation dispositions and ethical beliefs effect the selection of alternatives solutions to a problem. This conceptual essay integrates the theories of self-regulatory focus, motivation theory, ethical decision-making, and image

theory. By focusing on the errors associated with selecting too many or too few alternatives in a consideration set, a set of eight proposals emerge on how best to avoid these errors. Implications for these theories as well as for practice provide suggestions for empirically testing these proposals and applying the results to managerial contexts.

Essay 2 reports results from an empirical study in how individual regulatory dispositions and context specific beliefs effects on the size of the consideration set in an online auction purchase. Results indicate that self-regulatory focus and trusting stance are important factors in predicting the number of auctions considered in an online auction marketplace.

Essay 3 reports results from two empirical studies examining the differences between a product search and information search. In both studies, dispositional factors were modeled to be antecedent to the number of alternatives considered for a solution. Results indicated that dispositional factors of self-regulatory focus and trusting stance were important in a product search but not in an information search.

Taken together, these three essays offer a new perspective for analyzing human interaction with search technologies. Results suggest design changes to a variety of search technologies that are context specific. Further research can extend these findings and build a better understanding on how to effectively search for information to solve problems in spite of the growing volumes of data.

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ESSAY 1: MOTIVATIONAL DISPOSITIONS AND ETHICAL BELIEFS THAT LEAD TO ERRORS IN ALTERNATIVE SOLUTION SELECTION

Introduction

Understanding the role of motivation in decision-making process has long been of interest to researchers and managers alike (Locke & Latham, 2004; Wood & Bandura, 1989). However, much of the research has focused on choosing the best option (Idson, Liberman, & Higgins, 2000; Kahneman & Tversky, 1979; Tversky & Kahneman, 1974). There is some evidence that motivation also influences the number of alternative solutions considered (Crowe & Higgins, 1997). Because alternative solutions are selected prior to the final choice, it is in many respects more fundamental (Beach & Mitchell, 1998). The alternatives must be chosen, often independent of other alternatives, to be considered in the solution set. Sometimes this results in many alternatives, sometimes in one alternative, and sometimes in no alternatives at all. Particularly with today's information search capabilities returning hundreds, if not thousands or millions of potential alternatives, information processing strategies that limit the search to relevant alternatives serve a functional purpose in the decision-making process.

What is less understood is how motivational dispositions impact the search for alternative solutions. Yet, motivational dispositions are extremely important for

understanding organizational behavior (Judge, Locke, Durham, & Kluger, 1998). In the business world, men of accomplishment demonstrate an ability to envision multiple alternatives to solving problems. Classic stories, such as Anheuser Busch, show the ability to see alternatives help organizations to overcome obstacles that reality places in the way. Anheuser Busch survived a U.S. change in law by diversifying into ice cream, barley malt syrup, ginger ale, root beer, chocolate and grape-flavored beverage, corn syrup, truck and bus bodies, refrigerated cabinets, baker's yeast and dealcoholized Budweiser during the crucial years when the sale and transportation of alcohol was prohibited. Later, when "Prohibition" was reversed, Anheuser Busch was able to resume beer production, outliving many of their former competitors. August Busch Sr.'s ability to see alternative options enabled him to find a solution to the very serious problem his company faced. Busch, however, did not stop with one successful decision. Through a series of excellent decisions, August Busch created a company that would go on to become the world's largest brewery.

In contrast to these motivational dispositions, there are also dispositions that affect individuals in such a way as to make solving problems difficult. Some individuals when confronted with many alternatives consider every alternative as equally valid, creating an information overload when trying to pick the best. This information overload inhibits the ability to act. There are also dispositions that predispose individuals to consider only one alternative, neglecting all others, including possible superior options. So while some motivational dispositions may seem ideal for consistent highly quality decision-making, other dispositions make such decision-making difficult.

However, motivational dispositions do not develop in a vacuum. Just as one's values determine, in part, one's goals (Locke, 1997), so do one's ethical beliefs determine, in part, one's motivational dispositions. Understanding how ethical standards direct regulation of motivation and the decision-making process may help individuals to become simultaneously more moral and better decision makers (Drake, Hall, Cegielski, & Byrd, 2007). Furthermore, understanding this relationship, between ethical standards and motivational dispositions, and between motivational dispositions and the decision-making process could provide us with insights into evaluating strategic choices, organizing decision-making teams, training decision-makers, building better information systems, and avoiding common decision-making errors.

The purpose of this work is to introduce regulatory related factors, specifically motivational dispositions and ethical beliefs, to the decision-making model. This work synthesizes and integrates theories of self-regulatory focus (Higgins, 1997), image theory (Beach, 1998; Beach & Mitchell, 1998), ethical decision-making (Ferrell & Greshan, 1985; Jones, 1991), trust (McKnight, Cummings, & Chervany, 1998; Rotter, 1971), and motivation (Locke, 1997; Meyer, Becker, & Vandenberghe, 2004) by arguing that one's ethical beliefs directly influences one's motivational disposition which in turn affect the number of alternative options consider when making decisions. This work examines the relationship between these concepts and offers proposals for verifying this model. First, the paper examines existing theories. Next, the paper explores the search for alternative solutions in the decision-making process, along with common mistakes and limitations. Then, the paper explores how various motivational dispositions, both personal and social, affect the number of alternative solutions analyzed. Then, the paper addresses potential

effects that ethical beliefs may have on motivational dispositions. Lastly, the paper discusses implications for research and practice.

Literature Review

A number of theories in decision-making recognize the causal relationship between ethical beliefs, motivational dispositions, and decision-making. This can be observed by realizing that ethical beliefs and motivational dispositions are concretized through specific values and goals. The sum of one's values represents one's ethical beliefs and the sum of one's goals represents one's motivational disposition. In the first theory we consider, image theory, alternative solution selection is accomplished through compatibility tests, comparing possible alternatives to working images of the ideal (Beach, 1998). Images come in three forms; 1) value image constituting the decision-maker's principles, 2) trajectory image constituting the decision-maker's goals, and 3) strategic image constituting the plans to action that may be used to accomplish the goals. By comparing working images of these three tests to the alternatives, decision-makers can determine if they are compatible with the ideal. Through this theory we observe that specific values and specific goals help define and drive alternative solution selection.

While image theory recognizes the efficacy of values and goals in alternative solution selection, it does not fully explain the relationships between values and goals. Two theories stress this relationship in terms of decision-making in general; motivation theory and ethical decision-making theory. Research on work motivation has found that values and beliefs directly affect goal choice (Locke, 1997; Locke & Latham, 2004). Further, values and beliefs affect performance and outcomes mediated by goal setting.

While motivation theory does not directly address the decision-making model, a causal connection is observed in how values and goals interact with the outcome, whether the outcome is success through action or success in making a decision.

Traditional ethical decision-making models note the influence of normative evaluations on the decision-making process (Ferrell & Greshan, 1985; Jones, 1991). They highlight the importance of normative beliefs on problem identification (Ferrell & Greshan, 1985) and intention to follow the morally correct best option (Jones, 1991). Moral judgments directly affect intention to be moral. Further, moral judgments affect behavior, mediated by intention. While intention is not synonymous with goal setting, they both invoke a plan for action to fulfill a future vision. Again, we observe the casual connection between values (moral judgments), goals (intention), and choice.

From the previous discussion, we see that values affect motivation in terms of specific goals, and goals affect decision-making. Beyond specific values and goals, a recent integration of motivation and commitment theories proposed that values and beliefs affect goal choice, mediated by self-regulation (Meyer et al., 2004). Self-regulation is conceived as a principle of motivational that regulates the types of goals chosen based on self images. Meyer and colleagues use Higgins' theory of self-regulatory focus to ground this new construct in their model.

Self-regulatory focus reflects a principle of motivation beyond simple pleasure and pain mechanisms. It specifies a general strategy for achieving desired end-states and avoiding undesired end-states. The theory of self-regulatory focus suggests that regulatory focus differs based on how strong one's "ideal" self is versus how strong one's "ought" self is (Higgins, 1997). Figure 1 shows a simplified version of Higgins' theory

of self-regulatory focus. Higgins (1987) found that individuals that were primarily ideal focused, thinking about success, achievement, and advancement, had a self-regulatory focus that was generally promotional. With a promotional focus, the primary strategy requires concentration on the accomplishments; pleasure stemming from gain of positive outcomes, pain from failure to gain positive outcomes. In contrast, individuals that were primarily ought focused, thinking about safety, security, and responsibility, had a self-regulatory focus that was generally preventative. A preventative focus requires concentration on the obligations; pleasure stemming from the avoidance of negative outcomes, pain stemming from presence of negative outcomes. Self-regulatory focus does not specify the strength of the motivation or the importance of a goal. Rather, it identifies a motivational disposition. Self-regulatory focus explicitly differentiates between gain and non-loss as well as loss and non-gain. The focus deals with either a promotion (nurture) or prevention (security) perspective with regards to end-states (Higgins, 1997).

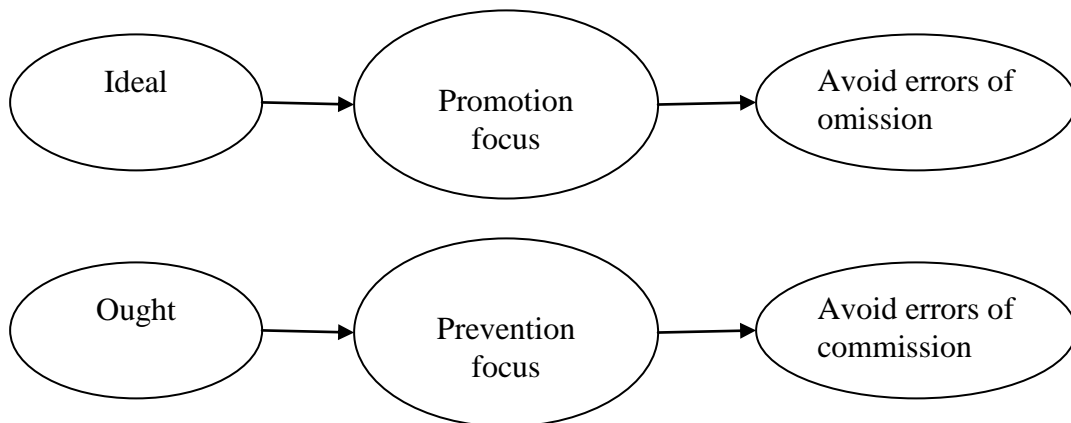


Figure 1. Self-regulatory theory (Higgins, 1997)

The theory of self-regulatory focus explains how one's ethical beliefs (in terms of one's ideal or ought selves) affects one's motivational dispositions (in terms of self-regulatory focus). One's motivational disposition, in turn, directly affects the decision-making process. Figure 2 represents a high level depiction of these relationships. The model we propose is a beginning toward a more comprehensive understanding of these relationships. We purposefully leave unmentioned a number of factors that are important, such as cognitive processing, experience, efficacy, external environment, or knowledge, which would distract from the primary focus of this effort. Other

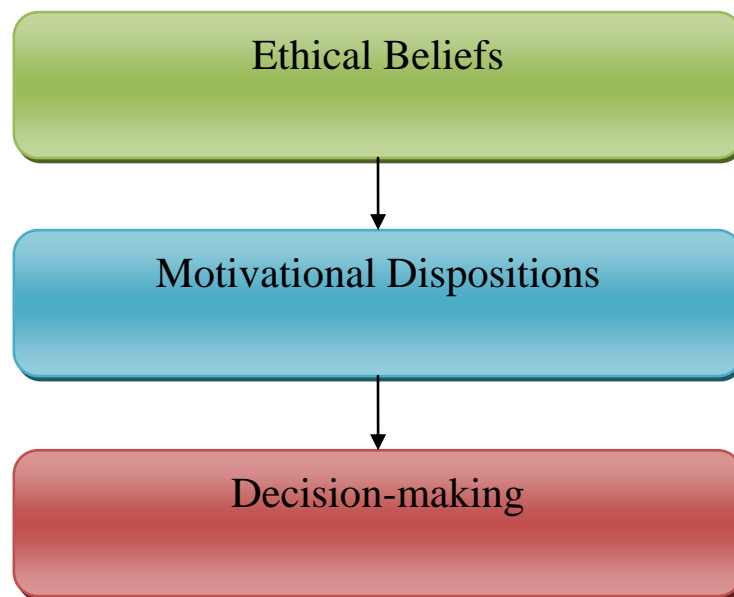


Figure 2. High level model

motivational dispositions, such as regulatory reference and trust, will be considered in their affect on the alternative solution selection (Higgins, 1997; McKnight et al., 1998; Rotter, 1971).

Alternative Solution Selection

In the traditional decision-making model, there are four phases; intelligence, design, choice, and implementation (Drucker, 1954; Schwenk, 1984; Simon, 1977). In the intelligence phase, decision makers scan their environment and their own minds to identify and define the problem. In the design phase, decision makers seek alternative solutions to the problem. In the choice phase, decision makers choose the best alternative. In the implementation stage, decision makers implement the best solution. Each of these phases provides value added activities to the decision-making process.

The focus of this work, on design phase, leads us to a discussion of alternative solution selection. This phase entails the search, development, and analysis of possible courses of action with regard to the identified problem. Alternative selection is not an instantaneous process, often including complexities such as multiple searches and sub-problems requiring their own decision-making process. Even with today's computing tools to aid search and decision-making, alternative solution selection maintains complexities that require human attention and cognition, particularly for unstructured decisions (DeSanctis & Gallupe, 1987; Hogarth & Makridakis, 1981; Simon, 1977).

Individuals employ a variety of strategies in the process of identifying alternative solutions. Conducting this process involves a balancing between avoiding two potential errors, selection of too many alternatives and selection of too few alternatives. These two errors are caused by an inability to sufficiently limit the search or the acceptance of solution sets involving less than the full contingent of possibilities. There may even be an optimal number of alternatives that yield the best results in a given context. If too few alternatives are considered, a superior solution may be overlooked. If too many

alternatives are considered, information overload may cause the decision-maker to consider inessential details, thereby increasing the difficulty in choosing the best solution.

This differentiation can be visualized by imagining two managers charged with purchasing a laptop for a new employee. These two managers must choose from hundreds of different makes and models available on the market. One manager may immediately select a laptop exactly like the one he owns. When asked why he chose that model over all the other alternatives, his response is that his laptop has served all of his own needs so he sees no reason why it will not do the same for the new employee. The other manager, when faced with these same laptop alternatives, faces the opposite problem and is overwhelmed by the choices. He cannot decide from which of the hundreds to choose because they all seem to have their advantages and disadvantages. When asked about his dilemma, he responds that he wants to buy the best laptop but is afraid of making the wrong choice. In both cases, we observe that the decision-making process is hampered while selecting alternatives because of the managers' motivational dispositions.

Drucker notes that a common error that most people would protest are false "either-or" statements, such as with "All things in the world are either red or green" (1954). The number of alternatives considered is often limited through several specific processes (Schwenk, 1984). Single outcome calculations often begin with an evaluation with only one alternative in mind (Steinbruner, 1974) where the decision maker bolsters the attractiveness of the preferred outcome and minimizes the attractiveness of alternatives. Related to this is inferences of impossibility, where decision-makers devote

a good deal of time identifying the negative aspects of non-preferred alternatives (Steinbruner, 1974). In effect, they interpret facts in such a way that the favored alternative appears more attractive and deny that there are any trade-offs between the favored alternative and the non-preferred alternatives.

Particularly for uncertain and ill-structured problems, decision-makers attempting to generate problem-sets will generate very few alternatives (Newell & Simon, 1972). The limitations of these problem sets are because of repeated use of one problem-solving strategy, causing decision-makers to simplify their cognitive effort by adopting heuristics (Hembrick, Geletkanycz, & Fredrickson, 1993; Hitt & Tyler, 1991; Kahneman & Tversky, 1979). These strategies are not necessarily bad for the decision-making process, because businessmen have limited time to think and decide on many issues. If information processing strategies did not allow for simplifications in this process, few decisions would ever be made. However, for decisions requiring high information quantity and high information determinacy, comprehensiveness in gathering information and assessing alternative solutions is likely to have a positive effect (Forbes, 2007).

Consumer decision-making research has added some insights into how a set of alternatives evolves. Starting with explicit goals and needs, the hierarchical set theory, as seen in Figure 3, identifies a multistage process for searching and choosing a brand that will satisfy those goals and needs (Kardes, Kalyanaram, Chandrashekar, & Dornoff, 1993; Shocker, Ben-Akiva, Boccara, & Nedungadi, 1991). At the top level, a universal set represents all possible options when purchasing a product. This universal set represents the theoretical possibility of knowing all possible brands. While this rarely occurs, it helps to differentiate between what brands exist and what brands are retrieved

and observed by the consumer. This second set is called the retrieval set. From the retrieved set, a consumer establishes a consideration set, highlighting just those brands that will successfully fulfill the goals and needs of the individual. This consideration set represents the list of alternative options that may potentially fix the problem or need of the consumer. From the consideration set, a choice is made.

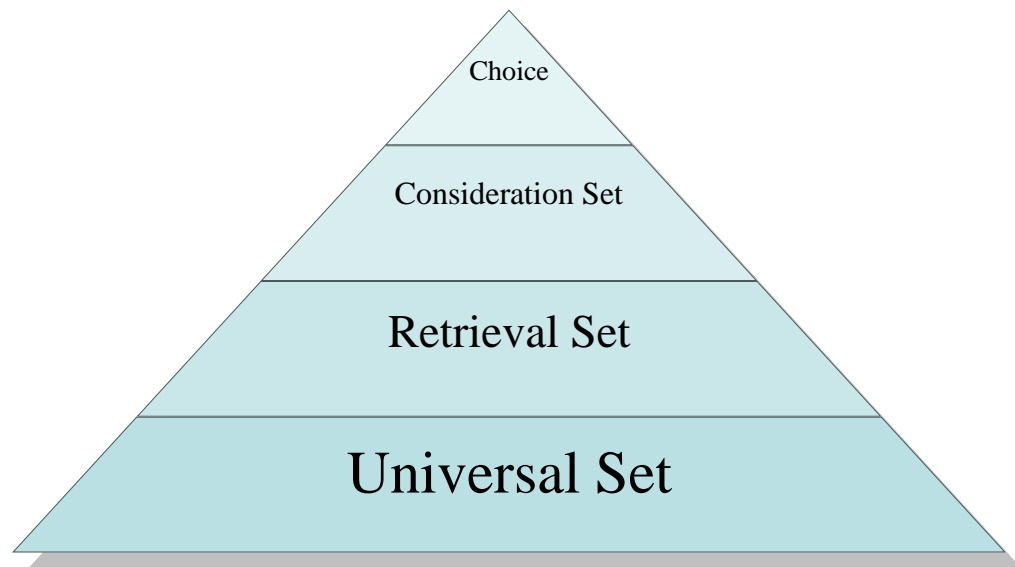


Figure 3. Hierarchy of sets in consumer decision-making

Research on consideration sets suggests that typical consideration sets are eight or less (Hauser & Wernerfelt, 1990). Considering that the number of brands available for each product type ranged from 6 to 47, there are obvious questions as to why the consideration sets are so small. Is eight some sort of optimal number? Indeed, research into short-term memory shows that humans generally are limited in processing no more than seven pieces of information at any given instant (Miller, 1956). This natural

limitation induces individuals to simplify their decision environment by simplifying the consideration set (Wright, 1975). Because our minds are limited to processing seven units or less, individuals must limit the number of things considered in evaluating, judging, or conceptualizing. The principle of unit-economy explains why concepts are essential for human understanding of our environment (Rand, 1990). By forming concepts, humans can maintain a larger picture of reality in their minds at any given time. The space saving function of concepts allows individuals to think about and make decisions about complex problems by integrating thousands or even millions of pieces of data into recognizable units of thought. The widespread use of heuristics in problem solving (Kahneman & Tversky, 1979) demonstrates the use of and importance of conceptualization to simplify the decision-making environment. The natural limitation of human cognition applies when determining what factors to consider when analyzing a problem. Designing the alternative solution selection cannot include too many factors without severely affecting the decision-maker's ability to comprehend the problem. If too many factors are considered, the process overloads the decision-makers cognitive capacities. These findings suggest that the natural human limitation of seven may act as an effective limit on alternative solution selections, preventing the cost of the design process from exceeding the benefits obtained from selecting a better solution (Payne, 1982).

Often, decision-makers simplify lists of alternatives to a "short-list" of potential candidates. It is often taken for granted among managers that a short list will be used in various decisions such as job searches and vendor selection. For example, three or four candidates are much easier to compare and contrast than larger numbers of candidates.

With the use of computers, larger comparison sets and larger rule sets can be utilized in making decisions by automating the process, overcoming the human mind's limitations (Simon, 1977). Simulations with hundreds of variables and searches returning thousands of items would seem to broaden the capacity to make decisions. However, even with computer help, the ultimate decision rests with an individual. Regardless of how complex a program becomes or how sophisticated its ability to support the decision process, the human mind can process only a limited amount of information at any one time. Therefore, output from such a program must still be manageable. If a computer returns a list of potential alternatives that is greater than seven, decision-makers will most likely reduce the processing load further by shrinking the list of potential alternatives to a short-list of seven or less options. Thus, an optimal program would produce the best seven or fewer alternatives. In this manner, a computer allows an individual to better organize and process information in order to consider more information in manageable chunks, effectively enhancing the quality and quantity of decisions.

Proposition 1a: Optimal alternative solution design should balance adding more alternatives with limiting alternatives so that cognitive processing is not overwhelmed within the timeframe of the decision context.

Proposition 1b: Optimal alternative solution design should balance adding more alternatives with limiting alternatives so that superior solutions are not overlooked within the timeframe of the decision context.

Regulation of Motivational Dispositions

Explicit strategies for choice heuristics might vary from decision to decision, depending on context. Heuristics are carried out in specific ways depending on many factors, such as prior experience, knowledge, and motivation (Bettman, 1979). Of these, we focus on motivation. The following sections discuss the relationships between the constructs included in our full model (Figure 4).

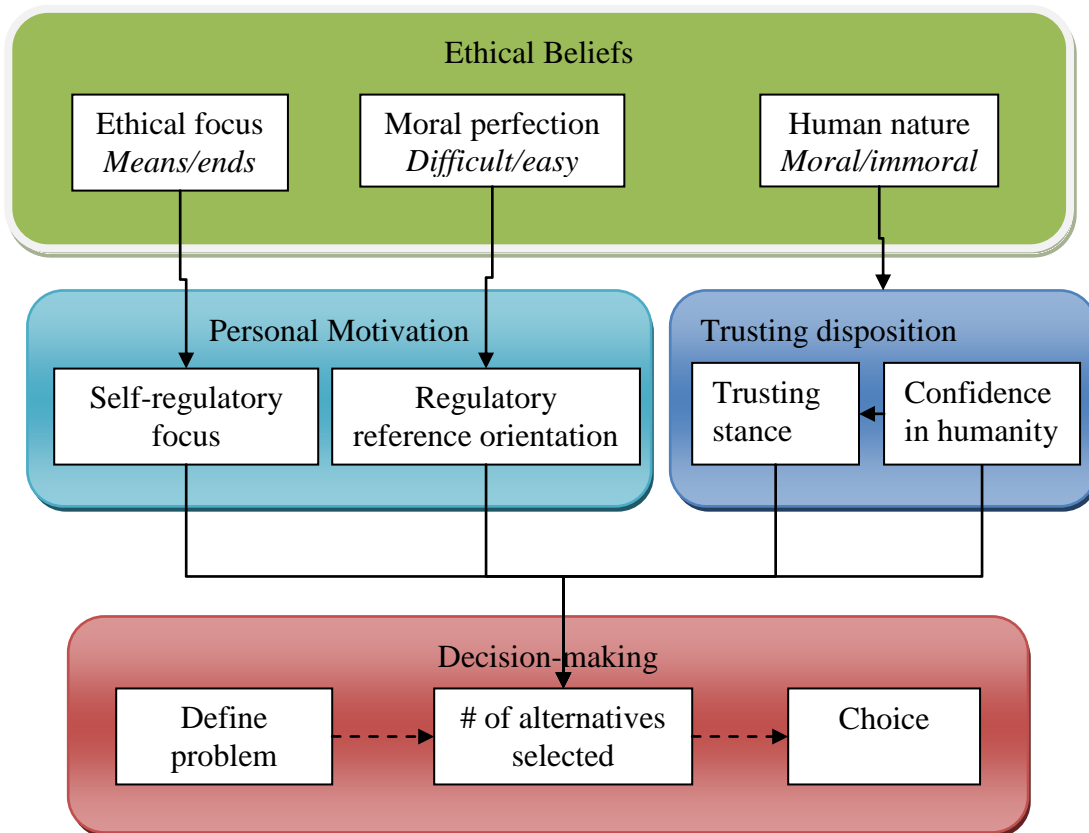


Figure 4. Proposed model of ethical and regulatory effects on solution design

Regulation of motivation is seen with increasing frequency in business literature, including general management (Ashford & Tsui, 1991; Latham & Locke, 1991; Wood &

Bandura, 1989) leadership (Kark & Dijk, 2007; Sosik, Potosky, & Jung, 2002), negotiation (Brett, 1999), and marketing (Aaker & Lee, 2001; Avent & Higgins, 2006; Wang & Lee, 2006). Most of these research efforts focus on the intelligence phase, the choice phase, or on the implementation phase of Simon's (1977) decision model. However, there are implications for the design phase, as we will discuss next.

Self-regulatory focus.

While setting goals has a long history of enhancing and sustaining people's motivation (Locke & Latham, 1984; Wood & Bandura, 1989), new research shows that optimal results are obtained when self-regulatory focus is in alignment with strategies used to attain goals (Higgins, 1997; Higgins, Idson, Freitas, Spiegel, & Molden, 2003). In particular, research shows that the number of alternative solutions considered is affected by self-regulatory focus (Crowe & Higgins, 1997).

In the promotion focus, individuals attempt to find matches to a desired end-state or to find mismatches to an undesired end-state (Higgins, 1997). Individuals generally attack problems with eagerness (Crowe & Higgins, 1997) leading to increased valuation and attitude toward the end-result (Avent & Higgins, 2006; Higgins et al., 2003). Increased eagerness induces individuals to search wider and broader for solutions to problems (Crowe & Higgins, 1997), seeking to avoid errors of omission.

In the prevention focus, individuals attempt to avoid matches to undesired end-states or to avoid mismatches to desired end-states (Higgins, 1997). Its focus is on safety, security, and responsibility. With this focus, individuals strategically address problems through vigilance (Crowe & Higgins, 1997). An individual with a preventative focus will

want to avoid errors and insure against mistakes by considering fewer solutions to problems. They seek to avoid errors of commission.

How do errors of omission and commission affect alternative solution selection? Quite simply, if the motivation is to avoid omitting something, there will be a tendency to include and consider as many options as possible. If the motivation is to avoid committing an error, there will be a tendency to avoid unknowns and consider only a few options that are known to work. In an experiment asking participants to sort vegetables, then to sort fruit, Crowe and Higgins (1997) found that individuals with a preventative focus more often repeated their sorting criteria across both fruits and vegetables than individuals with a promotional focus. They also found that individuals with a preventative focus sorted using fewer categories than individuals with a promotional focus. In short, decision makers with a promotion focus include more alternative solutions than a person with a prevention focus.

Proposition 2: An individual with a promotion focus will consider a greater number of alternative solutions than an individual with a prevention focus.

Regulatory reference.

Beyond the self-regulatory focus, motivation to complete goals varies by the direction of the regulatory reference point (Higgins, 1997). Regulatory reference orientation refers to the basic positive or negative orientation that a person adopts in developing motivational goals. The reference point is conceptually distinct from the

regulatory focus. If a reference point is positive, for instance, getting an A in a class, a promotion focused individual thinks they could achieve an A if they pursue sufficient means for the high grade, whereas a prevention focused individual thinks they could achieve an A if they are careful and avoid mistakes. If a reference point is negative, for example getting an F in a class, a promotion focused individual thinks they could receive an F if they do not pursue sufficient means for increasing that grade, whereas prevention focused individuals think they could receive an F if they make too many mistakes. Such distinctions between positive-valence and negative-valence not resting on a single continuum have been documented by other researchers (Burke, Brief, George, Robertson, & Webster, 1989; Watson & Tellegen, 1985). Table 1 highlights these differentiations in terms of gains and losses.

Table 1.
Interaction of Self-regulatory focus and regulatory reference

	Positive reference	Negative reference
Promotion focus	Gain	Non-gain
Prevention focus	Non-loss	Loss

Regulatory reference points establish how standards influence human functioning (Higgins, 1997). Situational reference points have complex effects on causal judgment in the decision-making process, such that negative reference points induce causal judgments to focus on the absence of a cause (White, 2003). Logically, the number of causes absent from an effect is much larger than the number of causes present for an effect. There can be only a limited number of causes for any effect, yet there can be a nearly infinite number of causes absent from an effect.

Consider two similar statements used to limit the number of alternative solutions, “Select all of the options that would help solve the problem” versus “Do not select any options that would not help solve the problem”. While both statements are for all practical purposes the same, one is worded as achieving a positive end-state and the other is worded as avoiding a negative end-state. By understanding how the certainty effect induces decision makers to overweight positive outcomes (Kahneman & Tversky, 1979), we can see how alternative solution selection will be affected by these statements. The certainty effect will induce readers of the first statement to select options that will definitely solve the problem. Because the emphasis is on “solving” the problem, only those options that are certain to solve the problem will be considered. The certainty effect will induce readers of the second statement to select options that will definitely not be a hindrance to solving the problem. Because the emphasis is on avoiding mistakes, only those options that will not help will be eliminated. In between these extremes of certainty is an area of uncertain alternatives – uncertain as to their ability to solve or not solve the problem. These uncertain alternatives act as a type of swing vote. When assessing positive end-states the uncertain alternatives are ignored. When assessing negative end-states, the uncertain alternatives are included.

It is not just situational reference points that determine regulatory reference, but standards consistently possessed (Higgins, 1997). For decision problems, an individual with a positive reference orientation tries to choose alternatives that match the end-state. An individual with a negative reference orientation tries to omit alternatives that will result in that end-state. By adopting a negative reference point in the decision-making process, the number of alternatives to consider grows considerably because the decision-

maker is only interested in avoiding the undesired end-state. Therefore, any alternative that potentially avoids that end-state can be considered. For positive reference points, the number of alternatives to consider is limited by the approach to a desired end-state. Only a limited number of solutions will create the effect desired.

Proposition 3: An individual with a positive regulatory reference orientation will consider fewer alternative solutions than an individual with a negative regulation reference orientation.

Trusting disposition.

Self-regulatory focus and reference apply to one's personal motivation. Besides self-regulatory factors, we consider one major regulatory factor of salience to decision-making in a social context, namely trusting disposition. Trust is a primary means of evaluating others in a social environment (Judge et al., 1998). Where selection of alternatives consist of evaluating new organizational relationships, trust will often be an important part of the evaluation (McKnight et al., 1998). We consider not only new organizational relationships, but any decision context involving interaction with other people. Only when those people are trusted will intention for interaction develop (McKnight et al., 1998).

Trusting disposition represents one's propensity to trust individuals in new relationships. There are two aspects to a trusting disposition; 1) one's confidence in

humanity¹, and 2) one's strategic trusting stance (McKnight et al., 1998). One's confidence in humanity refers to one's belief that other people are generally well meaning and capable of positive interactions. Trusting stance refers to one's stance toward others regardless of one's belief in others well-meaning and reliability (McKnight et al., 1998). Trusting stance is a strategy for dealing with others, whereas confidence in humanity is a belief. These two dimensions of trusting disposition have been empirically confirmed as distinct in e-commerce transactions (McKnight, Choudhury, & Kacmar, 2002).

Just as self-regulatory focus develops during childhood through child-caregiver interactions (Higgins, 1987, 1989), so does one's trusting disposition (Bowlby, 1982; Erikson, 1968). A trusting disposition reflects a personality trait describing one's propensity to depend on others. It is not situation specific, but reflects general tendencies and behaviors established over a lifetime (Rotter, 1971).

In McKnight and colleagues (McKnight et al., 2002; McKnight et al., 1998) discussion of trusting disposition, they argue that confidence in humanity and trusting stance are two dimensions of trusting disposition, yet do not discuss how these two dimensions may be related. Although it is possible for individuals to consider these two concepts uniquely when making decisions, it is more likely that confidence in humanity influences the trusting stance. As Theory of Planned Behavior researchers have noted,

¹ McKnight and colleagues refer to 'faith in humanity' rather than 'confidence in humanity'. Unfortunately, faith conjures up religious images that are inappropriate for this discussion. So we use the less controversial term 'confidence,' yet maintain the same meaning of this concept that McKnight uses throughout our discussion.

intention flows from beliefs (Ajzen, 1991). McKnight and colleagues (McKnight et al., 1998) argue that trusting stance is a trait, not an intention. However, it is a trait of regular intention, or more precisely, a strategy toward intention. We expect to find the same relationship, that confidence in humanity (beliefs) positively influences one's trusting stance (intention).

Proposition 4: Confidence in humanity will positively affect trusting stance.

Because intention to trust is dependent on trusting disposition and intention to trust establishes trusting behavior (McKnight et al., 1998), a stronger trusting disposition increases the chances that any one alternative relationship may be trusted. This trusting behavior means the decision-maker "trusts" the agents of the relationship as acceptable for interaction. The stronger the trusting disposition, the more potential relationships will be considered acceptable for interaction. The net effect is that stronger trusting dispositions leads to higher number of alternatives considered in decision of social consequence.

Conflicting findings with regard to trusting disposition's affect on organizational relationships are due to this character trait obtaining salience only in initial trusting situations (Mayer, Davis, & Schoorman, 1995; McKnight et al., 1998). In situations where alternative selections involve unfamiliar people, trusting disposition would be vital. Ironically, a strong trusting disposition may lead to a number of strong trust relationships among familiar people, which in turn reduces the number of options and alternatives available in future decisions involving those people (Wicks, Berman, &

Jones, 1999). These strong trust relationships coincide with cooperative interdependent relationships by providing reduction in both agency costs and transaction costs (Aoki, 1988; Frank, 1988; Hill, 1990, 1995; Jones, 1995) through increased cooperation (Williams, 2001). A problem with these cooperative interdependent relationships is that they usually receive the first option to fix an organization's problems within a given context. This necessarily reduces the number of options and alternatives for that organization within that context. So while trusting disposition increases the number of alternatives considered for new relationships, this is not necessarily true for established relationships and may in fact decrease the number of alternatives considered.

Proposal 5: In solving a problem involving the development of new relationships, an individual with a strong trusting disposition will consider more alternatives solutions than an individual with a weak trusting disposition.

Ethical Standards

While individuals often use an amalgamation of ethical principles borrowed from a variety of sources and often compartmentalized by their setting, the standards for defining ethical beliefs are fairly stable for mature adults over time (Kohlberg, 1976). There are important exceptions to this stability, such as during moral cognitive restructuring (Bandura, 1991). However, these exceptions should be evaluated only after a general theory of moral standards is understood.

Ethical standards are established by several meta-ethical concerns, three of which have important implications for motivation. These three are ethical focus, moral perfection, and humanity's morality.

Ethical focus.

Ethical focus pertains to the focus of the ethical system on either the means or the ends, commonly dichotomized as teleological and deontological. Ethical systems such as Utilitarianism's greatest good for the greatest number (Mill, 1863) is an example of the teleological tradition. Ethical systems such as Kant's categorical imperatives focus on means, regardless of ends, falls into the deontological tradition. While a number of ethical systems seem to defy this strict categorization, such as Rawls' theory of justice, Rand's Objectivism, and virtue ethics in general, each start with a fundamental standard from which the rest of the theory is built. It is this fundamental standard that defines the ethical focus.

In a teleological perspective, an individual strives to do everything possible to promote a moral end. With this ethical focus, individuals nurture the good and strive for the ideal ethical behavior. Their concern is for advancement, growth, and accomplishment. Exactly what advancement, growth, and accomplishment an individual strives for may differ between individuals. For example, an Objectivist's answer to why be moral is because life demands it. His or her primary ethical motivation is the flourishing of his or her own life (Smith, 2000). Utilitarians are motivated by promotion of the greatest good (Mill, 1863). Various Contractarians (Gauthier, 1986) argue that self-interest motivates our moral behavior.

In deontological perspective, an individual strives to do only what her or she “ought” to do to be moral. An individual’s moral concerns are mostly with responsibility, duty, and safety. Kant’s categorical imperative defines a duty based ethical system highlighting only what one ought to do. Ross (1952) contends that we ought to do what is right regardless of consequences.

Which comes first, ethical focus or motivational focus? Moral development theory suggests that ethical standards develops over time through thoughtful consideration and that desire and motivation do not influence this outcome (Kohlberg, Levine, & Hower, 1983). If true, then self-regulation is influenced by ethical standards. Motivation to behave ethically forces individuals to adopt a self-regulatory focus consistent with ethical beliefs to enable a fit between beliefs and motivations. This coincides with research that shows one’s self-construal (focus on self or others) moderates regulatory focus (Lee, Aaker, & Gardner, 2000), suggesting that core ethical orientations precede regulatory focus.

The teleological/deontological ethical split resonates directly with the self-regulatory focus of promotion/prevention. In the teleological view, individuals strive for some end. This is consistent with the self-regulatory promotion focus, which is focused on achieving ideals. Growth, achievement, and nurturance are types of ends that the promotion focused individual desires (Higgins, 1997). In both cases, the individual is motivated by the ideal, with little focus on the means.

In the deontological view, individuals apply judgment to the means to achieving ends. This is consistent with the preventative regulatory focus. The preventative focus values security and seeks it through strategically avoiding mismatches to undesired states

(Higgins, 1997). In both the deontological view and the preventative regulation, there are strong “oughts” defining how one should act, but little focus as to what end. Thus, we posit:

Proposition 6a: An individual with a teleological ethical view will generally utilize a promotional regulatory focus.

Proposition 6b: An individual with a deontological ethical view will generally utilize a preventative regulatory focus.

Moral perfection.

Moral perfection refers to one’s efficacy beliefs regarding attaining perfection in moral behavior. When talking about perfection in any endeavor, we refer to achieving the ultimate or best outcome given the context. It is important we clarify this context. For instance, a perfect game in baseball does not mean the pitcher threw nothing but strikes, but emphasizes the goal and context of baseball, in that no batters reach first base. In the realm of morals, we talk about achieving perfection in the pursuit of moral standards. This does not mean that the person never makes a mistake, as errors of knowledge are possible, as are cognitive limitations of information processing. Rather, moral perfection (of the relative kind) refers to flawless execution of one’s standards of value by whatever moral code one accepts (Smith, 2004). While the particulars about what constitutes moral perfection differs radically from individual to individual, ranging

from total selflessness to complete selfishness, there is often an underlying belief about how difficult or easy it is to attain that perfection.

When we talk about the difficulty of achieving moral perfection, we are not talking about the difficulty in the cognitive process in making moral judgments. Moral development researchers have found that later stages of moral development are often more difficult to grasp than early stages (Rest, 1973). In theories of moral development, the difficulty is with understanding what moral reasons are legitimate, not with relative perceptions of achieving moral perfection given a certain ‘level’ of moral understanding. This distinction is important to avoid confusing the knowledge of moral perfection with the attainability of moral perfection. Again, we stress that our discussion focuses on relative moral perfection – relative to the individual’s beliefs.

In order to understand the impact that the belief in moral perfection would have on regulation reference, an examination of some philosophic perspectives is necessary. Some philosophers, such as Kant and Green, claim that moral perfection is impossible (Green, 1899; Hare, 2002; Kant, 1900). They often acknowledge that total selflessness is the moral ideal, yet is impossible to achieve in practice. However, the standard of selflessness serves as a guide toward correct behavior. Other writers, such as Calvin (Passmore, 1979) and Niebuhr (1935), argue that man should not strive for perfection. For such people, the quest for moral perfection is itself a moral flaw.

If moral perfection is impossible to achieve, it is reasonable to ask what motivates those adherents to behave according to their moral standards. While someone might argue that the impossibility of moral perfection might goad people to work harder to achieve it, this is unlikely the case. As philosopher Tara Smith (2004) has noted, it

would in a sense mean that there is something one should do, but cannot do. This logical impossibility would be readily apparent to most people. As philosopher Susan Wolf (1982) has argued, the impossibility of perfection leads her to say there is no use in trying. Such a belief would in essence force individuals to reject the positive end-state of perfection because it simply is not possible. Yet, humans must act, so they must consider some end-state. If the positive end-state of moral perfection is impossible, the only alternative is the negative end-state. This is not to say that individuals attempt to acquire a negative end-state, but to avoid the negative end-state. In other words, they attempt to avoid as much imperfection as possible.

Not all philosophers believe moral perfection is impossible. Some advocates for selfishness claim that moral perfection is attainable but requires a disciplined approach to practicing virtues (Rand, 1964; Smith, 2004). For them, moral perfection constitutes approaching morality with one's full capacity. Achievement of moral perfection does not guarantee, but provides an opportunity for flourishing within a happy and successful life.

Other philosophers, by equating perfection with one's subjective desires, minimize the effort it takes to be morally perfect. Ethicists of the relativist school believe that moral right and wrong is culturally or even individually dependent (Gauthier, 1986; Harman, 1975). Whatever the culture or individual claims to be morally perfect is so, including cannibalism and murder (Harman, 1975). The obvious implication is that moral perfection becomes trivial; one can redefine moral perfection to fit whatever actions have occurred. Whatever end a moral relativist attempts to achieve can be accomplished.

One's beliefs about the attainability of moral perfection affect one's regulatory reference orientation. This relationship can be seen by understanding the consequences of adopting the extreme points of moral perfection, impossibility or attainment. If moral perfection is relatively easy to attain, then this ensures that the positive end-state of perfection is achievable.

The lessons learned from the pursuit of moral perfection translate into habits and persistent dispositions. As researchers have noted, emphasis on punishments leads to anti-social behavior (Bandura, 1991; Bandura & Walters, 1959). Once an individual adopts a belief in moral imperfection, his or her life would revolve around the consequences of being moral imperfect. Such attention to punishment of imperfection manifests itself in a regulatory focus orientation of negative end-states. To our knowledge, no studies have attempted to measure one's belief in moral perfection, even though it is relevant within ethics literature (Smith, 2004; Wolf, 1982).

Proposition 7a: An individual who believes in the possibility of moral perfection will likely have a positive regulatory reference orientation.

Proposition 7b: An individual who believes in the impossibility of moral perfection will likely have a negative regulatory reference orientation.

Humanity's morality.

The last major aspect to ethical standards is one's overall view of human nature. One's view of humanity's morality in part drives moral questions and in part is shaped by

the meta-ethical perspectives. In short, one's view of humanity's morality answers the question 'Are humans generally moral or immoral?' Some philosophers have explicitly stated their views, such as Hobbes' view that individuals are generally opportunistic (1968) and Kant's view that "from the crooked timber of humanity, no straight thing was ever made" (1991) where he equates being moral perfect to being "straight".

This highly relative question forms the basis for interacting with others in society. In short, this ethical evaluation can be described as the belief in the general propensity for others to act morally. It is derived in part from what moral standards are adopted. If moral behavior is difficult to obtain or not well known, it is unlikely that others will adopt it. Confidence in the morality of others distinguishes itself from justice in that it offers no prescription for how we deal with others, but rather describes the perception of humanity's morality in general. It is descriptive rather than prescriptive.

How is the belief in the general propensity for others to act morally different from trusting disposition? While Hosmer (1995) defines trust as "the expectation by one person, group, or firm of ethically justifiable behavior on the part of the other person, group, or firm in a joint endeavor or economic exchange," we believe this definition is overly narrow. Other researchers have noted that trust often includes an element of ability, such as competence, predictability, and expertness (Butler, 1991; Giffin, 1967; Mayer et al., 1995; McKnight et al., 1998; McLain & Hackman, 1999). As Aristotle argues, persuasion of someone of an argument requires more than just belief in his or her moral character, but also is dependent on emotional appeal and logical arguments (Aristotle, 350 B.C.E.). Trust is more than just an expectation of moral behavior. It is entirely possible for someone to generally believe that humans in general are moral, but

still exhibit a low trusting disposition toward new relationships. For example, we may believe most people generally behave morally but lack the ability to do the actions necessary to ensure my safety.

While the two are conceptually distinct, there is a relationship between them in how they influence one another. When a clash occurs between the core values and/or goals of two groups, benevolence and integrity-based beliefs in the other group members decreases (Sitkin & Roth, 1993; Tjosvold, 1988) resulting in much weaker trust levels in members of the other group (Williams, 2001). If we conceive of society as a large group, the same phenomena should be observed when judging society. If an individual believes that society generally behaves immorally, there will be a clash between values and goals of the individual and those of society because the belief in immorality presupposes that the actions of others in that society are not what they should be. This should lead to a decrease in benevolent and integrity based beliefs for society as a whole. Whenever the values and/or goals clash, an individual is likely to experience weaker trust toward the members of that society. This would decrease that individual's trusting disposition.

Proposition 8a: An individual who believes others generally act morally will have a stronger trusting disposition.

Proposition 8b: An individual who believes others generally act immorally will have a weaker trusting disposition.

Discussion

Implications for Theory

The extension of self-regulatory theory in relation to alternative solution selection offers a new direction for research within decision-making. No one will dispute that decision-makers generally want to choose the best option, but if only one option is presented, how can that judgment be considered the best? Just as important as the choice of the best option is the search for, imagination of, and understanding of alternative solutions to a problem. If someone's disposition leans too much toward selecting few alternatives, then that individual may become staunch in promoting only one or two alternatives despite superior alternatives. Equally troublesome is someone whose disposition leans too much toward selecting many alternatives, as this may overburden his or her cognitive abilities in selecting from among the alternatives. Balancing dispositions, so that some lead to more alternatives and other lead to fewer alternatives, may provide the best mix for decision-making. Some self-regulatory research has shown a fit between promotion focus and positive reference, promotion focus leading to more alternatives and positive reference leading to fewer alternatives (Higgins, Roney, Crowe, & Hymes, 1994). A fit was also found between prevention focus and negative reference, prevention focus leading to fewer alternatives and negative reference leading to more alternatives. This fit may be in part enacted because it is cognitively advantageous to do so.

Theories of goal setting have acknowledged the central role that values and desires play in selecting particular plans to action (Meyer et al., 2004). Our expanded

view of self-regulatory systems provides a secondary influence on choice of action. Not only do ethical beliefs affect goal choice directly through one's values, but also indirectly through the types of self-regulatory systems one adopts when evaluating alternative solutions. A new look at goal-directed action may reveal interesting ways in which these character traits interact. Especially interesting will be exploration of goal setting when one's professed values are incongruent with one's regulatory systems, or similarly, the effects on decision-making when an organization asks an employee to achieve some goals that are incongruent with their regulatory systems. Higgins' self-discrepancy theory suggests that discrepancy between the "actual" and the "ideal" leads to depression, while discrepancy between the "actual" and the "ought" leads to anxiety (Higgins, 1987).

Various models of ethical decision-making recognize the importance of environmental context when judging moral issues (Ferrell & Greshan, 1985; Jones, 1991). To this, we add the individual and issue context. Not only do ethical beliefs affect moral judgment, but regulatory systems for motivation do as well. Moral issues defined with a positive or negative reference will make different impressions on promotional and preventative regulated individuals. How all these issues relate together and help form moral judgments should be further explored.

Implications for Practice

Every business desires consistent and high quality decision-making. This model suggests some implications for what managers can do to help with that goal. By understanding how to balance regulatory focus, regulatory reference, and trusting disposition, managers can find individuals and organizations that "fit" an optimal design.

For example, security in organizations generally requires preventative focused individuals. It would be advantageous for security personnel to be given policies and individual goals that state negative reference points to avoid. For instance, security personnel may be told to prevent all unauthorized personnel from entering, which is an explicit negative reference. If on the other hand, those personnel are instructed to allow all authorized personnel through, there may be uncertainty as to how to handle unauthorized personnel. This type of fit between self-regulatory focus and regulatory reference is important to organizations because the feelings associated with a discrepancy between regulatory focus and actual self image can lead to job dissatisfaction (Cropanzano, James, & Konovsky, 1993; Higgins, 1987).

Further practical implications can be found with the development of and usage of information systems. Research into group decision support systems show that the number of high quality ideas generated for solving a problem can be increased with the use of technology to support ‘cause cueing’ rather than ‘input cueing’ (Potter & Balthazard, 2004). By ‘cause cueing’ (cueing causes of the problem), more motivational differences become apparent to each individual. This in turn allows that individual to brainstorm a larger quantity of ideas and, more importantly, a larger number of high quality ideas by considering a broader range of motivational perspectives. By avoiding ‘input cueing’ (cueing of other member solutions), individuals with different motivational perspectives are not distracted by previous ideas.

Research in product and knowledge searching has led to some interesting findings about the usefulness of ratings (Ba & Pavlou, 2002; Poston & Speir, 2005). While these ratings can help build trust and evaluate content, individual characteristics may provide

additional understanding of the search and evaluation process (Poston & Speir, 2005). The model in figure 4 highlights just how those individual characteristics may affect the search process by including or excluding options based on one's regulatory systems. Ideal search results will present information in a form and manner that decision-makers can quickly evaluate, but should be customizable for individual characteristics.

Conclusion

This work expanded on the theory of self-regulatory focus to assess its potential in explaining alternative solution selection. We have further expanded this theory by exploring how specific ethical beliefs can affect self-regulatory systems. The propositions we offer provide researchers with many potential avenues to continue this line of thought in expanding and synthesizing individual dispositions and their effect on individual and organizational decision-making. The implications of this paper could add significant additions to existing theories of motivation and goal setting, decision-making, and ethical decision-making. By understanding the role of ethical beliefs and regulatory systems on decision-making, managers gain a better perspective of decision-making efforts within their organization.

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ESSAY 2: INDIVIDUAL REGULATORY DISPOSITIONS ANTECEDENT TO ONLINE AUCTION CONSIDERATION SET SELECTION

Introduction

The popularity of online auctions such as EBay has led to a variety of research efforts to understand what factors affect the buyer's decision process when bidding for items. Included among these factors are various studies in online auctions and e-commerce showing that individual factors such as uncertainty (Pavlou, Liang, & Xue, 2007) and trusting disposition (McKnight, Choudhury, & Kacmar, 2002) influence intention to conduct online transactions. These research efforts suggest that individual dispositions may be important factors in predicting usage of an online auction marketplace as well as success in winning specific auctions. A study of individual dispositions with respect to online auction decision making can be beneficial in three ways. First, it can help sellers better understand how buyers use online auction marketplaces, allowing them to focus their marketing efforts to cater to specific dispositions. Second, it can also be beneficial to the design of auction marketplaces with the construction of decision aids to facilitate the decisions of buyers looking for products. Lastly, it can help buyers overcome limitations in their own approach to auction selection and bidding through a better understanding of their own dispositional traits that lead to

frequent successes or failures in online auction transactions. With these three reasons in mind, further study of the effects of individual dispositions is paramount.

The focus of this article is how individual dispositions affect the search for products within an online auction. Often, buyers must search through a large number of auctions selling similar or identical products. However, buyers may not always conduct this search in the same manner, leading some buyers to consider too many auctions, inhibiting their ability to choose the best option, or considering too few auctions, thereby missing potential bargains. While research on information search has found various “stopping rules” for limiting information searches in online tasks (Browne, Pitts, & Wetherbe, 2007), the number of alternatives considered was not ascertained, nor what individual factors affect the stopping rules. These stopping rules are important for determining when an individual stops, but does little to suggest if that individual has considered more alternatives than they have cognitive ability to process. Nor do they suggest if the search stopped before they had the opportunity to find optimal solutions. Individuals may also develop dispositional traits using stopping rules that regularly result in too many alternatives considered or too few alternatives considered.

To answer how individual regulatory dispositions affect the selection of alternatives, this paper reports on a survey that examines participant selection of auctions in consideration for solving a request from their employer. The survey captured various regulatory dispositions to determine their influence on the number of selected auctions. The results suggest that various regulatory disposition should be considered when designing systems and that more work on regulatory fit should be pursued.

Literature Review

Before a consumer can bid in an online auction, a buyer must decide which auctions may help them solve their purchase needs. According to Simon's IDS decision making model, the second phase of the decision process involves "inventing, developing, and analyzing possible courses of action" (1977, p. 41), which closely resembles the problem solving process identified over many years (Dewey, 1910; Drucker, 1954). Often, online auction buyers search for certain items or navigate to certain product types. Such searches often present buyers with large lists of similar or identical products from which to choose. We know from introspection that our search for products is often strongly influenced by our motivational dispositions. Although we know that various heuristics or stopping rules are used in the information search process (Browne et al., 2007), we don't know when buyers adopt stopping rules that are consistently too loose, causing too many alternative products to be considered, or consistently too restrictive, causing too few alternative products to be considered.

Consumer behavior research has found that the number of items considered for a purchase is an essential aspect of the consumer decision-making process (Hauser & Wernerfelt, 1990). While many products, locations, and sellers offer similar options, consumers limit their evaluations to a consideration set that represents only those items that the consumer takes into consideration when selecting the optimal choice. Consumers are often aware of other options being available, but do not include them in their consideration set for various reasons. For example, when purchasing a computer, a buyer may be aware of 10 or 20 different manufacturers. Yet, only a handful is considered when evaluating specifications and price. Typically, this process involves a screening of

all items within the direct awareness of the consumer in order to limit the number of products to a select few. This screening is followed by an in depth evaluation of each item.

By limiting the number of items in the consideration set, consumers save time and energy by not searching for additional items. The size of consideration sets is often moderated by the cost of searching for additional options (Belonax & Mittlestaedt, 1978). As the cost of searching for additional items increases, the number in the consideration set decreases. For some rare products with difficult to find information, the consideration sets tend to be small. Where information is relatively easy to find, consideration sets are much larger. The size of the consideration set is a double-edged sword. If the consideration set is small in order to minimize effort, there is often conflict with maximizing decision quality (Todd & Benbasat, 1992). When the consideration set is large, limitations of cognitive processing lead to information overload, again conflicting with maximization of decision quality. The number in the consideration set, whether too many or too few, may negatively influence the quality of decisions.

While not definitive, recent research suggests that humans are cognitively limited by the number of items that can maintained in short term memory to about 4 +- 1 items (Cowan, 2001). Only through the effort of grouping items can that limit be overcome. But given enough items that must be simultaneously evaluated, grouping becomes ineffective, leading to an overload of information that prevents effective decisions.

When too few alternative products are considered, buyers often overlook opportunities that better match their needs, at the same or even lower price. Often, the argument for quickly ending searches involves lost value from the effort and time

involved with the search. However, this begs the question is to how an individual knows if the effort saved is worth more than the value gained from a more comprehensive search. For some products, this may be evident. Searching through toothpaste brands, for example, will not likely elicit much effort because it is doubtful that additional searching will greatly increase the value of the product. For other products, such as cars or computers, a great disparity in value can result from inadequate searches. In complex environments like auctions, single outcome calculations often begin with a one alternative in mind to which all other alternatives are compared (Steinbruner, 1974). The decision-maker in these situations often bolster the first alternative by focusing only on the positive elements and minimizing the negative elements, while simultaneously highlighting the negative elements in the alternatives and minimizing the positives. Particularly for ill-structured or uncertain problems, as can happen often when purchasing something with many attributes, decision-makers often develop few alternatives (Newell & Simon, 1972).

According to motivation theory, individual characteristics such as values, beliefs, and dispositions affect the choice of goals (Locke, 1997; Meyer, Becker, & Vandenberghe, 2004). These factors are also important when considering alternatives (Beach, 1998). In online auction contexts, individuals must first choose the auction(s) in which they wish to participate. Choice of an auction in which to bid is partly dependent on that individual's values, beliefs, and dispositions. The number of alternatives auctions they consider for possible interaction however will be based more on regulatory dispositions than specific values. The values define "what" they are looking for, not necessary "how" they look for it. Regulatory dispositions explain the "how".

Various regulatory dispositions may affect the number of alternatives considered in the set of acceptable solutions. Based on prior research, four dispositions show the most promise in showing an effect on the number of alternatives - self-regulatory focus (Crowe & Higgins, 1997), self-efficacy (Bandura, 1988), perceived risk from the community of sellers (Pavlou & Gefen, 2005), and trusting disposition (McKnight et al., 2002). Two of these measures, self-efficacy and perceived risk from the community of sellers are context specific and depend on experience with online auctions. Further examine how experience affects online auction self-efficacy and perceived risk from community of sellers. Each of these dispositions are explored in greater detail below.

Lastly, we control for regulatory reference. Situational specific wording of the goal in terms of achieving a positive end-state or avoiding a negative end-state has been shown to affect the decision-making process (Idson, Liberman, & Higgins, 2000).

Self-Regulatory Focus

An emerging psychological theory, self-regulatory focus theory, suggests that individual dispositions affect the number of alternatives that an individual will consider when making decisions (Crowe & Higgins, 1997). Self-regulatory focus theory suggests that regulatory focus differs by a strategic approach to goals in one of two ways, either promotional or preventative (Higgins, 1997). With a promotional focus, an individual is usually motivated by their nurturance needs, tend to have strong ideals, and think in terms of gains and non-gains. With a preventative focus, an individual is usually motivated by

their security needs, tend to have strong obligations, and think in terms of losses and non-losses.

An individual with a promotion focus will generally try to ensure success and approach problems by working to avoid errors of omission by considering any and all options available to them. In searching for alternatives, an individual with a promotional focus will generally consider more options than someone with a preventative focus (Crowe & Higgins, 1997). An individual with a preventative focus will generally try to avoid failure and approach problems by working to avoid errors of commission by considering only those options that help them to avoid problems. In searching for alternatives, an individual with a preventative focus will generally consider fewer options than someone with a promotional focus (Crowe & Higgins, 1997). By extending this search for alternatives to the online auction realm, we hypothesize:

H1: An individual with a promotion focus will on average select a larger number of alternative auctions than an individual with a prevention focus

Trusting Disposition

Trust is an important factor in intention to purchase in e-commerce transactions (Gefen, 2000; Gefen, Karahanna, & Straub, 2003; Jarvenpaa, Tractinski, & Vitale, 2000; McKnight et al., 2002), including online auctions (Ba & Pavlou, 2002; Pavlou & Gefen, 2004). Online auction transactions present a special case for e-commerce transactions because most of the time buyers are unfamiliar with the sellers. Transactions often

involves new relationships where initial trust must be developed. Previous research shows that the likelihood that initial trust depends on the level of trusting disposition an individual possesses (McKnight et al., 2002). McKnight and colleagues found that trusting disposition is composed of four sub-constructs; integrity, competence, benevolence, and trusting stance.

The higher the trusting disposition, the higher the likelihood that initial trust will form for any of the auctions. The greater the number of initial trust relationships established, the greater the number of auctions considered for transactions. Likewise, the lower the trusting disposition, the lower the likelihood that initial trust will form for any one alternative. The fewer the number of initial trusting relationships established, the fewer the number of auctions considered.

H2: An individual with a high trusting disposition will on average select a larger number of alternative auctions than an individual with a low trusting disposition.

Online Auction Self-efficacy

Self-efficacy represents a regulatory system that captures the self-appraisal of one's capabilities (Bandura, 1989). The stronger the beliefs in one's capabilities, the stronger and more persistent one's efforts (Bandura, 1988). In the context of computer self-efficacy, it has been shown that general computer self-efficacy positively affects both personal and professional outcome expectations and negatively affects anxiety (Compeau, Higgins, & Huff, 1999). From these studies, we would expect someone with

high self-efficacy in using online auctions to expect to obtain positive outcomes with less anxiety and search through the results with more persistence. With increased persistence, buyers would be more likely to parse through search results and find more alternatives to accept into a consideration set.

H3: An individual with high online auction self-efficacy will on average select a larger number of alternative auctions than an individual with low online auction self-efficacy.

Perceived Risk from the Community of Sellers

Perceived risk from the community of sellers is defined as the subjective belief that there is a probability for a loss when conducting a transaction with a community of sellers (Pavlou & Gefen, 2005). If buyers are worried about the potential for a loss, they are likely to approach the transaction with greater reserve. Perceived risk has been shown to reduce transaction intentions in an online marketplace (Pavlou, 2002; Pavlou & Gefen, 2004). Reduction in transaction intentions means that fewer transactions will be considered acceptable. Given a list possible marketplace auctions, we expect buyers with higher perceived risk will consider fewer auctions acceptable, resulting in fewer acceptable auctions in the consideration set.

H4: An individual with high perceived risk from the community of sellers will on average select fewer alternatives than an individual with low perceived risk from community of sellers.

Online Auction Experience

Online auction experience represents the frequency, intensity, and duration of online auction usage. Experience purchasing items online has been shown to directly impact transaction intentions (Pavlou et al., 2007). However, experience may also directly effect self-efficacy and perceived risk. According to social contract theory, self-efficacy is both predicated by prior experience as well as predictive of future success (Bandura, 1989). Flowing from this reasoning, we expect prior online auction experience to lead to greater self-efficacy in new online auction marketplaces.

Past positive experience with online auctions also leads to less perceived risk in a community of sellers (Pavlou & Gefen, 2005). Likewise, a buyer's total number of objective transactions in online auctions leads to increased credibility (Pavlou & Dimoka, 2006). It is reasonable to expect that with more experience, the perceived risk in the community of sellers would be less.

H5: An individual with more online auction experience will have a higher online auction self-efficacy.

H6: An individual with more online auction experience will have lower perceived risk of community.

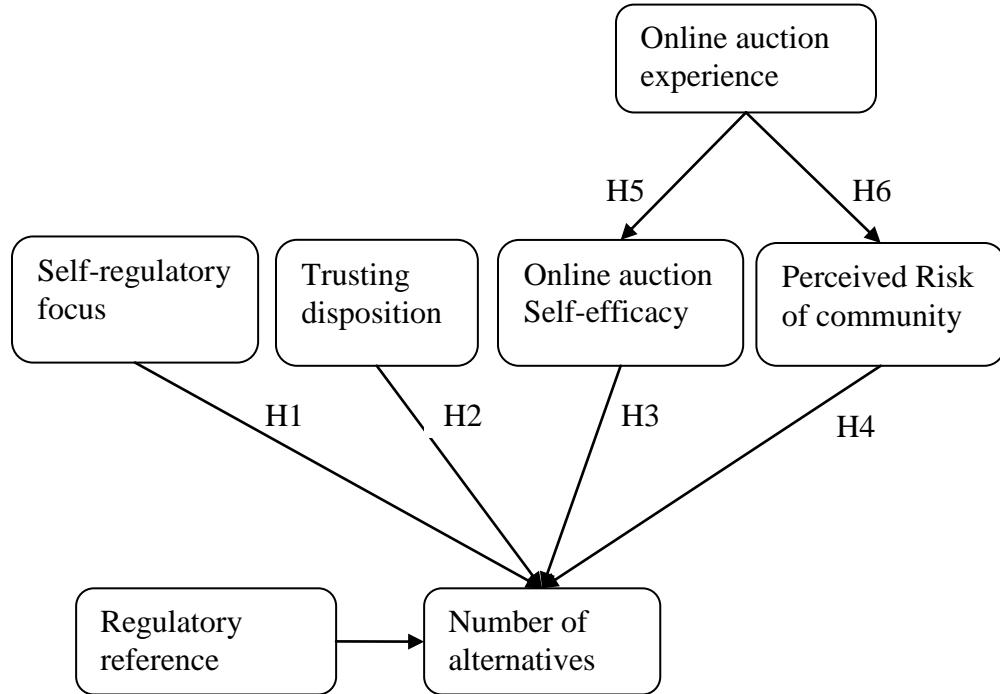


Figure 1. Proposed model

Method

Context

We selected the context of purchasing an IBM/Lenova Thinkpad from a generic online auction search listing to empirically test our hypotheses. This context was chosen as most of the participants are familiar with purchasing computers and can easily relate to the scenario.

Research Domain and Participants

Because our goal was to observe different individual dispositions in the decision-making process in an online auction environment, the primary target group in our study

was participants with varying degrees of experience using online auctions and fair representation of the varying dispositions. College age students generally fit this requirement. Prior research has shown that there are no significant differences between online auction behavior of students and the general population (Pavlou & Fyngson, 2006). Students were encouraged to participate with an offer for extra credit. According to the rule of thumb of 10 times the greater of 1) the block with the largest number of formative indicators or 2) the dependent latent variable with the largest number of independent latent variables impacting it, this study should have at least 80 participants for the alternative model specified below (Chin, 1998b). Using a stricter calculation with the a-prior sample size calculator for multiple regression (Cohen, 1988) with α level = .05, anticipated medium effect size = .15, and statistical power = .80, this study will need at least 108 participants.

A total of 107 students in the college of business at two major southern universities participated. Because there is suspicion that participants who selected zero acceptable auctions did not take the study seriously, we omitted four such cases from the results resulting in 103 usable responses. Students in the college of business have in general similar demographic characteristics, a decision was made early in the study not to collect demographic data. Characteristics of our primary variables suggest that the sample was diverse enough to test our hypotheses. A total of 38 participants had a promotional focus, whereas 69 had a preventative focus.

Research Model and Measurement Instruments

Trusting disposition, perceived risk of community, computer self-efficacy, and online auction experience were derived from existing measures as indicated in appendix B. Online auction experience is a formative construct composed of duration, frequency, and intensity of online auction marketplace usage (Drake, Hall, Cegielski, & Byrd, 2007). All other constructs are reflective.

Self-guide strength measure is an idiographic measure that determines the extent of focus on particular viewpoints by asking participants to list attributes describing said viewpoint (Higgins, 1997; Higgins, Idson, Freitas, Spiegel, & Molden, 2003). Participants are initially provided with a definition of their ideal and ought selves. The ideal self was defined as “the type of person they ideally would like to be, the type of person they hoped, wished, or aspired to be.” The ought self was defined as “the type of person they believed they ought to be, the type of person they believed it was their duty, obligation, or responsibility to be.” Participants were then informed that they would have to list attributes that describe their ideal and ought selves. They were also told they would be unable to re-use an attribute once used.

Participants were then asked to list the attributes in a seemingly random order – one ideal, followed by two ought, then two ideal, ending with the final ought. After listing the attributes, participants were asked to rank the extent they would like to possess their ideal attributes and to rank the extent they actually possess their ideal attribute on a scale of 1 to 4 (slightly, moderately, a great deal, extremely). Likewise, participants were asked to rank the extent they would like to possess their ought attributes and to rank the extent they actually possess their ought attributes using the same scale.

The self-guide strength measure consists of calculated reaction times to questions about ideal and ought selves (Higgins et al., 2003). The use of reaction times to measure attitude strength has shown that accessibility is related to strength and shown to have predictive validity (Fazio, 1986, 1995). All of these reaction times were transformed using a natural logarithm because the time distributions are often positively skewed. The reaction times were then summed for questions listing the attributes of the ideal self and the extent they would like to possess and actually possess each ideal attribute. The reaction times were summed for all the questions listing the attributes of the ought self and the extent they would like to possess and actually possess each ought attribute. These two values were then subtracted from one another to determine their self-guide strength measure. A negative value signified a promotional focus whereas a positive value signified a preventative focus.

The dependent variable consisted of the number of product auctions that participants selected as potentially valid solutions to the scenario problem. The scenario explained that they were interning for a manager who asks them to purchase a quality IBM/Lenova Thinkpad for under \$1500 from an online auction marketplace. To increase immersion in the scenario, users were told they would have to use the computer purchased for their internship. To increase expediency, we also informed the participants that they would have to report to their boss within 5 minutes with possible auctions in which to participate. Participants were then presented with a list of products from which to select those they consider viable options. The list of products consisted of real auctions that were transposed and reformatted to contain the auction characteristics that are most relevant to auction participants (Drake et al., 2007) and most commonly displayed in

auction marketplaces (eBay, Yahoo Auctions, etc.). These characteristics were name of product, picture of product (where available), current bid amount, number of bidders, and shipping costs (where available). Real data was desired to add complexity to the study that actual decision environments often entail. Results were transformed by natural log because of positively skewed results.

Procedures

Participants were invited by electronic mail (Appendix A) to visit a lab at a date and time of their choosing to participate in this study. They were informed that the purpose of experiment was to learn about decision making using search technology. Upon arriving in the lab, participants were presented with a browser directly linked to the instruction page. All effort was taken to minimize distractions throughout the exercise. After reading the instructions, participants filled out the survey questions. After answering these questions, they were directed to the auction scenario where they had to select possible products in which to bid.

Analysis and Results

Reliability was calculated using PLS composite reliability scores. PLS was chosen for its ability to handle complex models and its predictive ability, which is appropriate for exploratory studies of this nature (Chin, 1998a). All scores were adequately above the normal cutoff of .7 (Barclay, Higgins, & Thompson, 1995; Nunnally, 1978), ranging from .771 to .945 (Table 1).

Table 1.
Correlation and Reliability
Square root of AVE listed on diagonal

	Mean (STD)	Reli- ability	1	2	3	4	5	6	7	8	9
1. # selected (ln)	1.5 (1.0)	--	--								
2. Self-regulatory focus (ln)	0.4 (1.4)	--	.21	--							
3. Self-Efficacy	6.8 (2.8)	.95	-0.02	-0.08	0.80						
4. Integrity	3.3 (0.8)	.77	0.04	0.08	-0.06	0.73					
5. Competence	3.7 (0.7)	.86	0.17	0.08	0.08	0.08	0.82				
6. Trusting Stance	3.8 (1.0)	.89	0.30	0.11	0.09	0.20	0.15	0.85			
7. Benevolence	3.4 (0.8)	.82	0.07	0.11	0.18	0.26	0.23	0.21	0.78		
8. Perceived Risk	3.3 (0.9)	.92	0.12	-0.07	-0.42	0.01	0.03	0.07	0.06	0.89	
9. Online auction experience	--	.87	-0.05	0.10	0.37	-0.04	0.03	0.05	0.16	-0.10	0.84

Discriminant and convergent validity were tested through five tests. First we performed principle components analysis and obtained good loading patterns (Table 2). Next, we ensured that the square root of AVE for each construct was much larger than any correlation between constructs (Table 2). Third, we found that the correlations among all constructs are well below the .90 threshold (Table 2). Forth, we found that all AVEs were above .5, suggesting that the principle components capture construct related variance rather than error variance. Fifth, convergent validity was obtained with PLS convergent analysis that showed excellent loading patterns and differentiated between constructs. All item loadings were significant at the .05 level (Table 3).

Table 2.
Principle Components Analysis

Question	Component						
	1	2	3	4	5	6	7
Integrity							
1						.603	
2						.760	
3						.754	
Competence							
1							
2							.731
3							.765
Benevolence							
1					.735		
2					.869		
3					.782		
Trusting Stance							
1			.891				
2			.681				
3			.899				
Perceived Risk							
1		.832					
2		.819					
3		.861					
Self-efficacy							
1	.598						
2	.823						
3	.762						
4	.856						
5	.773						
6	.804						
7	.774						
8	.812						
9	.728						
10	.801						
Experience 1							
1				.874			
2				-.743			
3				.752			

Rotation Method: Varimax with Kaiser Normalization.

Testing the Model

The model was tested using PLS analysis. Standardized PLS path coefficients can be found in Figure 2. In both models, factor items were omitted for brevity.

Hypotheses summary can be found in Table 4. First, as hypothesized, self-regulatory focus ($b = .18, p < .05$) and trusting disposition ($b = .19, p < .05$) did have a significant impact on the number of alternatives selected, supporting hypotheses 1 and 2.

Table 3.

Item loading	
Item	T-value
Self-efficacy	
1	16.48
2	17.71
3	22.29
4	14.64
5	22.26
6	17.01
7	18.16
8	14.27
9	19.84
10	11.76
Integrity	
1	3.66
2	4.35
3	6.13
Competence	
1	8.02
2	13.55
3	6.49
Benevolence	
1	23.46
2	16.41
3	4.82
Trusting Stance	
1	17.09
2	13.47
3	10.18
Perceived Risk of Community	
1	15.78
2	10.46
3	9.16
Online Auction Experience	
1	19.12
2	7.06
3	35.02

Table 4.

Hypothesis support summary	
Hypothesis	Support
H1	Yes
H2	Yes
H3	No
H4	No
H5	Yes
H6	Yes

However, online auction self-efficacy and perceived risk of community were not statistically significant, not supporting hypotheses 3 and 4. Online auction experience did however statistically predict online auction self-efficacy ($b = .37, p < .01$) and perceived risk ($b = -.22, p < .05$), supporting hypotheses 5 and 6.

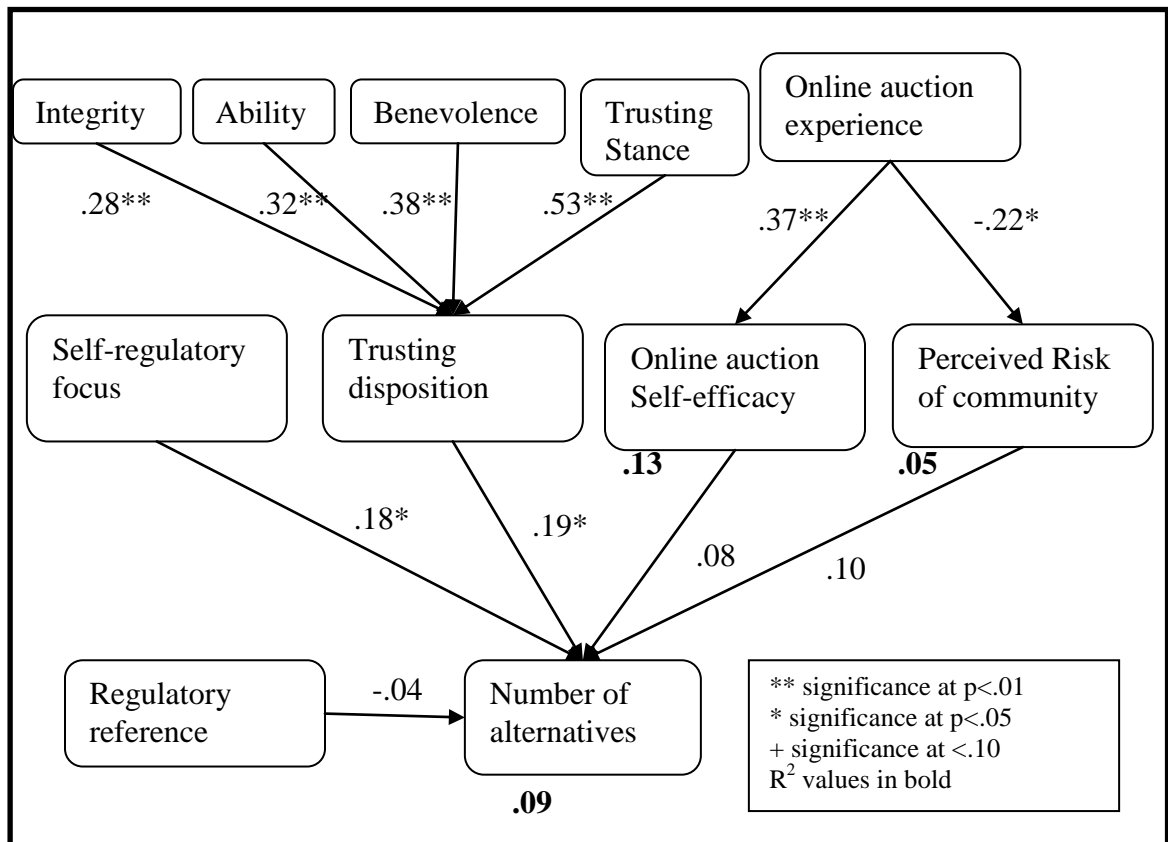


Figure 2. PLS results of structural model

An alternative path model was tested with results found in Figure 3. In the alternative model, we explore a variation of trusting disposition as designed by McKnight and colleagues (2002). While McKnight describes trusting stance and faith in humanity (composed of integrity, competence, and benevolence) as two distinct sub-constructs of trusting disposition, they treat integrity, competence, and benevolence on the same level

as trusting disposition when measuring for second order nature of the instrument. Because other researchers do not measure trusting disposition as a second order factor (Gefen, 2000), a direct effects model was created and tested. In the alternative model, all sub-construct terms directly predict alternative auction selection.

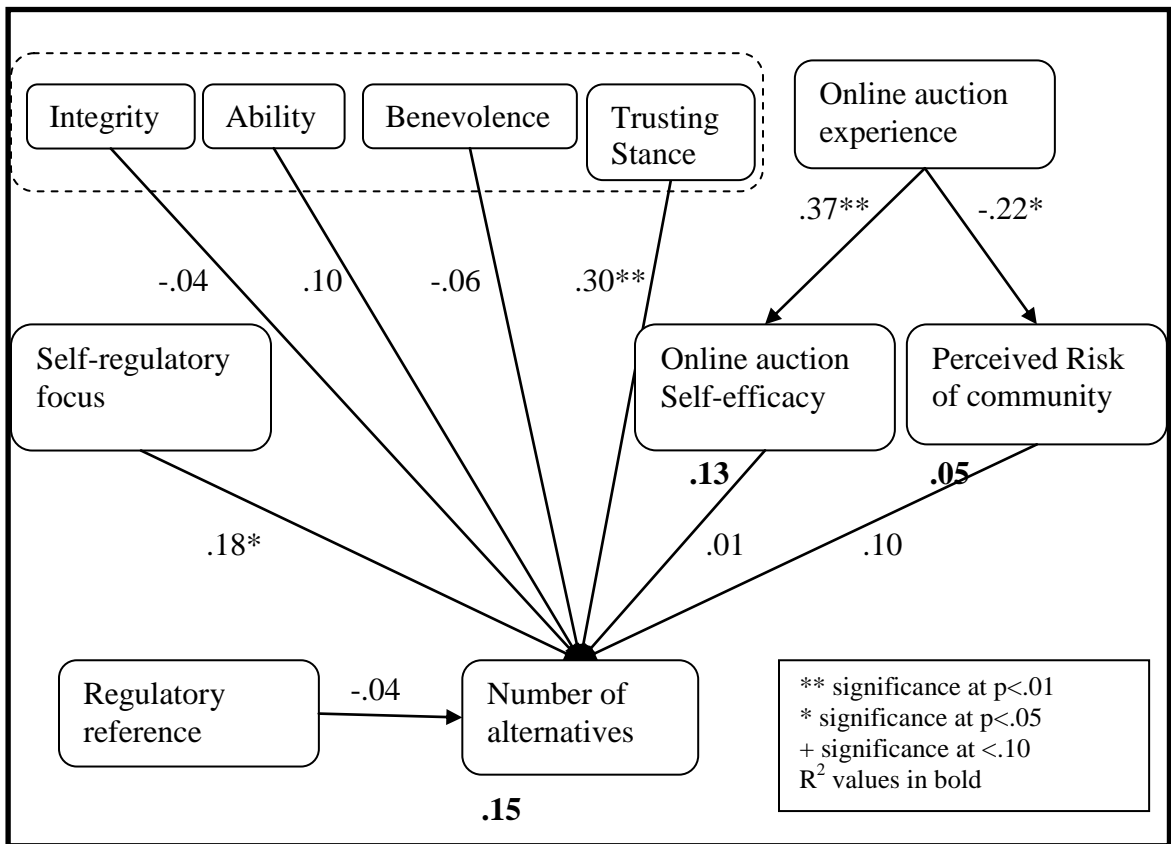


Figure 3. PLS results for alternate model

Although the initial model is informative, the alternative model explains more variance in the dependent variable, increasing the R^2 to 0.15 (adjusted R^2 increased from .04 to .08). Of the four trusting disposition factors, only trusting stance had a statistically significant affect on the number of auctions selected ($b = .30, p < .01$). All other path coefficients were similar in value and significance.

Discussion

The study has several key findings that extend research in online auctions. First, the findings extend decision-making theory by confirming the role of regulatory dispositions in predicting the number of alternative solutions selected in online auction transactions. Second, the findings extend online auction research in externally regulated auction transactions, by demonstrating how contextual self-efficacy and perceived risk from the community of sellers have little to no significance on the usage of selection of a set of auctions. Third, the findings extend trust research by showing that the second-order term for trusting disposition may be more complex than originally thought. Each finding is discussed in detail below.

Implications for Theory

Implications for online auction research.

Taking a lead from marketing research, the findings in this research suggest that consideration sets should be considered in online auction research. Consideration sets using a two stage decision process have been shown to explain more variance than a one stage decision for each item (Roberts & Lattin, 1991). While previous research efforts on online auctions explores how buyers make their final choice such as intentions to transact (Pavlou & Gefen, 2004, 2005), actual transaction (Pavlou & Gefen, 2004, 2005), and final bid price (Ba & Pavlou, 2002; Kauffman & Wood, 2005; Pavlou & Dimoka, 2006), this research shows that the concept of a consideration set, along with the two stage decision model, is useful to our understanding of consumer behavior in online auction

marketplaces. It does not contradict existing research, but adds a new dimension to the decision context extending our understanding of buyer behavior. For example, prior research suggests that trusting propensity (a concept similar to trusting disposition) impacts transaction intention to conduct a transaction in online auctions mediated through trust in the community of sellers (Pavlou & Gefen, 2004). This research effort helps explain the cognitive process in the relationship between trust propensity and intention to transact. The buyer's trusting stance influences how many new relationships the buyer will trust when shopping in online auction marketplaces, thereby increasing intentions to transact in any one auction.

By observing that trusting disposition increases the size of the consideration set, we bring a new perspective to how auction characteristics affect the buyer's decision to enter an auction. Trusting disposition, which leads directly to initial trust, appears to be a significant factor in determining which auctions are included in the consideration set, a step that happens prior to final choice. It is unclear if trust has a greater effect on forming the consideration set or on the final choice, but if it is the former this could lead to a new understanding on how reputation mechanisms such as feedback scores (Dellarocas, 2005) and feedback comments (Pavlou & Dimoka, 2006) influence the choice of auctions or how trust is replaced by services such as escrow accounts (Hu, Lin, Whinston, & Zhang, 2004).

Given the larger context of the experiment, evidence that self-regulatory focus does influence the number of alternatives considered provides a strong foundation for the relationship. It is possible that students approached the scenario from the perspective that their answers did not matter, but were motivated by the incentive of extra credit instead.

A promotionally focused student would be interested in completing the extra credit assignment but would likely want to spend a limited amount of time on it so that they could pursue other activities. Being in a hurry may lead them to consider fewer options just to be done and to move on. A preventative focused individual, however, once committed to the survey, may have felt it was their duty to be as thorough as possible and would spend more time analyzing and considering possible auctions. Greater time commitment may have lead to a higher number of alternative auctions considered. Because we did not find this to be true, we can conclude that participants were involved with the scenario enough to take it seriously.

Self-regulatory focus theory suggests that promotionally focused individuals construct more alternatives than preventatively focused individuals (Crowe & Higgins, 1997). This research extends Higgins' research by showing that regulatory focus influences not only the construction of alternatives but also the elimination of alternatives from a large list in order to construct a consideration set. This extension leads to a renewed respect for dispositional traits influencing the online auction behavior. Applying these ideas to bidding strategies (Bapna, Goes, & Gupta, 2001) may give us new insight into online auction marketplace behavior, leading to new tools to buyers and sellers to facilitate the search for information and effective transactions.

The influence of regulatory focus on the number of alternatives auctions selected may translate into lower final bid prices for promotional focused buyers. Evidence shows that cross bidders on average pay a lower winning price than non-cross bidders (Anwar, McMillan, & Zheng, 2006). The strategy of cross bidding is one where buyers place bids in more than one auction at the same time in hopes of landing the lowest bid in at least

one of them. This strategy of bidding in multiple auctions parallels the strategy of promotional focused individuals who approach problems by attempting many different options and avoiding errors of omission (Higgins, 1997). Because of the promotional focus, bidders who cross-bid may achieve lower winning prices.

While it was surprising that "Online Auction Self-efficacy" and "Perceived Risk of the Community of Sellers" were not significantly related to "Number of alternatives selected", there are a few possible reasons this may have occurred. First, because the use of an online auction marketplace was required by the scenario context and the participants did not have money at risk, it is possible that self-efficacy and perceived risk became irrelevant to the participant's decision. Self-efficacy works in a reciprocal nature with the decision maker's environment and their behaviors (Bandura, 1989). Participants had no control over whether or not they used the online auction and it is possible that they selected possible auctions in which to participate without consideration of their ability to actually perform the transaction.

The fact that both online auction self-efficacy and perceived risk in the community of sellers both failed to show a significant relationship with the number of alternatives considered is unsurprising considering that self-efficacy represents the extent an individual believes they can cope with risky situations (Bandura, 1989). If self-efficacy does not influence a particular behavior, it is reasonable to suspect that risk may not be significant either. And yet, risky perceptions should lead to risk taking behavior. If we consider the inclusion of a large number of sellers as a risky decision-making behavior (because any one of those sellers may lead to a negative transactions), we would expect risk perception to negatively influence the number of alternatives considered

(Sitkin & Weingart, 1995). Again, it may be the fact that the scenario context required usage of an online auction marketplace in spite of an individual's perceived risk levels that limited the role of risk in the consideration of auctions in which to transact. We can summarize from these findings that when required to use an online auction, self-efficacy has a limited role in the construction of a consideration set. Whether self-efficacy influences any of part of the decision-process when individuals are required to use a system is a subject that should be explored in greater detail.

Implications for trusting dispositions.

The dispositional nature of trust may be more complex than originally formulated by McKnight and colleagues (2002). While the four sub-factors integrity, competence, benevolence, and trusting stance significantly predicted trusting disposition as a 2nd order concept, these same four factors behave quite differently when directly predicting auction selection. In fact, this study found that the amount of variance explained increases with direct prediction, even though trusting stance is the only significant factor.

Other researchers have argued that what McKnight calls "faith in humanity" (composed of integrity, competence, and benevolence) should predict trusting stance (Drake, Byrd, Hall, & Cegielski, 2008). Trusting stance acts as a strategic approach to new relationships. Such an approach is likely to be strongly influenced by that individual's beliefs about other people in general. If I believe most people have integrity, act with competence, and are generally benevolent, I'm far more likely to find the strategic approach of trusting people to fit with my personality. If, however, I believe that most people do not have integrity, do not act with competence, or are generally without benevolence, I would find it difficult to act as if I did. It is more likely that

beliefs in integrity, competence, and benevolence directly lead to an individual's trusting stance. This alternative understanding of trusting disposition helps to explain the findings from this study.

Implications for Practice

This study has highlighted the importance of regulatory dispositions in making decisions in online auction environments. We identify three implications for practice. First, online auction marketplaces can design decision aides and additional functionality to buyers to facilitate better decisions in searching and selecting auctions in which to bid. Decision support system research offers decision aides that may be helpful for buyers when searching for auctions in order to increase the number of alternatives in the consideration set (Fazlollahi & Vahidov, 2001) or to help them decrease the number of alternatives in the consideration set (Todd & Benbasat, 1992). Another opportunity for marketplace designers is to offer greater individual customization so that buyers can display the information they use most often, based on their own dispositions. Further tracking a buyer's clicks, time spent on a page, and percentage of winning bids may provide insights into buyer dispositions, leading to algorithms that can suggest to that buyer on how to improve their customization to enhance bidding success. For example, if a user consistently checks feedback ratings and feedback comments of sellers (showing a low trusting disposition), it may be useful to suggest an added a column on the search results page with the seller feedback rating and a link to feedback comments, along with a weighted risk column by displaying the current bid price divided by seller feedback

rating. This last column may help individuals with low trusting disposition consider more alternatives than they may otherwise have done.

In spite of an individual's contextual dispositions, little can be done to change his or her selection of alternative auctions. A marketplace is limited in how they deal with individuals required to use their service. Reducing the perceived risk from sellers may have little impact on the number of alternatives considered, ultimately affecting the decision quality if too few alternatives are considered or too many alternatives are considered.

Limitations

Although many interesting lessons were learned from this study, there are a number of limitations and possible future research studies. The percentage of variance explained was low, which is not uncommon for behavior research, but suggests that there are a number of other factors involved in the creation of a consideration set. Some other possible factors may include cognitive biases (Schwenk, 1984; Tversky & Kahneman, 1974), intrinsic motivation (Venkatesh, 2000), search stopping rules (Browne et al., 2007), and environmental constraints (Ajzen, 2002). Generally speaking, these factors have been traditional used to describe the final choice rather than the consideration set. Yet, understanding how any of these factors effect the size of the consideration set may give insights into how to better design online auction marketplaces to facilitate transactions by minimizing errors with considering too many or too few auctions.

The second limitation involves the scenario specifications. Participants were provided with just one scenario involving them spending money that was not theirs in an

environment they may not have experienced first-hand (an internship). Even though they were provided with a spending limit and told they would be using the computer they purchased, they may have spent the company's money differently than they would have their own. We may also find different responses with the use of different products than when purchasing laptop computers.

Another limitation was the operationalization of the dependent variable as a single count of the number of auctions selected. With a single item measure, it is difficult to determine if participants considered the scenario equally when selecting auctions. Given the purpose of the study to determine if the number of auctions selected varied by motivational dispositions, a single item measure was necessary and sufficient - necessary because additional measures of counts could have introduced fatigue in the participants or could have tipped participants off to our purpose, thereby eliciting results that correspond with expected outcomes - sufficient because only predictive significance was desired rather than explanatory significance. Because the results demonstrated predictive significance, a single item instrument sufficed.

Because this study only viewed part of the decision process, decision quality could not be determined based on the alternative auctions selected. While decision quality was not directly tested, theory supports the suggestion that too many alternatives or too few alternatives lead to inferior decisions. Further research can confirm this relationship between regulatory dispositions, auction selection, and successful transactions at optimal winning bid prices.

Conclusions

The purpose of this study was to determine if regulatory dispositions affect the selection of auctions in online marketplaces. From a sample of over 100 participants, we found that two dispositions, regulatory focus and trusting disposition, affect the number of auctions selected when searching for products in an online auction marketplace, but contextual factors, online auction self-efficacy and perceived risk in the community of sellers, were not significant in predicting the number selected. We also found that the construct trusting disposition may be more complex than originally formulated. From these results, a number of future research studies are proposed to further examine the relationship between regulatory systems and the decision making process.

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ESSAY 3: SEARCHING FOR ALTERNATIVE SOLUTIONS: AN EXAMINATION OF DISPOSITIONAL FACTORS

Introduction

Today, data is being stored at exponential rates of growth. In 2006, IBM estimated that by 2010, data storage needs will double every 11 hours (IBM, 2006). IBM noted however, that without the ability to effectively extract meaningful information from this storage, the data is essentially useless. With the help of search technologies, the explosion of data can be more readily accessed, processed, and analyzed. Indeed, many software development companies today realize the importance of search capabilities and will not ship a product without search features embedded within it. The critical importance of search technology is demonstrated through the rapid growth and profitability of Google. Google has successfully built a multi-billion dollar company through the success of one technology, their ad-supported search engine.

While the importance of search technologies is evident, users of search technologies frequently have difficulty finding the information they desire. This difficulty comes in spite of improved search algorithms that facilitate the search for information, and hence restricts the searcher's ability to solve his or her problems and make informed decisions. If these problems still exist in spite of the improved

algorithms, then the limitation is not necessarily with the search technologies themselves, but may lie with how individuals interact with the search technologies. This interaction has two parts: 1) how an individual interacts with a specific technology in general and 2) how an individual approaches a problem in general. To understand the first part, different search technologies should be studied. To understand the second part, various dispositional factors should be assessed.

While there is rich history of research analyzing the choice of the best solution from a set of alternatives (Browne, Pitts, & Wetherbe, 2007; Newell & Simon, 1972; Schwenk, 1984; Todd & Benbasat, 1992; Tversky & Kahneman, 1974), research into selecting a small set of top options is an underrepresented stream of research. When the number of alternatives solutions are considered, it is often a controlled experimental factor (Payne, 1976; Todd & Benbasat, 1992), not self-selected. By understanding the effects of different motivational approaches to the search process, improved design features may be identified and utilized in various search contexts to facilitate problem solving. While there is no guarantee that the same motivational dispositions effect the search process in different contexts, it is important to identify if and where such dispositions are evident and what can be done to improve the design. Two board categories of search consist of information searches and products searches.

The purpose of this paper is two-fold: 1) to begin identifying dispositional factors that influence the selection of alternatives solutions when performing searches in complex decision environments and 2) to compare differences between searches based on information gathering and based on product purchases decisions. To this end, three motivational disposition factors are identified as having a possible effect on the number

of alternatives selected. These three dispositions are self-regulatory focus, regulatory reference, and trusting disposition. Two studies are conducted to compare the effects of factors in different contexts; one involving an information search and one involving a product search. The results suggest that dispositional factors are an important effect the number of solutions considered in product searches, but not in information searches. Suggestions for further research are explored based on these findings.

Literature Review

Alternative Solution Selection

It has been well noted that solving problems and making decisions follow a similar process - starting with identifying the problem, followed by a selection or development of possible solutions, and resolved with a choice of the best alternative (Dewey, 1910; Drucker, 1954; Simon, 1977). Simon specified these steps as Intelligence, Design, and Choice (IDC). In the design phase, the decision-maker invents, designs, or selects possible courses of action to solve the problem. Traditionally, these possible courses of action were limited by manual searches and the inventiveness of the decision-makers. With search technologies, hundreds, thousands, and even millions of possible courses of action may become evident to the decision-maker. Narrowing the selection down to the best candidates from such a long list of possible options is an increasingly difficult task.

When narrowing down the search to the top possible alternative solutions, two errors of selecting alternatives can limit the effectiveness of the decision. The two errors stem from the two extremes in selecting alternative solutions, selecting too many

alternatives and selecting too few alternatives. If a decision-maker selects too many alternatives, there is a danger from information overload when trying to select the best option. If a decision-maker treats a hundred results as equally good top choices, cognitive limitations prevent him or her from considering them equally at the same time and in the same respect. While researchers have proposed natural limits on human short term memory, from as high as 7 ± 2 (Miller, 1956), recent research suggests that 4 ± 1 items may be held in short term memory at any one time (Cowan, 2001). When more than 4 ± 1 items are held in the mind, grouping of items starts to take place. While the exact number is not critical to this discussion, it is important to note that natural limits exist and that limiting the number of alternatives is an important consideration in decision-making. When significantly more than this natural limit is present, there becomes too much information for a decision-maker to process, causing a cognitive overload leading to ineffective decisions.

At the opposite extreme, individuals may consider too few alternatives. Decision-makers are guilty of considering too few alternatives when they enter decision-making contexts with existing biases toward one alternative. Research shows that some decision-makers, especially in complex decision environments, will enter the design phase with one solution in mind in which they focus on the positives of that solution while simultaneously focusing on the negatives of other solutions, thereby rejecting them as possible solutions (Steinbruner, 1974). In effect, the decision-maker considers only one alternative from the beginning to the end of the decision-making process, regardless of the benefits of other alternatives. For uncertain and ill-structured problems, alternative generation tends to be low (Newell & Simon, 1972) even though these are the situations

where generating additional alternatives will have the greatest positive effect (Forbes, 2007).

Set theory expands on the process of identifying alternatives in order to find the best solution. While based in marketing research (Kardes, Kalyanaram, Chandrashekar, & Dornoff, 1993), this theory builds off of psychological research to demonstrate how individuals parse through options when making a decision. According to set theory, decision-makers identify different sets when making a decision, starting with the retrieval set, followed by the consideration set, and lastly with the choice. The retrieval set represents all the options and alternatives of which the decision-maker is consciously aware. If purchasing a diamond ring, the retrieval set would consist of all the jewelry stores that the consumer knows in the local area. From the retrieval set, only a few are considered as legitimate options to solving their problem. So from the list of all possible jewelry stores, the consumer only considers three or four as worthy of one's business. Whether the store is considered because of price, customer service, or some other factors is irrelevant to the fact that it is considered. From the consideration set, the best choice is made.

In terms of search technologies, a similar process occurs. From a search, many items are often displayed. The retrieval set consists of those items the searcher views. If multiple pages of items result, the retrieval set consists of only those pages that the searcher actually views. From the retrieval set, the searcher identifies those items that he or she considers as possible solutions to their problem. How the decision-maker identifies those items may be based on the short comments or descriptions list with the search or may involve clicking on links to learn more information. If search consists of a

simple problem such as locating a specific piece of information, the search may stop once that piece of information is found or may continue until verification is identified from multiple sources. For complex problems, the search involves identifying possible alternatives for the consideration set. Evidence suggests that motivational dispositions play a role in how many items are included in the consideration set (Crowe & Higgins, 1997; Duncan & Olshavsky, 1982; McKnight, Choudhury, & Kacmar, 2002).

Self-Regulatory Focus

Regulatory focus represents a motivational disposition trait that affects how individual approach problems. Developed by Tory Higgins (1997), self-regulatory focus theory posits that individuals possess one of two regulatory focuses – promotional focus or preventative focus. The theory states that an individual with a promotional focus approaches problems with a focus on attainment. Someone with a promotional focus wants to attain matches to desired end-states or wants to attain mismatches to an undesired end-state. Independent of the reference point of the end-state (positive or negative), someone with a promotional focus approaches a problem in terms of attainment. This focus leads an individual to describe themselves in terms of growth, achievements, and success. A preventatively focused individual approaches problems with a focus on avoiding matches to end-states and avoiding mismatches to desired end-states. Again, the reference point does not affect the approach to a problem, which is generally in terms of avoidance. This focus leads an individual to describe themselves in terms of duties, responsibilities, and obligations.

Evidence suggests a person with a promotional focus will attempt to avoid errors of omission, eagerly trying everything to attain a desired end-state, whereas with a persona with a preventative focus will attempt to avoid errors of commission, vigilantly trying avoid an undesired end-state (Crowe & Higgins, 1997). Crowe and Higgins found that when attempting to classify fruits and vegetables, promotionally focused individuals used a greater number of classifications. They also found that promotionally focused individual adopted a risky response bias in a memory recognition task, whereas preventatively focused individuals adopted a conservative response bias in a memory recognition task. These studies suggest that those with a promotional focus will eagerly consider more search items when confronted with a problem than a preventatively focused individual. Thus, we posit:

H1: Promotional focus leads to a greater number of alternatives selected than a preventative focus.

Regulatory Reference

Regulatory reference refers to whether or not an end-state is desired. A positive reference is one that is desired, a negative is not. The positive reference refers to what one will gain, the negative to what one will lose. Reference frames are often defined by the decision context. When describing a goal or problem, a reference point must be defined. Without a reference point, solving the problem or satisfying the goal would be

impossible because the end-state is not known. Without an end-state, there is no direction and nothing to work toward or away from.

The direction of the reference point induces decision-makers to consider problems with different perspectives. According to the certainty effect, people overweight *certain* outcomes relative to *probable* outcomes even if the probable outcomes have a greater expected utility (Kahneman & Tversky, 1979). What this means in terms of regulatory reference is that people will overweight outcomes that match the reference frame used in the decision context. The difference between a gain and a non-loss will manifest itself in the number of actions or alternatives that will satisfy the end-state. With a positive reference, the number of alternatives will be limited to those that are certain to achieve the end-state. With a negative reference, the number of alternatives will be those that can accomplish a non-loss, which includes those actions that will certainly avoid a loss and potentially those that may produce a gain. With the negative reference, more options are available. For example, a decision-maker that searches for a job that will enable a career jump (a positive reference), the number of jobs that fit that criteria would be much smaller than if a decision-maker searches for a job that will not leave him or her unemployed (a negative reference). Any job can fulfill the requirement of being not unemployed, but only a few jobs would fit the criteria of a career jump. Thus, we posit:

H2: A positive reference frame leads to fewer selected alternatives than a negative reference frame.

Trusting Disposition

In social contexts, decision-makers must evaluate how much they trust individuals on which they depend. Trusting disposition is the dimension of trust that deals with the propensity to develop an initial trust with someone in new relationships where dependence on the other person is part of the decision context (McKnight, Cummings, & Chervany, 1998). McKnight and colleagues have argued that trusting disposition is composed of two primary sub-constructs, *confidence in humanity*² and *trusting stance*. Confidence in humanity represents an individual's belief that people in general are dependable and worthy of trust it is further composed of three sub-factors – integrity, competence, and benevolence. Each of these sub-factors represents the expectations of integrity in others, the expectation of competence in others, and the expectation of benevolence in others, respectively. Trusting stance represents an approach to new relationships regardless of the confidence in humanity. Trusting stance is a strategic approach to new relationships.

Although McKnight and colleagues treat confidence in humanity and trusting stance as two equal sub-factors of trusting disposition, that relationship may be more complex than originally stated, both from an empirical standpoint (Drake, Byrd, Hall, & Cegielski, 2008a) and a conceptual standpoint (Drake, Byrd, Hall, & Cegielski, 2008b). As self-regulatory focus theory has shown (Crowe & Higgins, 1997; Shah, Higgins, &

² McKnight refers to "faith in humanity" rather than "confidence in humanity". Faith, however, can be confused with religious connotations which we wish to avoid.

Friedman, 1998), dispositional beliefs about oneself lead to different strategic approaches to problems. The same relationship holds true in social cognitive theory (Bandura, 1989), where general beliefs about one's self-efficacy influence the approach to new situational problems. Would not the same relationship between beliefs and strategic approaches to problem hold true in social contexts? For trusting disposition, this means that beliefs about trustworthy attributes in others will likely effect the trusting stance. While it is possible that a person may believe others generally have integrity but approach new situations as if they do not trust individuals, we believe it is more likely that people will approach new situations in a manner consistent with their beliefs. A general high confidence in humanity will lead to a positive stance towards new relationships. A general low confidence in humanity will lead to a negative stance towards new relationships. This relationship should hold true with all three sub-constructs of faith in humanity – integrity, competence, and benevolence. Thus, we posit:

H3: A high level of perceived integrity in others leads to a higher trusting stance than a low level of perceived integrity in others

H4: A high level of perceived competence in others leads to a higher trusting stance than a low level of perceived competence in others

H5: A high level of perceived benevolence in others leads to a higher trusting stance than a low level of perceived benevolence in others.

As trusting stance becomes higher, people sooner initiate new relationships with trust. If searching for a solution to a problem or evaluating others as a means to an end,

trusting stance should increase the likelihood that any one person is trusted. If the chance of any one individual is trusted, then chances are many will be trusted. With increase trusting stance, comes increased number of alternatives considered for solving a problem.

H6: A high trusting stance leads to a greater number of alternatives selected than a low trusting stance.

Trusting dispositions are not created in a vacuum. Regulatory dispositions, such as trust, develop through a lifetime of experiences integrated into a set of core beliefs (Bandura, 1989). Ethical beliefs form part of this core in terms of values and virtues that guide behavior. The relationship between trust and ethical beliefs is tightly intertwined (Hosmer, 1995), with many virtues such as integrity, honesty, benevolence, good-will, caring, credibility, reliability, responsiveness, competence, and ability listed as dimensions of trust, trustworthiness, and/or trusting dispositions (for summaries of previous trust research see (Gefen & Straub, 2004; McKnight et al., 2002). Because trusting disposition addresses expectations of trusting new relationships, it is dealing with expectations of unknown individuals. Trusting disposition flows from these implicit beliefs of how unknown individuals will act in new contexts. More specifically, trusting disposition is based on global expectations of humanity's moral behavior. It is the expectation that humans are in general moral, what we define as *humanity's morality*.

Empirical evidence shows that at the group level, when core values clash, benevolence and integrity based beliefs decrease (Sitkin & Roth, 1993; Tjosvold, 1988). Extending the concept of the group to include all of humanity, a similar clash between

core values should lead to a decrease in benevolence and integrity based beliefs in humanity in general. This in turn would lead to lower trusting dispositions. If core values of unknown people are expected to be different (and hence not moral), then these unknown people will likely be viewed with lower benevolence and integrity based beliefs. Although competence was not explicitly addressed by Sikin, it can be viewed as a virtue (Giffin, 1967). Furthermore, a belief that others are generally moral will likely lead to an approach to new relationships that is positive, leading to a higher trusting stance. Thus, we posit:

H7: A high level of perceived moral behavior in others leads to a higher trusting stance than a low level of perceived moral behavior.

H8: A high level of perceived moral behavior in others leads to a higher level of perceived integrity in others than a low level of perceived moral behavior.

H9: A high level of perceived moral behavior in others leads to a higher level of perceived competence in others than a low level of perceived moral behavior.

H10: A high level of perceived moral behavior in others leads to a higher level of perceived benevolence in others than a low level of perceived moral behavior.

These ten hypotheses form the basis of the model described in figure 1. A method for testing these hypotheses is discussed next.

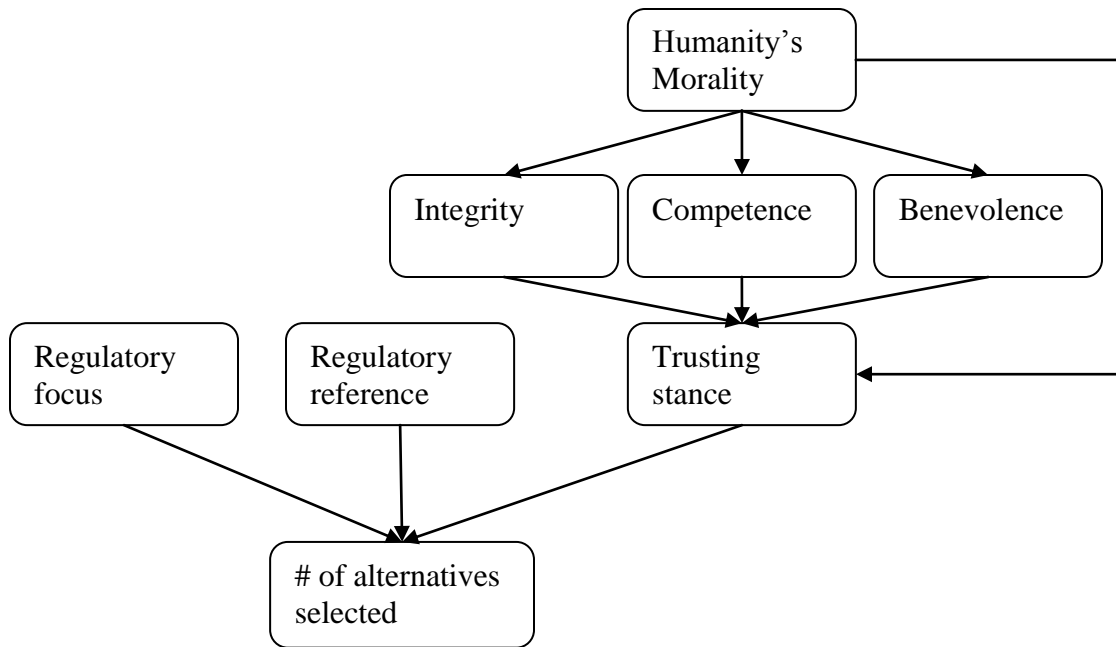


Figure 1. Proposed Model

Method

Context

Two studies were conducted to empirically test the above hypotheses. In the first study, participants made decisions for purchasing an IBM/Lenova Thinkpad from a generic online auction search listing. In the second study, participants made decisions for selecting apartments in which to learn more information. These two scenarios were chosen for several reasons – first, the complexity of each decision environment requires thoughtful consideration that may better tap the underlying disposition; second, both scenarios involve social elements requiring an evaluation of unknown individuals for the first time; third, most participants are familiar with both scenario contexts allowing greater involvement with the exercise; fourth, the differences between the two contexts

taps into both an economic product selection decision with objective data and an information gathering decision with subjective ratings for better comparisons; and fifth, prior research has shown both scenario contexts to be useful in understanding decision making (Drake et al., 2008a; Todd & Benbasat, 1992).

Research Domain and Participants

Because our goal was to observe different individual dispositions in the decision-making process in an online auction environment, the primary target group in our study was participants with varying dispositions but with a basic understanding of online auction purchases and apartment searches. College age students generally fit this requirement. Prior research has shown that there are no significant differences between the online auction behavior of students and the general population (Drake, Hall, Cegielski, & Byrd, 2007; Pavlou & Fygenson, 2006). According to the rule of thumb of 10 times the greater of 1) the block with the largest number of formative indicators or 2) the dependent latent variable with the largest number of independent latent variables impacting it, this study should have at least 80 participants for the alternative model specified below (Chin, 1998b). Using an a-prior sample size calculator for multiple regression (Cohen, 1988) with α level = .05, anticipated medium effect size = .15, and statistical power = .80, we will need at least 91 participants to provide sufficient power.

In the online auction study, a total of 107 students in the college of business at two major southern universities participated. Students were encouraged to participate with an offer for extra credit. Because there is suspicion that participants who selected

zero acceptable auctions did not take the study seriously, we omitted four such cases resulting in 103 usable responses. In the apartment search study, a total of 128 students in the college of business at a major southeastern university participated. There was one case where zero apartments were selected, so that case was omitted, resulting 127 usable cases. Because students in the college of business have in general similar demographic characteristics, a decision was made early in the study not to collect demographic data.

Characteristics of our primary variables suggest that the sample was diverse enough to test our hypotheses. Out of a total of 230 participants, 68 participants had a promotional focus, whereas 162 had a preventative focus.

Measurement Development

Wherever possible, instruments were based on existing studies (Appendix B). Internet experience was a formative construct composed of duration, frequency, and intensity of Internet usage. Humanity's morality was operationalized by adapting measures from integrity, competence, and benevolence within the context of moral and ethical behavior. A three item instrument measured perceived moral behavior of others, perceived virtuous behavior of others, and perceived living by a value system of others. The initial instrument was pre-tested for clearness and pilot tested for reliability.

Self-regulatory focus was operationalized using a measure developed for this purpose called the self-guide strength measure (Higgins, 1997; Higgins, Idson, Freitas, Spiegel, & Molden, 2003). This measure determines the extent of focus on particular viewpoints by asking participants to list attributes describing said viewpoint. With this measure, participants are provided with a definition of their ideal and ought selves. The

ideal self is defined as “the type of person they ideally would like to be, the type of person they hoped, wished, or aspired to be.” The ought self is defined as “the type of person they believed they ought to be, the type of person they believed it was their duty, obligation, or responsibility to be.” Participants are informed that, with these two definitions in mind, they would have to list attributes that describe their ideal and ought selves. They are also told they would be unable to re-use an attribute once used.

Consistent with the self-guide strength measure, participants list the attributes in a seemingly random order – one ideal, followed by two ought, then two ideal, ending with the final ought. After listing the attributes, participants rate the extent they would like to possess their ideal attributes and rate the extent they actually possess their ideal attribute on a scale of 1 to 4 (slightly, moderately, a great deal, extremely). Likewise, participants rate the extent they would like to possess their ought attributes and rate the extent they actually possess their ought attributes using the same scale.

Self-guide strength measure consists of calculated reaction times to questions about ideal and ought selves (Higgins et al., 2003). The use of reaction times to measure attitude strength has shown that cognitive accessibility is related to strength and shown to have predictive validity (Fazio, 1986, 1995). All of the reaction times were transformed using a natural logarithm because the time distributions are positively skewed. The transformed reaction times were summed for questions listing the attributes of the ideal self and the extent they would like to possess and actually possess each ideal attribute. Likewise, the reaction times were summed for all the questions listing the attributes of the ought self and the extent they would like to possess and actually possess each ought attribute. These two values were then subtracted from one another to determine their

self-guide strength measure. A negative value signified a promotional focus whereas a positive value signified a preventative focus.

In the online auction study, the dependent variable consisted of the number of product auctions that participants selected as potentially valid solutions to the scenario problem. The scenario explained that they were interning for a manager who asks them to purchase a quality IBM/Lenova Thinkpad for under \$1500 from an online auction marketplace. To increase emersion in the scenario, participants were told they would have to use the computer purchased for their internship. To increase expediency, we also informed the participants that they would have to report to their boss within 5 minutes with possible auctions in which to participate. Participants were then presented with a list of 50 auctions from which to select those they consider viable options. The list of products consisted of archived data from real auctions that were copied and reformatted to contain the auction characteristics that are most relevant to auction participants (Drake et al., 2007) and most commonly displayed in auction marketplaces (eBay, Yahoo Auctions, etc.). These characteristics were name of product, picture of product (where available), current bid amount, number of bidders, and shipping costs (where available). Real data was desired to add complexity to the study that actual decision environments often entail. The number of selected auctions was transformed by natural log because of positively skewed results.

In the apartment search study, the dependent variable was obtained through a selection of possible apartments found through an online search of an apartment rating website. To increase emersion in the scenario, participants were instructed to imagine they had found a job in a far away city and needed to find an apartment in which to live.

They were further instructed to select those apartments in which they wished to contact further. Following the scenario instructions, 60 apartment complexes were listed. The information on this list of apartments was transposed from a real apartment rating website and consisted of the following characteristics; Name of apartment building, Number of raters, Miles from campus, Quality, Price, Location, Social, Parking, and Overall. All apartment buildings had a least one rater. The six qualitative measures of the apartment buildings displayed averages of subjective ratings ranging from 1 to 5 in value. Next to each apartment name was a checkbox that participants could check if they wished to learn more information about that apartment. The number of selected auctions was transformed by natural log because of positively skewed results.

Regulatory reference was operationalized as a binomial trait of the last sentence in the scenario. Half of the participants were instructed to consider what you will gain by choosing a particular apartment, while half were instructed to consider what you will loss by not choosing a particular apartment.

Survey Administration

Participants were invited by electronic mail (Appendix A) to visit a lab at a date and time of their choosing to participate in this study. The participants were informed that the purpose of experiment was to learn about decision making using search technology. Upon arriving in the lab, participants were presented with a browser opened to the instruction page. All effort was taken to minimize distractions throughout the exercise. To this end, participants were required to begin the survey at the same time to

avoid excessive noise due to participants walking in to the lab during the study. After reading the instructions, participants filled out the survey questions. After answering these questions, they were directed to the scenario (an online auction marketplace in study 1 and an apartment search in study 2) where they had to select possible alternatives to the problem presented.

Analysis and Results

A PLS analysis was chosen for its ability to handle complex models and its predictive ability, which is appropriate for exploratory studies of this nature (Chin, 1998a). Reliability was calculated using PLS composite reliability scores. All scores were adequately above the normal cutoff of .7 (Nunnally, 1978), ranging from .768 to

Table 1.
Correlation and Reliability
* Square root of AVE listed on diagonal

Constructs	Mean (STD)	Reliability	1	2	3	4	5	6	7
Online Auction Search									
1. Number selected (ln)	1.46 (1.0)	--	--						
2. Self-regulatory focus	.37 (1.4)	--	0.21	--					
3. Integrity	3.3 (0.8)	.77	0.02	0.10	0.72				
4. Competence	3.7 (0.7)	.86	0.16	0.07	0.08	0.82			
5. Benevolence	3.4 (0.8)	.82	0.06	0.14	0.37	0.17	0.78		
6. Trusting Stance	3.8 (1.0)	.88	0.28	0.11	0.31	0.20	0.31	0.84	
7. Humanity's morality	3.3 (0.8)	.85	0.04	0.09	0.45	0.09	0.53	0.24	0.81
Apartment Search									
1. Number Selected (ln)	2.5 (0.7)	--	--						
2. Self-regulatory focus	1.1 (1.4)	--	-0.01	--					
3. Integrity	3.3 (0.8)	.71	0.00	0.06	0.68				
4. Competence	3.8 (0.8)	.85	0.00	0.06	0.16	0.81			
5. Benevolence	3.4 (0.8)	.82	0.00	-0.02	0.18	0.06	0.78		
6. Trusting Stance	3.9 (1.0)	.88	-0.04	-0.04	0.09	0.22	0.30	0.84	
7. Humanity's morality	3.5 (0.7)	.73	0.18	0.03	0.44	0.23	0.27	0.24	0.70

.892 (table 1). Because Internet experience is a formative factor, reliability was not calculated.

Discriminant and convergent validity were tested through four tests. First, we found that the correlations among all constructs are well below the .90 threshold (Table 1). Second, we examined if the AVEs were above .5, which would suggest that the principle components capture construct related variance rather than error variance. Internet experience did not meet this cutoff in either study. In two cases (Integrity and

Table 2.
Item Loading

Item	Study 1 T-value	Study 2 T-value
Integrity		
1	5.54	13.95
2	4.97	2.24
3	8.96	7.19
Competence		
1	3.41	21.81
2	9.54	7.07
3	8.11	6.06
Benevolence		
1	8.64	11.26
2	13.21	22.46
3	11.00	8.70
Trusting Stance		
1	16.74	29.63
2	17.34	13.60
3	12.78	17.97
Humanity's Morality		
1	27.89	20.81
2	13.95	7.81
3	13.94	3.64
Internet Experience		
1	0.80	2.70
2	3.05	1.20
3	1.02	1.53

Humanity's morality), the AVE was slightly below .5 in one study, but not in the other. Because of the mixed results and because each constructs passes the other three tests, we left them in the model for further analysis. Next, we ensured that the square root of AVE for each construct was much larger than any correlation between constructs (Table 1). Fourth, convergent validity was obtained with PLS convergent analysis that showed excellent loading patterns and differentiated between constructs. All item loadings were significant at the .05 level (Table 2).

The model was tested using PLS analysis. Standardized PLS path coefficients can be found in figures 2 and 3. Factor items were omitted for brevity.

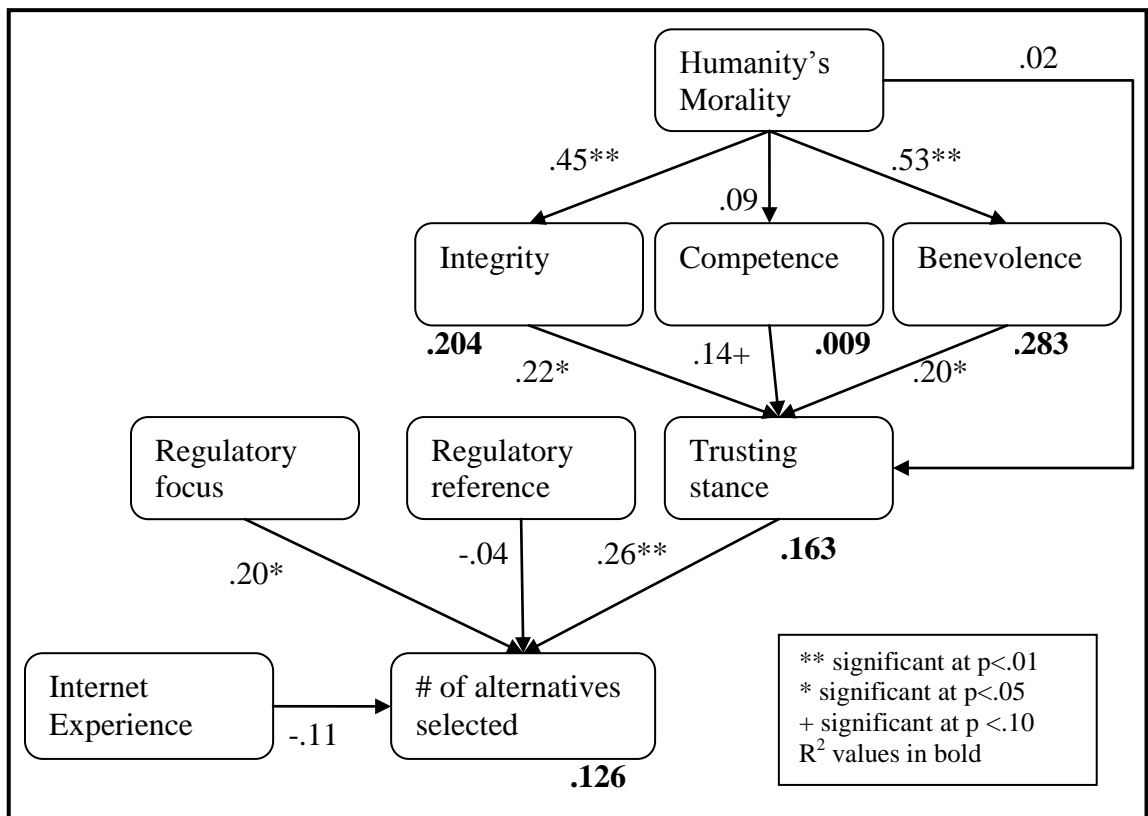


Figure 2. Online Auction Model Results

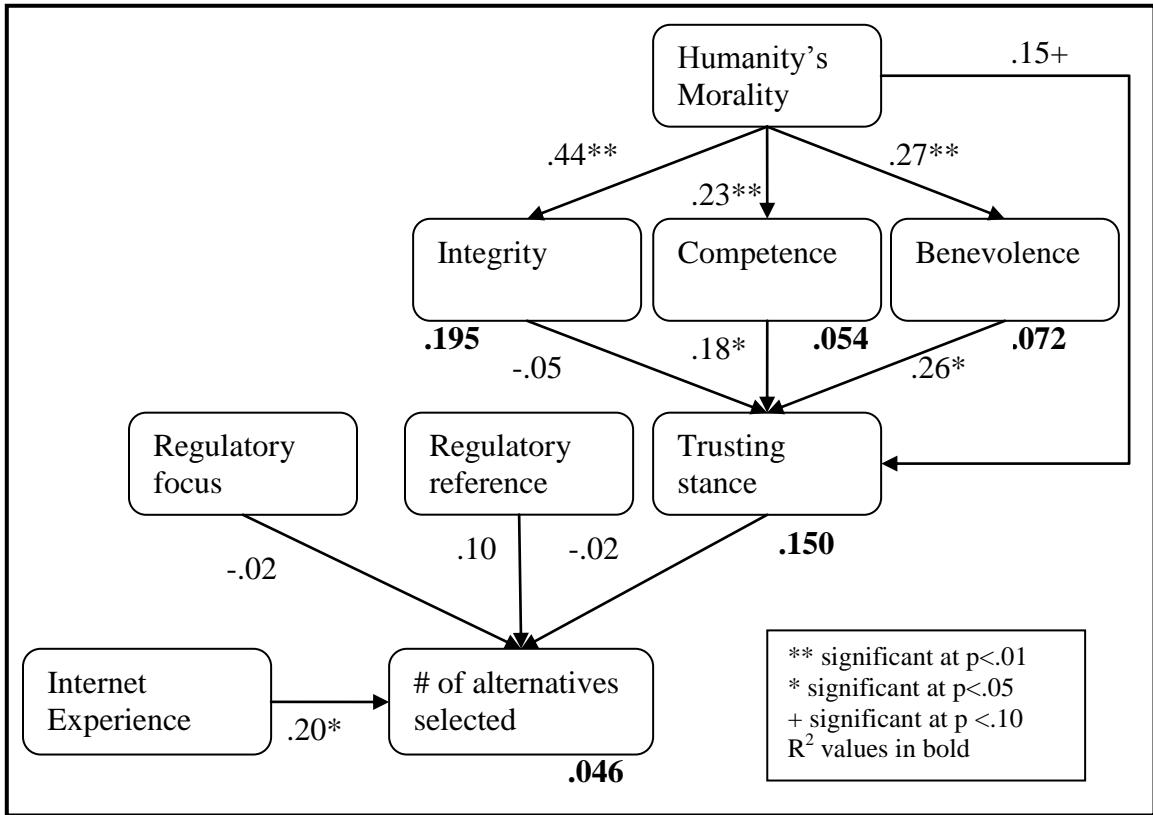


Figure 3. Apartment Search Model Results

Discussion

Hypotheses summary can be found in table 3. In study 1, as hypothesized, self-regulatory focus ($b = .20, p < .05$) and trusting disposition ($b = .26, p < .01$) did have a significant impact on the number of alternatives selected, supporting hypotheses 1 and 3. However, regulatory reference was not statistically significant, showing no support for hypothesis 2. For the expanded model of trusting disposition, Integrity ($b = .22, p < .05$), Competence ($b = .14, p < .10$), and Benevolence ($b = .20, p < .05$) all significantly predicted trusting stance, supporting hypotheses 4, 5, and 6. Humanity's morality significantly predicted Integrity ($b = .45, p < .01$) and Benevolence ($b = .53, p < .01$) but not Competence nor Trusting stance. In study 2, none of the primary factors, regulatory focus, regulatory

reference, and trusting stance, significantly predicted the number of alternatives selected, offering no support for hypotheses 1, 2, and 3. However, the expanded conception of trusting disposition found that Competence ($b=.18, p<.05$) and Benevolence ($b=.26, p<.05$) significantly predicted trusting stance, supporting hypotheses 5 and 6. Humanity's morality also significantly predicted Integrity ($b=.44, p<.01$), Competence ($b=.23, p<.01$), Benevolence ($b=.27, p<.01$), and Trusting Stance ($b=.15, p<.10$), supporting hypotheses 7, 8, 9, and 10.

Table 3.
Summary of support for hypotheses

Hypothesis	Online auction search	Apartment search
H1	Yes	No
H2	No	No
H3	Yes	No
H4	Yes	Yes
H5	Yes	Yes
H6	Yes	No
H7	No	Yes
H8	Yes	Yes
H9	No	Yes
H10	Yes	Yes

Implications for Theory

The design phase of Simon's IDC model for decision-making rests on the premise that alternative solutions to a problem must be selected or developed before the final choice commences. While research in decision-making has traditionally focused on the final choice, this research adds evidence that regulatory factors may be important during alternative solution selection. In the selection of alternatives, we find that the type of search conducted directly impacts which factors effect the number of alternatives

selected. In a search for products, trusting stance and ideal self-regulatory focus positively influence the number of alternatives selected. In a search for information, we find that trusting stance, self-regulatory focus, and regulatory reference do not significantly influence the number of alternatives selected. These findings suggest that motivational dispositions play a role in creating a consideration set for products. However, motivational dispositions may not be as important in consideration set when conducting information searches. This finding seems to contradict research that suggests trust is an important belief in constructing attitudes for information searches and product purchases (Pavlou & Fyngson, 2006). If trust in a source leads to a better attitude toward that source, we would expect that trusting dispositions would lead to a better attitude toward more relationships, increasing the consideration set in both information and product searches. The discovery that trusting disposition did not significantly influence the number of alternatives solutions selected in the information search was unexpected, but not without precedent (Koufaris & Hampton-Sosa, 2004). In Koufaris' and colleagues' research, they found that propensity to trust did not influence initial trust in a company by their website information. While Koufaris' research websites offered products for sale, the questions for initial trust focused more on the information contained on the website than on an actual purchase.

The unexpected results with the apartment search may also be because trust could effect the results in multiple ways, 1) with trust in the apartment complex owners and 2) with institutional trust in the rating system. Disposition to trust should positively influence both institutional trust and trusting beliefs in e-commerce transactions (McKnight & Chervany, 2001; McKnight et al., 2002). While initial trust may have been

high in the apartment owners, it may have been low with the raters or vice versa. Perhaps because of the conflating influences of trust in one item, trusting disposition becomes a non-significant factor overall. Institutional trust, if lacking, may limit the trust during an information search, just as it does in e-commerce transactions (Pennington, Wilcox, & Grover, 2003). Further research should explore the relationship between various trust factors in contexts where multiple trust relationships may confound the results.

Many years of research suggested that decision-makers are plagued by errors in designing or selecting alternative solutions to problems (Beach & Mitchell, 1998; Kahneman & Tversky, 1979; Schwenk, 1984; Steinbruner, 1974; Tversky & Kahneman, 1974, 1992). Most of these efforts have focused on heuristics and cognitive processes rather than general dispositional traits. For example, the classic theory of satisfying suggests that decision-makers consider one alternative at a time until an alternative is found that satisfies pre-defined requirements or heuristics, at which point the search stops (Simon, 1955). Tversky and Kahneman in a number of articles explore how heuristics and biases effect a choice among alternatives that sometimes counter maximum utility (Kahneman & Tversky, 1979). In stopping a search, Browne and colleagues (2007) examined rules that decision-makers employ when stopping their search process. The results of this study extend decision-making theory by showing that individual regulatory dispositions, not only heuristics, have an important influence on the selection of alternatives in product selection. When self-regulatory focus is promotional, individuals tend to consider more alternatives than when they are preventative. We also found that when trusting dispositions are high, more alternative dispositions are considered than when trusting disposition is low.

It is important to note that self-regulatory focus and regulatory reference are a single indicator constructs in the model (although this indicator was composed of several measures summed together) which may lead to an under-estimation of the true effects (Chin, 1995). If under-estimation is an issue, then a new measure of regulatory focus may show effects on the number of alternatives considered for information searches where none were found in this study. If under-estimation is not an issue, then the lack of support for self-regulatory focus influencing the number of alternatives selected seems to contradict the theory on which it is based.

By observing that regulatory disposition leads to trends in the number of alternatives selected in product selection, there may be a potential relationship between regulatory dispositions and the choice of heuristics. We also expect that cognitive stopping rules in the search for alternative auctions differ based on regulatory dispositions. Research into stopping rules in online searches finds that a variety of stopping rules are used (Browne et al., 2007). Rules such as “single criterion” may be used more often by preventative focused individuals who have a criterion they know has worked in the past and represents a safe choice. While some stopping rules are used more often than others, research should further explore the relationship between the number of auctions selected and the criteria used to limit the selection of auctions.

This research also builds on the vast tradition of human-computer interaction. Within the framework of Zhang & Li’s human-computer interaction model (Zhang & Li, 2005), this research explored elements from all five components of the interaction model (figure 4). At the center of the model, usage of the system was captured with a unique measure, the number of alternatives selected. Interacting with usage are four

components; technology, human, task, and context. The technology captured was search technologies and the type of data observed - objective or subjective. The human elements included individual dispositions - self-regulatory focus, regulatory reference, and trusting disposition. Two tasks were used, 1) searching for a product and 2) searching for information. Each task was situated within the contexts of online auction marketplace and apartment rating website respectively.

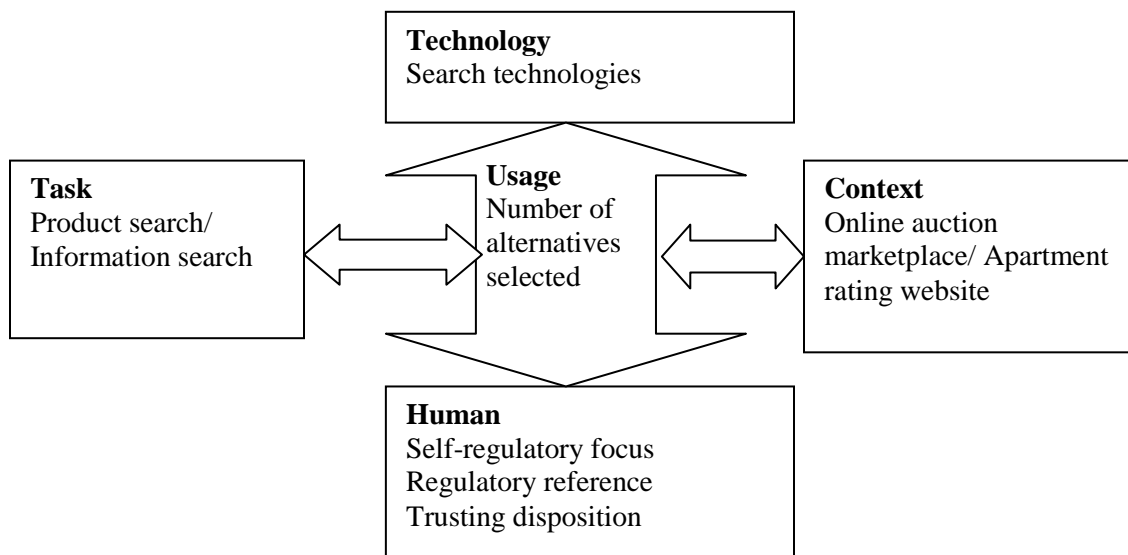


Figure 4. Human-computer interaction framework

This study also suggests that trusting disposition is more complex than originally conceived. Many studies in e-commerce and online auctions have used a related concept, trusting propensity in accessing the intentions to purchase online (Gefen & Straub, 2004; Koufaris & Hampton-Sosa, 2004; McKnight et al., 2002; Pavlou & Gefen, 2004, 2005). Although results from the two studies were not identical, both studies found that the new

concept humanity's morality is positively related to confidence in humanity and that confidence in humanity is positively related to trusting stance. With an improved understanding of how trusting dispositions develop and interact with selecting new relationships, researchers can better understand why some individuals will consistently limit interaction with new relationships in online contexts. It may also help to explain why ad hoc groups built through Internet message boards, email lists, and blogs or networking websites such as Facebook and MySpace have grown so quickly. Because relationships are developed in an ad hoc fashion, individuals can match their core values with appropriate groups as they see fit. When those values are shared, trusting dispositions within that context are higher enabling higher initial trust for others in the group.

This research also extends regulatory system research into the information systems context. In particular, self-regulatory focus is introduced as a significant factor in effecting motivation within decision-making. Human-computer interaction research benefits from this concept by showing how the task is tied to motivation. This motivation is further tied to dispositional traits, implying a relationship similar to Bandura's Social Cognitive Theory where environment, personal factors, and behavior interact in a triadic relationship (Wood & Bandura, 1989).

Implications for Practice

Searching for information is partially dependent on individual regulatory disposition, depending on context. In cases of product searches, such as in online auctions, it seems to be beneficial for sellers in such marketplaces to design auctions that

can quickly build trust, but that there is a limit to reaching buyers depending on their underlying trusting disposition. Marketplace designers should build search capabilities that allow buyers to alleviate either of the two extremes in alternative selection.

Individual customization is one method to allow individuals to change the data displayed to accommodate their needs. Beyond that, search technologies could track individual search patterns and suggest tools when appropriate to element alternatives if the searcher often selects too many alternatives, or add alternatives if the searcher often selects too few alternatives. Such alternative generation and alternative elimination technologies have been helpful in decision support systems (Todd & Benbasat, 1992).

Just as cognitive fit has demonstrated to be a significant factor in information system design (Vessey & Galletta, 1991), we propose that a new concept of “regulatory fit” should help explain information system usage and help focus information system design. Similar to the concept used in marketing (Lee & Aaker, 2004), regulatory fit represents a fit between technology design and individual regulatory environment. Individual regulatory dispositions lead to different usage of information systems, particularly when selecting alternative solutions to a product. Information systems should be designed to fit these different approaches to reduce potential errors. With a better understanding of how regulatory dispositions affect the selection of alternatives, auction marketplace designers can better design search results that limit the potential errors in selecting alternatives because of individual dispositions.

Because self-regulatory focus and trusting dispositions significantly influence the number of alternative auctions considered, there is evidence to warrant further examination of the concept of regulatory fit. If indeed the number of alternatives

considered is limited by our cognitive capabilities, then we expect there are technologies that can help to limit alternatives when too many are present and to help add alternatives when too few are present. The use of a technology to overcome motivational disposition should yield a regulatory “fit.” Various decision support tools have shown some promise in helping with too few alternatives (Fazlollahi & Vahidov, 2001; Potter & Balthazard, 2004) and too many alternatives (Todd & Benbasat, 1992). The relationship between technology and motivational disposition suggests that certain tools will “fit” certain dispositional traits better than others (see table 4).

Table 4.
Regulatory Fit with Technology

Technology influence	Regulatory environment	
	Increases alternatives considered	Decreases alternatives considered
Increase # of alternatives	Too many alternatives	“fit”
Reduce # of alternatives	“fit”	Too few alternatives

Limitations

As with all research, these studies are not without limitations. First, only a limited number of factors were considered as potential antecedents to alternatives considered. However, this research was exploratory in nature, seeking to highlight only some of the factors that are important in the construction of consideration set size. A great many other factors may possibly effect the size of the consideration set because of their strong influence on decision-making process, including such factors as cognitive bias (Schwenk, 1984; Tversky & Kahneman, 1974), motivation (Bagozzi & Dholakia, 1999; Bettman, 1979; Locke & Latham, 2004; Venkatesh, 2000), computer self-efficacy

(Compeau, Higgins, & Huff, 1999; Marakas, Yi, & Johnson, 1998), and environmental constraints (Ajzen, 2002). A better understanding of how decision-makers search for information and construct consideration sets may evolve with a systematic coverage of these factors.

Another limitation was the operationalization of the dependent variable as a single count of the number of auctions or apartments selected. With a single item measure, it is difficult neither to determine if participants considered the scenario instructions in the same manner nor if participants would have stopped the search after the first option passed the adopted heuristics. Given the purpose of the study was exploratory in nature, a single item measure was sufficient because only predictive significance was desired rather than explanatory significance. The ultimate purpose was to determine if when constructing a consideration set, regulatory dispositions influential. This was accomplished with a single measure.

Conclusion

With the increasing importance of search technologies to effectively organize and present information for individuals to make decisions, it is increasing important that we understand how individuals parse through search results to solve their problems. This research project provided a piece to the puzzle with its discovery of how various dispositional factors effect the number of alternatives solutions considered when making decisions. Dispositional factors of self-regulatory focus and trusting disposition appear to be very important influences in selecting alternatives in a product search, but not as

important in an information search. Additionally, this research found that trusting disposition was more complex than previous studies suggest. Trusting disposition should not be a second-order factor with four clear sub-factors, but rather an over-arching term to refer to a number of factors stemming from ethical foundations mediating and interacting with each other to influence decisions. These findings should help information technology developers design systems that should help users avoid errors in selecting too many alternatives or selecting too few alternatives.

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APPENDIX A

Request for Participants

Dear MNGT 3100 students,

My name is John Drake and I am contacting you today at the request of Dr. Terry Byrd and myself. We are currently conducting research regarding decision-making using search technologies. Our mission is to better understand how technology facilitates the decision-making process. You can help by completing a 20-30 minute questionnaire. In return, [professor's name] has graciously offered [terms of extra credit] extra credit toward your final average for you participation.

We need students such as you, who are interested in business and are at least 19 years of age to complete this questionnaire. Your feedback will be enormously helpful for use to understand these issues. Participation is voluntary. Your answers will be collected anonymously and will be kept strictly confidential. All data will be collected and analyzed at the aggregate level.

To participate in this study, please sign up for a date and time to visit a lab at this website:
<http://www.webdesign-jrd.com/lapsignup/labsignup.asp>. After you arrive at the lab, you will be directed to a seat where you will fill out the questionnaire. When you have completed the questionnaire, you will have to write your name and email on a sheet provided at the front of the lab so that you may receive your credit.

If you have any questions or concerns, please do not hesitate to ask.

We thank you for your time.

John Drake
drakejr@auburn.edu
Phone: 314-477-8446

APPENDIX B

Instrument

Survey instructions:

Thank you for your interest in participating in this research project.

The Purpose of this Study is to determine what factors are important to decision making when using search technologies. In the following questionnaire, you will be asked to a number of questions about your personality, interests, and beliefs. This will be followed by two activities.

Participation is strictly voluntary. Your answers from this experiment will be kept strictly confidential.

Please avoid all distractions during your participation because the time you take to complete the exercise is as important as the answers you give. Please answer truthfully. **There are no right or wrong answers.** If none of the chooses seem appropriate, please choose the one that comes closest to your feeling or opinion.

To receive credit for participation, please write your name and email address on the sheet of paper provided at the front of the lab as you leave. You must enter this correctly to receive credit from your professor. Your name and email will be kept strictly confidential and all analysis will be completely anonymously. This process should take about 30 minutes of your time.

Self-guide strength: (Higgins, Idson, Freitas, Spiegel, & Molden, 2003)

For the first series of questions, we will ask you to provide attributes describing your *ideal* and *ought* selves. These attributes should be one word descriptions of either your *ideal* self or your *ought* self. However, attributes once listed, cannot be reused. They may be used to describe your ideal or your ought selves, but not both.

Please study the following two descriptions of how you view yourself:

Your *ideal* self is the type of person you ideally would like to be, the type of person you hope, wish, or aspire to be.

Your *ought* self is the type of person you believe you ought to be, the type of person you believe it was your duty, obligation, or responsibility to be.

With these two definitions in mind, you will be asked to list these attributes.

Please list an attribute you would use to describe your "ideal self", the type of person you hope, wish, or aspire to be. (Asked 3 times)

Please list an attribute you would use to describe your "ought self", the type of person you believe it was your duty, obligation, or responsibility to be. (Asked 3 times)

Please rank the extent you would like to possess your *ideal* attributes

Please rank the extent of which you *actually* possess your *ideal* attributes

Please rank the extent you would like to possess your *ought* attributes

Please rank the extent of which you *actually* possess your *ought* attributes

Trusting Disposition (McKnight et al., 2002)

Benevolence

1. In general, people really do care about the well-being of others.
2. The typical person is sincerely concerned about the problems of others.
3. Most of the time, people care enough to try to be helpful, rather than just looking out for themselves.

Integrity

1. In general, most folks keep their promises.
2. I think people generally try to back up their words with their actions.
3. Most people are honest in their dealings with others.

Competence

1. I believe that most professional people do a very good job at their work.
2. Most professionals are very knowledgeable in their chosen field.
3. A large majority of professional people are competent in their area of expertise.

Trusting Stance

1. I usually trust people until they give me a reason not to trust them.
2. I generally give people the benefit of the doubt when I first meet them.
3. My typical approach is to trust new acquaintances until they prove I should not trust them.

Humanity's morality

1. In general, most people are moral.
2. I think people generally try to live by their value system.
3. Most people act virtuously in their everyday dealings.

Perceived Risk from the community of sellers (Pavlou, 2002)

1. There is a considerable risk involved in participating in online auctions.
2. There is a high potential for loss involved in participating in online auctions.
3. My decision to participate in online auctions is risky.

Self-efficacy with online auctions adapted from (Compeau & Higgins, 1995)

I could participate in an online auction from a new auction marketplace...

1. if there was no one around to tell me what to do as I go
2. if I had never used a marketplace like it before
3. if I had only a reference guide for assistance
4. if I had seen someone else using it before trying it myself
5. if I could call someone for help if I get stuck
6. if someone else had helped me get started
7. if I had a lot of time to complete the purchase of the product I'm interested in
8. if I had just the built-in help facility for assistance
9. if someone showed me how to do it first
10. if I had used similar packages before this one to do the same job

(Each item can respond Yes/No. If yes, then the respondent fills out a rank from 1 to 10 of how confident they are at completing the task).

Online auction experience (Drake et al., 2007)

1. How long ago did you start bidding on online auctions?
2. How often do you bid on online auctions?
3. When shopping for an item in online auction marketplace, how many minutes per month do you spend searching, analyzing, comparing, and bidding?

Scenario 1:

For this activity, imagine you have started an internship. Your employer has given you the task of purchasing a new laptop for use on the job. He is not very specific but wants you to purchase something before the day is over. He says "I need you to purchase a IBM/Lenova ThinkPad laptop with the best features for the lowest price (including shipping) and from a reputable seller at eBay. You will be using this computer a lot, so don't buy something that is outdated. Your budget is \$1500."

A quick search of eBay's marketplace for IBM/Lenova ThinkPads returned the following possibilities. Please check all auctions below that best satisfy your boss's requirements.

Scenario 2:

For this activity, imagine you recently found a job at Brigham Young University, and now you need to find an apartment in which to live. In order to narrow down your options, you explore an apartment rating website. A quick search for apartments returned the following possibilities. Please check all apartments that you wish to contact further.