An EXPERIMENTAL TEST OF THE PERFORMANCE OF REFERRAL REWARD PROGRAMS

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ABSTRACT

Generating word-of-mouth (WOM) is considered a marketing tool to stimulate customers to purchase a product. Firms use referral rewards to encourage existing customers to make a recommendation. Biyalogorsky, Gerstner and Libai (2001) state that “referral reward programs are designed to motivate consumers to spread positive word of mouth (WOM) about products or services and thus, in essence to integrate customers into the sales force.” In addition, Schmitt, Skiera, and Van den Bulte (2011) define that “customer referral programs are a form of stimulated WOM that provides incentives to existing customers to bring in new customers” (p. 47).

Previous research has examined the effect of reward programs on referral likelihood (e.g. Schmitt et al. 2011; Ryu and Feick 2007) and identified the optimal referral rewards under different price levels without empirical testing (Biyalogorsky et al. 2001; Kornish and Li 2010). While initial research has mainly considered the effects of referral rewards on the recommender’s referral likelihood (e.g. Ryu and Feick 2007), only a few studies have examined the receiver’s purchase likelihood (Verlegh et al. 2013; Jin and Huang 2014). In addition, no one has tested the effects of referral reward schemes on recommenders and receivers simultaneously as they occur in practice, or directly examined the effectiveness of referral rewards for the firm. My dissertation has two main research questions: 1) how do referral rewards work when rewards are given to recommenders and receivers simultaneously, and 2) what is the best reward scheme for a firm. Therefore, this dissertation empirically examines the effectiveness of referral rewards from the perspective of three parties: the recommender, the receiver and the firm.
In addition, this dissertation examines the effect of tie strength, product value, and reward size as moderators.

The results of study 1 show that although recommender referrals and receiver purchases increase when both the recommender and the receiver receive rewards regardless of tie strength, the firm incurs higher costs to implement this scheme. Interestingly, the recommender only scheme increases referral likelihood, but actually decreases purchase likelihood for weak ties. In addition, offering rewards is inefficient for firms when product value is high, because customers want to share the good product regardless of rewards. Although larger rewards increase both referrals and purchases, larger rewards also further increase the cost the firms need to pay as an incentive. The Reward Both scheme is especially influenced by reward size. This dissertation finds that No Reward is the best reward scheme for the firm regardless of product value and tie strength.

This dissertation bridges two important theories, exchange theory and attribution theory. This dissertation also provides a framework for both practitioners and academics to better predict recommenders’ and receivers’ responses to referral rewards by showing the relationship between WOM and actual purchases when consumers are given rewards. Further, this dissertation serves as the first to identify the impact of product value in a referral reward context. Finally, this dissertation provides an optimal referral reward scheme for the firm’s profit.
CHAPTER 1

INTRODUCTION

Generating word-of-mouth (hereafter WOM) is a popular way to stimulate customer purchases or interest a product. Arndt (1967), as one of the first researchers to examine WOM, defined WOM as “oral, person-to-person communication between a perceived non-commercial communicator and a receiver concerning a brand, a product, or a service offered for sale” (p. 190). Consistent with Arndt (1967), Harrison-Walker (2001) similarly defined WOM as “informal, person-to-person communication between a perceived noncommercial communicator and a receiver regarding a brand, a product, an organization, or a service” (p. 63). Firms use referral rewards to bring their customers into their business as a marketing tool. Customers (recommenders) can reward themselves for bringing in new customers. At the initial stage of referral rewards, firms traditionally pay recommenders to make referrals to bring in new customers. Researchers have investigated what factors influence recommenders to increase referrals, such as satisfaction.

However, firms have recently changed their payment method to one which pays both recommenders and receivers who receive the recommendation/referral from the recommender. For example, DIRECTV Company offers $100 off your DIRECTV bill for each friend who orders DIRECTV service, and your friends will also save $100 in bill credits. Since they have changed the payment method, it has also become a crucial consideration for firms to attract receivers with appropriate referral rewards.
Motivations to Spread Word of Mouth

WOM has been considered to be an interpersonal source of product information by consumers (Price and Feick 1984; Thorelli 1971). Many studies have explored the motivational factors that lead to the spread of WOM. De Matos and Rossi (2008) conducted a meta-analytic review of WOM antecedents. They found that satisfaction, quality, commitment, trust, perceived value, and loyalty are the primary antecedents. Customers who are more satisfied with their own consumption experiences are more likely to recommend the product to other consumers. Consumers who experience greater quality with a product than expected are more likely to recommend the product. Customers who receive relatively high value from a product tend to become more committed to the firm and spread positive WOM. Higher commitment customers exhibit higher identification with the firm and provide favorable WOM about the company. Additionally, the greater the consumers trust and loyalty for the brand or firm, the more likely they are to offer positive WOM. The findings show that all these antecedents have positive effects on WOM activity. However, there is a lack of research which has examined the effects of WOM on receivers (Sweeney, Soutar, and Mazzarol 2008; Bansal and Voyer 2000; Gremler 1994).

Referral Rewards for Spreading Word of Mouth

Even though many marketers have considered incentive programs as playing a key role in encouraging positive WOM, empirical research about which is the most effective type of incentive program has not been conducted much (Wirtz and Chew 2002). Two papers identified the optimal referral rewards program under different price levels (Biyalogorsky et al. 2001;
Kornish and Li (2010). Both papers have identified the optimal referral rewards under different price levels. However, neither paper provided empirical evidence.

Biyalogorsky et al. (2001) designed a model to investigate how a combination of a referral reward and product pricing may be used to optimize referrals among delighted customers. Biyalogorsky and colleagues (2001) suggest that “delighted customers, i.e., customers who achieve a high level of satisfaction, engage in referrals that in turn lead to increased sales” (p. 83). A customer is defined as delighted when “the customer surplus exceeds a certain threshold level” (p. 83). They find that the effectiveness of a referral reward will depend on how easy it is to delight customers with the product, and find how the optimal referral reward could be estimated based on a combination of customer delight and product pricing. They find that the optimal use of referral reward programs is when the customer’s delight threshold is at an intermediate level. If customers are easy to delight, firms should not offer referral rewards and instead rely on a lower price to encourage referrals. However, if customers are hard to delight, referral rewards are likely to not be enough to encourage referrals, and the seller should give up the referral strategy.

Kornish and Li (2010) also investigate the optimal referral reward program under conditions of asymmetric information. The primary difference between Biyalogorsky et al. (2001) and Kornish and Li (2010) is the consideration of the recipient who receives the referral. According to Kornish and Li (2010), recommenders should be concerned with the receivers’ outcome with the product that they recommend. They provide the optimal design of referral reward and product pricing based on the asymmetry of information between a recommender and a receiver. For example, a recommender who has experience with the product can recognize whether this is an appropriate product for the receiver. A recommender could also know a
receiver’s preferences as well as have knowledge of product, so that he can better match the product and the receiver’s preference. In this situation, the recommender has more information than the receiver does, so the receiver is likely to rely on a recommendation the recommender offers, unless the receiver has additional expertise about the product.

Kornish and Li (2010) also examine the interaction between referral reward programs and price under conditions of recommendation risk neutrality and recommendation risk-aversion. When the recommender is risk neutral, they find that referral rewards are least effective when a recommender is not concerned about the relationship with the receiver (for example, a distant friend), so firms should use a low price strategy instead of a referral reward program. As the recommender’s concern for the receiver’s outcome and the relationship with the receiver increases, firms should increase the use of referral rewards. However, when the recommender is risk averse and does not want to make recommendations which may have negative consequences for the receiver, higher referral rewards do not necessarily encourage referrals, especially when they are made to close friends. The authors assume that the recommender will be more risk averse when making a recommendation to a close friend and more risk neutral when making a recommendation to a distant friend. They find that for close friends, increased concern for the friend’s well-being increases the optimal referral reward, but also decreases the optimal price. The reason is that lower prices will decrease the recommenders’ risk of harming their close relationship more than referral rewards.

Since Biyalogorsky et al. (2001) was published, there have been a few empirical studies that have examined incentive programs within the WOM context. Wirtz and Chew (2002) examine the relationship between a financial incentive and WOM and investigate interactions
with other variables, such as tie strength, deal proneness, and satisfaction. Their finding is that the higher the financial incentives provided, the more WOM is actively engaged in. They did not find a significant interaction effect between incentives and deal proneness, even though highly deal prone recommenders were found to engage in more WOM than less deal prone recommenders as a main effect. The authors’ explanation is that deal prone recommenders are likely to talk about the products or services that the firm provides. Thus, the results show that financial incentives do not work very well at generating WOM among deal prone recommenders.

Wirtz and Chew (2002) do support an interaction effect between satisfaction and incentives on WOM. Satisfied recommenders were found to be more motivated by incentives to generate WOM than dissatisfied recommenders. The greater the incentives provided, the more WOM was generated. Finally, Wirtz and Chew (2002) test the three way interaction between satisfaction, incentives, and deal proneness. They find that incentive programs can motivate satisfied less deal prone consumers to spread positive word of mouth, while satisfied highly deal prone consumers are likely to talk about the product or service whether or not incentives are provided. Thus, incentives could be a valuable way to increase WOM among satisfied less deal prone consumers compared to highly deal prone consumers.

**Receivers’ Motivations to Seek Word of Mouth**

Receivers’ motivation to seek WOM can be divided two different decisions that the receiver makes. The decision to seek WOM has been shown to be influenced primarily by characteristics of the receiver, such as experience, expertise, and attitude toward WOM, and by characteristics of the decision, such as perceived risk. The decision of from whom to seek WOM
is primarily influenced by the relationship between the receiver and the potential recommender, often operationalized as tie strength.

**Receiver’s Experience with the Product**

Dichter (1966) provides a primary question about word of mouth recommendation with respect to the psychology perspective: “What motivates a person to listen to a recommendation and to act on it?” (p. 147). He states that there are no material interests involved in the recommendation as a primary assumption for the receiver. In other words, Dichter (1966) means that the receiver is assuming that the recommender is not receiving any material benefits to provide the recommendations. When a receiver purchases a product, he wants to have some information about the product. Arndt (1967) states that receivers often initiate product conversations by asking communicators for information. According to the information seeking literature, consumers usually seek different types of information and different amounts of information (Kiel and Layton 1981) prior to purchasing a specific product because information seeking is a way to make a better purchase decision (Punj and Staelin 1983). In other words, consumers seek out WOM when they need information to help them make a better decision in the pre-purchase stage and when they need to express satisfaction or dissatisfaction about purchasing the product in post-purchase stage (Tax, Chandrashekaran and Christiansen 1993). Bone (1995) describes strong WOM effects when consumers face an ambiguous situation. In other words, people are more likely to rely on WOM when they have different expectations of product performance from their previous experience. Specifically, the lack of product experience will increase receivers’ likelihood to seek WOM.
Receiver’s Expertise

Receiver’s expertise can lead them to listen to a recommendation from recommenders and to subsequently make a purchase decision. Dichter (1966) assumes that receivers do not have any information about a product at the time of purchase. However, Alba and Hutchinson (1987) propose that each consumer has different level of expertise based on product-related experience. A few researchers (Beatty and Smith 1987; Bloch et al. 1986; Brucks 1985; Furse et al. 1984) provide evidence of a negative relationship between expertise and an external search for information. In addition, Gilly et al. (1998) support the negative influence of receiver’s expertise on receivers’ preference for WOM as an information source. Furse, Punj, and Stewart (1984) also find that a receiver’s expertise negatively influences the receiver’s preference for WOM.

However, Bansal and Voyer (2000) show that the receiver’s expertise can positively influence the degree to which they seek WOM information in a service context. This produces a result diametric to what they originally hypothesized. The explanation Bansal and Voyer (2000) give is that there is an inverted U-shaped relationship between level of search and expertise (Bettman and Park 1980). In other words, level of search for information is greatest when consumers’ knowledge is moderate and lower when consumers’ knowledge is either high or low. Bansal and Voyer (2000) found 3.88 mean value out of 7 for consumer knowledge, suggesting that their respondents’ knowledge about the product is moderate. Thus, they found a positive relationship between expertise and seeking of WOM information from their study.

Perceived Risk

Perceived risk is one of the fundamental considerations for receivers when they make a purchase decision (Bauer 1960; Bettman 1973; Cox 1967; Jacoby and Kaplan 1972; Kaplan,
Szybillo, and Jacoby 1974; Lutz and Reilly 1973; Perry and Hamm 1969; Roselius 1971; Ross 1975; Shiffman 1972). According to Cox and Rich (1964), a common strategy to reduce risk is to rely on past experience. Moreover, when consumers purchase a product, they might have higher perceived risk because they have no experience or information about it. If the consumers do not have past experience with the product, they will seek out WOM information to help reduce the perceived risk. Many researchers (Arndt 1967; Lutz and Reilly 1973) look at WOM as the most important source to reduce perceived risk. When people perceive higher risk, they would more likely to seek WOM information (Arndt 1967; Perry and Hamm 1969; Roselius 1971; Woodside and Delozier 1976; Murray 1991; Bansal and Voyer 2000).

**Individual Differences**

Individual consumers have different preferences for WOM as an interpersonal source of information (Bearden et al. 1989; Furse et al. 1984) based on their previous experiences of products or services. Gilly et al. (1998) explain the preference for WOM as an information source and consider it to be a characteristic of receivers. For example, if you are satisfied with a product or service that your friends or family recommended, your preference for WOM would be higher. If not, it will be lower. There is only one study that empirically examines the relationship between WOM preference and the sources’ influence (Gilly et al.1998). However, the hypothesized relationship was not supported.

Another source of individual differences in attitude toward WOM is consumer susceptibility to interpersonal influence, which is “the tendency to learn about products and services by observing others or seeking information from others” (Bearden et al. 1989, p. 473). Like preference, consumer susceptibility to interpersonal influence varies among individuals as a
general trait (Bearden et al. 1989). Janis (1954) says that “some persons consistently tend to be highly amenable to social influence whereas others are predisposed to be resistant” (p. 504). Unlike preference or expertise, which is product-specific, however, susceptibility to interpersonal influence is an individual trait that is consistent across different products and decisions. Mowen et al. (2007) use susceptibility to interpersonal influence as a predictor of information receiving. In order to measure consumer susceptibility to interpersonal influence, they use the normative influence scale from Bearden et al. (1989). They conclude that consumer susceptibility to normative influence is a significant predictor of receiving information.

**Tie Strength**

As well as the decision to seek WOM, the decision of from whom to seek WOM is important for receivers. Tie strength is one of the most significant influences on WOM communication seeking (De Bruyn and Lilien 2008). Money, Gilly, and Graham (1998) define tie strength as, “a multidimensional construct that represents the strength of the dyadic interpersonal relationships in the context of social networks” (p. 79). Reingen and Kernan (1986) define two different levels of tie strength: “strong primary (such as spouse) and weak secondary (such as seldom-contacted acquaintances)” (p. 374). Two studies of WOM have operationalized tie strength by asking subjects in the strong tie condition to name “one of your closest friends” and subjects in the weak tie condition to name “someone you interact with from time to time, but someone not close enough to count as a friend” (Ryu and Feick 2007; Frenzen and Nakamoto 1993).

Many studies (e.g., Brown and Reingen 1987; Frenzen and Nakamoto 1993; Bansal and Voyer 2000; Ryu and Feick 2007; De Bruyn and Lilien 2008; East et al. 2008) find that tie
strength plays an important role in spreading WOM and demonstrate a positive relationship between tie strength and WOM. Ryu and Feick (2007) suggest that people with strong ties are concerned about others and have strong communal relationships in which they feel general concern about the other person’s welfare, and people with weak ties are motivated by self-interest in exchange relationships. Thus, WOM is more likely to occur from strong ties than from weak ties (Ryu and Feick 2007; Wirtz and Chew 2002; Frenzen and Nakamoto 1993; Brown and Reingen 1987) because “their communal orientation toward strong ties motivates them to share the pleasure that they have received from using a product” (Ryu and Feick 2007, p. 85).

Bansal and Voyer (2000) examine the role of tie strength from the receiver’s perspective. They conclude that when a strong relationship exists between the recommender and receiver, the receiver would like to actively seek the WOM information from that recommender. According to Roger (1995) and Brown and Reingen (1987), information received from a strong tie is perceived as more credible than from a weak tie. Therefore, the receiver actively seeks information from the strong tie (Brown and Reingen 1987). WOM information from a strong tie has also been found to be more likely to influence the receiver’s purchase decision than from a weak tie (Bansal and Voyer 2000). De Bruyn and Lilien (2008) found that receivers are more likely to accept WOM coming from a strong tie than from a weak tie because the strong tie is perceived as a less risky source of information. For example, a receiver will be more likely to open an e-mail when a strong tie sends it, because “opening an e-mail from a strong tie should be perceived as less risky than opening an e-mail from a weak tie” (p.154).
Referral Rewards and Word-of-Mouth Receivers

Ryu and Feick (2007) investigate the effectiveness of referral reward programs to determine who should receive the referral rewards. They considered whether the reward is given to the recommender, the receiver, or both. They found that referral rewards could have different effects on the recommender based on tie strength. Specifically, varying the reward scheme with strong ties had little effect on referral likelihood. However, with weak ties, the effects of reward were differently on referral likelihood. Recommenders with weak ties to the receiver only responded well to reward programs when they alone received referral rewards. Recommenders with weak ties would not make referrals when receivers alone received referral rewards, and were unlikely to generate WOM without referral rewards.

However, Ryu and Feick (2007) did not consider the characteristics or behaviors of the receiver. Although they examine the recipients of the reward, they did not consider the resources of the receiver, such as expertise, perceived risk, tie strength, and attitude toward WOM. For example, a receiver may wonder why his friend recommends a specific product even though they are not close to each other. Hence, he may consider whether the reason why he recommends it is because of the referral reward or the benefits of the product. In addition, a receiver would not depend on the recommendation of a friend if he has expertise about the product.

Recent research examines the effect of referral rewards from the receiver’s perspective (Verlegh et al. 2013). They find that when a referral reward is not provided, receivers have a positive response to recommendations from both strong and weak ties. However, when given a referral reward without receiver’s recognition, receivers’ purchase likelihood decreases when the recommendation is made by a weak tie, but not when it is made by a strong tie. For strong ties,
referral rewards negatively affect the receiver’s response when the receivers know that the recommender is receiving a reward. In other words, receivers know the recommender’s ulterior motives in making the recommendation. Whether or not receivers know about referral rewards affect the receiver’s decision. Sun et al. (2014) examined the effect of a message about the recommender’s purchase before making the referral and about the existence of a referral reward. They found that knowing only information about the recommender’s purchase increases the receiver’s purchase likelihood, but knowing only information about the referral reward did not increase the receiver’s purchase likelihood. In addition, the receiver’s purchase likelihood did not increase when both messages were provided.

While the effect of referral rewards has been examined from both the recommender’s and the receiver’s perspective independently, there is no research that looks at the interrelationship between them. The overall goal of this dissertation is to create a theoretical framework designed to understand how recommenders and receivers react simultaneously if they know that recommenders receive referral rewards. Thus, this dissertation contributes to the WOM literature by bridging the gap between the recommender’s motivation and the receiver’s response when given referral rewards by integrating exchange theory and attribution theory. In addition, this dissertation seeks to find the best reward scheme for the firm’s profit by empirically testing actual purchases. Therefore, this dissertation empirically examines the effectiveness of referral rewards from the perspective of three parties: the recommender, the receiver and the firm.

Moreover, this dissertation examines the effects of tie strength, product value, and reward size as moderators on the effect of referral rewards. Specifically, this dissertation:

1) replicates the moderating effect of tie strength found in previous research,
2) serves as the first to identify the impact of product value in a referral reward context, and

3) analyzes the effect of reward size on the recommender’s referral likelihood, the receiver’s purchase likelihood, and the firm’s profit.

Finally, this dissertation provides important and novel insights into how firms incentivize consumers through referral reward programs and how incentives affect the firm’s profit.
Outline of Dissertation

In order to accomplish this objective, this dissertation reviews the psychology literature to develop a theoretical foundation that will help to explain both the recommender’s and receiver’s responses to referral rewards. Chapter 2 introduces the key constructs and theoretical background for developing the theoretical framework. Chapter 3 provides the model along with the presentation of the hypotheses. Chapter 4 presents study 1 and study 2 along with the results. Finally, Chapter 5 provides a discussion of the results and limitations of the current dissertation as well as future research directions.
CHAPTER 2

LITERATURE REVIEW

Intrinsic versus Extrinsic Motivation

A referral reward can be viewed as an extrinsic reward and a source of extrinsic motivation. Behavior is considered to be motivated by two different categories of causes: internal or personal causes and external or environmental causes (Kruglanski 1975). Intrinsic and extrinsic motivations have been widely studied in various fields, including education, psychology, economics and marketing. According to Ryan and Deci (2000), extrinsic motivation is defined as “a construct that pertains whenever an activity is done in order to attain some separable outcome” (p. 60). In other words, extrinsic motivation comes from outside of the individual. The satisfaction or pleasure from doing some activity may not be provided through the activity itself, but rather from getting a reward such as money, bonuses or good grades. Many studies have found that extrinsic rewards can influence behavior changes (Deci, Koestner, and Ryan 1999). In contrast to extrinsic motivation, according to Deci (1972), “[a] person is intrinsically motivated if he performs an activity for no apparent reward except the activity itself” (p. 217). In other words, people will be intrinsically motivated when the behavior itself is “inherently interesting or enjoyable” (Ryan and Deci 2000, p. 55).

Numerous studies have examined the effects of extrinsic rewards on intrinsic motivation (e.g., Deci, 1971, 1972; Higgins and Trope 1990; Kruglanski 1975; Lepper, 1981) since Deci (1971) suggested that extrinsic rewards could undermine people’s intrinsic motivation to engage in an interesting task. Deci (1971) conducted an experiment in which he investigated the effects
of extrinsic rewards on intrinsic motivation. He asked students to solve four puzzles in three sessions. The only difference was that students in the experimental group were paid one dollar per solved puzzle during the second session. In the third session (no money provided), although the researchers instructed students to continue to work on the puzzle solving, students who received money showed less subsequent intrinsic interest to work on the puzzles. However, the students who had not received money continued to work on the puzzles. According to Lepper et al. (1973), these effects of extrinsic rewards on intrinsic motivation are called the overjustification hypothesis. The overjustification hypothesis proposed that “a person’s intrinsic interest in an activity may be undermined by inducing him to engage in that activity as an explicit means to some extrinsic goal” (Lepper, et al. 1973, p. 130).

Several additional studies (Harackiewicz 1979; Ross 1975; Lepper et al. 1973; Kruglanski et al. 1971) have consistently supported Deci’s (1971) overjustification hypothesis. Lepper et al. (1973) found that when people have both extrinsic rewards and intrinsically interesting tasks to perform, they will discount their intrinsically interesting tasks and attribute their behavior to the extrinsic reward. Furthermore, Deci, Benware and Landy (1974) investigated how extrinsic reward size affects a person’s intrinsic motivation. They found that when people are given high extrinsic rewards, people’ intrinsic motivation tends to be lower, whereas when people are given low extrinsic rewards, people’ intrinsic motivation tends to be higher. Based on the overjustification hypothesis, we know that people tend to be less intrinsically motivated when they receive an extrinsic reward. In terms of this study, when receivers know that recommenders have received referral rewards as extrinsic reward for their recommendation, then receivers will be more likely to attribute their behavior to the extrinsic reward and not to intrinsic motivation.
Attribution Theory

Attribution theory has been a popular approach in various fields (e.g., psychology, social psychology, consumer behavior) and provides one of the most important “means of dealing with questions of social perception” (Kelley 1973, p.107). According to Kelley (1973) attribution theory is “a theory about how people make causal explanations, about how they answer questions beginning with ‘why?’” (p. 107). According to Harvey and Weary (1984), people make attributions to understand and exert control over their environment. In brief, Harvey and Weary (1984) define attribution theory as “concerned with attempts to understand the factors involved in perceived causation” (p. 428).

Attribution theory, also called “naïve analysis,” was first proposed as a theoretical approach by Heider (1958). Heider (1958) believed that people act as “naïve psychologists” to understand the social world around them and explain the reasons for a particular event that has occurred. Thus, attributions can be described as explanations that people make about the causes of their own and other people’s behavior. According to Heider (1958), there are two potential causes of behavior: person (or internal) causes and situation (or external) causes. Specifically, people’s behavior is affected by situational factors (e.g., physical environment and other people) or personal factors (e.g., motives, and personality).

Weiner (1974) provided another popular psychological theory of attribution. Weiner (1985 and 1986) identified causal dimensions and developed the causal structure proposed by Heider (1958) in the context of achievement behavior. In achievement-related contexts, Weiner made a basic assumption that “the search for understanding is the (or a) basic ‘spring of action’” (Weiner 1979, p.3). Based on this assumption, Weiner believed that people want to understand
the causes of events in their environment, in particular the causes of success and failure. He proposed a three dimensional classification of causality to explain attribution theory: locus, stability and controllability. The first dimension, locus, considers the internal-external dimension, consistent with Heider’s (1958) proposition that the two general properties of causes are the person and environment. Weiner considers effort, ability and mood as examples of internal causality, and luck and difficulty of the task as examples of external causality in the locus dimension.

The second dimension of causality proposed by Weiner et al. (1971) is stability. The stability dimension designates causes as constant or changing over time. Weiner et al. (1971) believed that some causes for behavior may change over time or fluctuate between time frames and situations. For example, an individual always has the same ability, regardless of the situation, but may expend different amounts of effort in different situations. In this case, ability would be a stable cause, while effort would be an unstable cause that fluctuates over time. Weiner et al. (1971) characterized these four causes within a 2 x 2 categorization scheme, identifying the main causes as ability, effort, task difficulty and luck (see Table 1).

Table 1. Weiner’s Original Attribution Model

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<tr>
<td>Stable</td>
<td>Ability</td>
<td>Task difficulty</td>
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<td>Unstable</td>
<td>Effort</td>
<td>Luck</td>
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The third dimension of causality is controllability (Weiner 1979). Controllability refers to an individual’s perceived control over an outcome. In other words, a controllable factor, such as bias or effort, can be controlled and changed by the individual, whereas an uncontrollable factor, such as ability, task difficulty or luck, would not be able to be controlled or easily changed. Based on these three dimensions with each having two levels (2 locus x 2 stability x 2 control), Weiner (1979) extended his classification of attributions into eight types (see Table 2).

Table 2. Causes of Success and Failure, Classified According to Locus, Stability and Controllability

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<td>Controllable</td>
<td>Typical Effort</td>
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In line with Weiner’s theory, Graham (2004) investigated how students attribute their success or failure at learning French among English students aged from 16 to 19. Graham (2004) found that students who succeed at a task attribute their success to high effort, high ability, and effective learning strategies as internal, unstable and controllable factors based on the table above. On the other hand, students who had lower levels of achievement attributed their failure to low ability and task difficulty as the main causes as external, stable and uncontrollable factors.
In summary, Weiner’s attribution theory suggests that individuals make attributions about behaviors, especially achievement behaviors, based on three criteria. First, the behavior is attributed to internal or external causes. Second, the behavior is classified as stable or unstable. Finally, the individual determines whether the behavior is controllable. The combination of these three dimensions leads to a range of possible attributed causes, such as ability, effort, task difficulty and luck.

**Kelley’s Covariation Model**

Since Heider (1958) introduced the notion of attribution to social psychology, many psychologists have attempted to explain why and how people make attributions. Kelley (1973) proposes a covariation principle to explain the way people make attributions. According to Kelley (1973), “an effect is attributed to the one of its possible causes with which, over time, it covaries” (p.108). In other words, after observing changes in individual behavior across time, places, and situations, an individual is able to make causal attributions about what caused their behavior by looking at what other factors occur consistently across times, places, and situations.

Kelley (1973) first proposed that people need to consider more than one piece of information when they make casual attributions about a certain event or situation. Kelley added time as a factor into Heider’s (1958) theory. Thus, he proposed three causes to which behavior is attributed, persons, entities (situations), and times, to explain complex configurations of events with what he calls a variance cube. These three causes can each be constant or changing to inform how people make attributions.

Based on this concept, Kelley (1973) believes that attributors use three types of causal information to influence their judgments: consensus, consistency, and distinctiveness. Consensus
is the extent to which other people behave the same way in the given situation. Consistency refers to whether people behave the same way every time a situation occurs. Finally, distinctiveness is the extent to which a person changes his behavior when the situation changes. According to Kelley, each of these factors can be either high or low in a given situation. After combining these three sources of information into a pattern, people can use patterns to make dispositional (internal) or situational (external) attributions. For example, Kelley proposed that internal attributions are more likely used when consensus is low, consistency is high, and distinctiveness is low. On the other hand, external attributions are more likely made when consensus is high, consistency is high, and distinctiveness is high. In sum, Kelley believes that the casual attributions people make depend on the available information, and that the inferences they draw from this information is the key to making causal attributions.

A Model of Attribution Theory

Kelley and Michela (1980) suggest a general model of the attribution field, as shown in Figure 1, and reviewed both antecedents and consequences of attributions for behavior. They considered information, belief, and motivation as antecedents of causal attribution, and behavior, affect, and expectancy as consequences of people making a particular attribution. This model assumes that causal attributions play a central role in the event. They also use the term “attribution theories” to refer to analyses concerned with the effect of various factors on perceived causation and the term “attributional theories” to refer to analyses focusing on the consequences of attributions.
There are three factors as antecedents of causal attribution identified by Kelley and Michela (1980): information, beliefs, and motivation. Each factor is defined and described below.

**Information**

The first antecedent factor is information. According to Fiske and Taylor (1991), “attribution theory deals with how the social perceiver uses information to arrive at causal explanations for events. It examines what information is gathered and how it is combined to form a causal judgment.” (p. 23). In other words, people use various information sources as data to make causal attributions about behavior. As mentioned above, Kelley (1973) suggests that attributors can infer causes of a certain situation or event based on three types of causal information: consensus, distinctiveness, and consistency.
**Consensus:** whether a particular entity evokes a similar behavior in all different people. Thus, other people behave the same way in the given situation.

**Distinctiveness:** whether the unique behavior occurs in a particular stimulus. This means that a person changes his behavior when the situation changes.

**Consistency:** whether the same behavior occurs whenever the entity is presented. This means that whether or not people behave the same way every time a situation occurs.

According to Kelley, people consider such information as causes for a certain event: distinctiveness over entities, consensus across persons, and consistency over time and modality. With attribution to the entity (situation), the persons and time are related to the three types of information, which has two different conditions as explained above. Several researchers (e.g., McArthur 1972; Williams et al. 1985) have supported Kelley’s theory empirically. For example, McArthur (1972) tested the effect of three different types and two levels of information on the nature of casual attribution and found that people use consistency and distinctness information more than consensus information when people make an internal or external attribution. However, Cha and Nam (1985) found that Korean participants use more consensus information, contrary to McArthur’s finding. In addition, when raters make an appraisal of performance, they look for the three different types of information in differing amounts (Williams et al. 1985).

**Beliefs**

Attributions are also affected by individual’s beliefs. According to Kelley and Michela (1980), “The attributor approaches most attributional problems with belief about the cause and effects involved” (p. 468). Causes are usually related to pre-existing suppositions and
expectations. Specifically, people may have suppositions about certain causes when given a certain effect, while people have an expectation about the effects when given certain causes (Kelley and Michela, 1980). In terms of attributional beliefs, many studies (e.g., Meyer 1980; Passer, Kelley, and Michela 1978; Frieze and Weiner 1971) conducted in educational settings have focused on the causes of success and failure. Weiner (1979) found that beliefs about success and failure that are influenced by stable causes (e.g., ability) lead to better future performance than beliefs that are related to unstable causes (e.g., luck). In addition, beliefs about the causes for success and failure in education influence how the students improve their performance on an achievement task in the future. Frieze and Snyder (1980) and Asmus (1986) supported Weiner’s finding that the student’s beliefs about success and failure are inclined towards ability (internal-stable) rather than effort (internal-unstable).

**Motivation**

People can also be motivated to make certain attributions about themselves or their behavior (Kelley and Michela 1980), especially when evaluating their behavior based on outcomes or performance (positive: success vs. negative: failure). However, the motivation people have depends on the causes for success and failure (Weiner 1971). Motivations for achievement tasks most often depend on one’s own ability and effort. For example, one’s previous success caused by hard work motivates people to continue to work hard in the future (Dalal et al. 1986). However, when motivation is based on outcomes, success may be attributed by people to themselves and failure to external or situational causes. For example, even though I know that studying more will better prepare me for the test, I am motivated to blame my failing grade on the teacher or the difficulty of the test because I do not want to admit to myself that I
could have done better if I had just studied harder. In sum, people use internal attributions (dispositional causes) for success and external attributions for failure. This can also take the form of a self-serving bias, which will subsequently be discussed.

In addition, motivation based on achievement outcomes is associated with emotions. Weiner (1985) found that, “success was associated with the affect of happy regardless of the cause of that outcome, and failure seemed to be related to frustration and sadness” (p. 561). Based on this concept, people put effort to help other’s performance and then feel happy for the success. Or people may not put effort into an important task and then feel guilty for the failure. Thus, emotions play an important role as attributional causes that motivate success or better performance at the achievement task.

Consequences

On the consequences side, Kelley and Michela (1980) assume that attributions mediate the effect of information, beliefs, and motivation on behavior, affect and expectancy, as mentioned above. In this section, I focus on attribution theory in an achievement-motivation context because Weiner’s studies of achievement motivation (1978, 1979, and 1985) initially identified the effects of causal attribution on affect and expectancy.

Behavior

Casual attribution can predict the behavior of other people and explain their behavior as a consequence of attributions. Several studies have examined the effect of causal attribution on achievement behavior (e.g., Dweck 1975; Weiner, Heckhausen, and Meyer 1972). Weiner (1974) provided the popular psychological theory that considered the effect of attribution on
achievement behavior. He believed that perceiving the causes of success and failure can influence how people perform their task in the future. For example, if you received an 'A' on a quiz and attributed it to the amount of effort you put in, you will likely continue to work hard on all of your quizzes to ensure your success. On the other hand, if you attribute your ‘A’ to luck, you are not likely to increase your effort in the future. Thus, causal attribution you make might directly affect the change of your behavior.

**Affect**

Weiner (1985) also proposed a relationship between attributional thinking and specific feelings. He suggested a basic sequence of “attribution-affect-behavior,” and that “attributions play a key role in affective life” (p. 563). For example, passing an exam will make me happy, which might result in increased effort toward achievement tasks in the future, while attributions that generate negative affect, such as frustration and sadness, would have the opposite effect. In addition, several researchers have examined the relationship between affect and consumer behavior. For example, Casado Diaz and Mas Ruiz (2002) examined the effect of two affective factors (anger and satisfaction with service) on consumer’ behavioral intentions after a failure situation in flight service. They found that a passenger’s anger is a mediator of the relationship between attributions made about the failure and behavioral intentions, as well as decreased satisfaction, and complaining behavior, and non-repurchase. Bitner (1990) applied the attribution concept to expectation disconfirmation. She also emphasized the role of causal attribution as a mediator between expectation disconfirmation and satisfaction of the customer.
Expectancy

The last factor as consequence of casual attribution is expectancy. Weiner et al. (1971) argued that the causal attributions people make influence expectancy of future success or performance. In Weiner’s study, expectancy is defined as a belief about future success or future need in a helping behavior context. Several researchers have demonstrated direct effects of causal attribution on expectancy (e.g., McMahan 1973; Meyer 1980; Valle and Frieze 1976). Consistent with Weiner’s findings (1971), Meyer (1980) showed that when students in high school consistently passed exams, they attributed their success to stable causes such as intelligence and study habits, so their expectancy of success in college was greater. On the other hand, when students failed exams, they attributed their failure to external factors such as luck and mood, so their expectancy of success in college was lower. However, Kanazawa (1992) argued that outcome valence does not have an effect on causal attribution. Rather, he suggested that when people face unexpected outcomes, they can use their subsequent spontaneous attributional activity in order to determine the reasons why they did succeed or fail. If people already know why they succeed or fail, then the outcome does not mean anything. Thus, the effect of causal attributions on future expectancy is stronger when there is uncertainty about the cause.

As shown in the attribution model proposed by Kelley and Michela (1980), early researchers showed how people make attributions in general and explored what factors people use to make causal attributions. However, they also recognized that attributions do not necessarily reflect reality and can be colored by a person's own perspective.
Attribution Biases

Individuals’ attributions about their own and others’ behavior are not always accurate. They are prone to perceptual errors and biased interpretations. First, there is the self-serving bias, which leads to “individuals taking responsibility for successful task outcomes but blaming circumstances or other persons for failed tasks outcomes” (Sedikides, Campbell, Reeder, and Elliot 1998). In brief, people are more likely to attribute their own success (a positive event) to personal factors, and to let the situation account for their failure (a negative event). For example, students are more likely to attribute a good grade on an exam to their own intelligence or good study habits, but they attribute a bad grade to the professor’s poor teaching ability or a poorly written exam. On the other hand, people tend to attribute an other’s success (a positive event) to situational factors, and tend to attribute an other’s failure (a negative event) to personal or dispositional factors. For example, if my friend gets a good grade on an exam, I am likely to conclude that the test was easy, but if she fails an exam, I am likely to think that she is not smart enough to pass the exam.

Second, the fundamental attribution error is one of the common biases discussed in the attribution literature. The fundamental attribution error refers to “the tendency for attributers to underestimate the impact of situational factors and to overestimate the role of dispositional factors in controlling behavior” (Kahneman, Slovic, and Tversky 1982). Specifically, people tend to attribute others’ behavior to their characteristics or personality, rather than to situational factors, especially for negative events. For example, if my friend fails a test that both of us have taken, I am likely to conclude that he is lazy or did not study, not that the test was too difficult. On the other hand, people tend to attribute others’ success to situational factors, not to personal
factors. In the same example as motioned above, if my friend gets a good grade on an exam, I am likely to conclude that the test was easy.

**Actor-Observer Bias**

While all of us have attribution biases, those attribution biases also lead us to make different attributions depending on whether we are the actor or observer. The notion that causal explanations for self-behavior differ from explanations of the same behavior performed by others has been widely accepted in psychology literature. The attributional difference between self and others is referred to as the “actor-observer” effect. In the attribution literature, Jones and Nisbett (1971) suggest a basic hypothesis that “actors tend to attribute the causes of their behavior to stimuli inherent in the situation, while observers tend to attribute behavior to stable dispositions of the actor” (p. 93). In other words, actors try to understand their own behavior and to make the appropriate causal attributions across different situations, whereas observers tend to watch the actor’s behavior and think about the reason why this actor behaves this way in this situation. Thus, there can be different explanations for behaviors from both within the same situation. This is called the actor-observer bias, which commonly occurs when people are forming attributions about behavior (Jones and Nisbett 1971). This actor-observer bias is exactly consistent with both the self-serving bias and the fundamental attribution error. For instance, when I am the actor, I exhibit a self-serving bias and attribute my own failures to situational factors, but when I am the observer, I make the fundamental attribution error and attribute others’ failures to personal factors.

Jones and Nisbett (1972) identified three factors which are different between actors and observers: their visual perspectives, their motivation, and the information available to them.
Many studies have conducted assessments of actor-observer differences with these three factors throughout the past decade. First, people as actors or observers use different visual perspectives to gather different information in the given situation (Jones and Nisbett 1972). These visual perspectives influence the manner in which people appraise the situation. According to Jones and Nisbett (1972), actors tend to attribute their behavior to environmental causes, whereas observers tend to consider the actor’s behavior as caused by personal traits, as mentioned above. This may be because both the actor and the observer don’t actually see themselves behaving. For example, when I am the actor, I am focused on the situational factors, which are more salient to me because that is what I am seeing, given my visual perspective. On the other hand, when I am the observer, I am focused on watching the person, rather than his surroundings. This is one reason why I tend to make more personal attributions for others’ behavior and more situational attributions for my own behavior. The situation is salient when I am the actor, and the person is salient when I am the observer.

This basic proposition postulated by Jones and Nisbett (1971) has been supported by several studies (Arkin and Duval 1975; Regan and Totten 1975; Nisbett, Caputo, Legant, and Maracek 1973, Storms 1973) that examined the visual perspectives of actor and observer. To test visual perspectives, Storms (1973) used a videotape of an event. When observed live, actors attributed causality to situational factors more than observers did. However, when both actors and observers saw a videotaped replay of the actor’s behavior in a conversation, their attributional differences were exactly the opposite. The actors attributed their own behavior to less situational factors, while the observers’ attributions became more situational. When actors or observers saw the videotape of the event, they could have a different point of view and gain new information about the behavior. Arkin and Duval (1975) manipulated whether participants were
videotaped and found that when the environment was stable, actors attributed more causality to the situation in the no camera condition than in the camera condition, while observers attributed less to the situation in the no camera condition than in the camera condition.

The second factor identified by Jones and Nisbett (1972) is differences in the information about the behavior, event, and context that are available to actors and observers. Actors may have more information about a particular event than observers, and actors know their own behavior or feelings in different situations through previous experience, while observers may have limited or no information about a particular event and must rely more on the observed behavior itself. Thus, actors may perceive “cross-situational inconsistencies” in their own behavior and subsequently make more attributions to situational factors in an event (Watson, 1982, p. 683). On the other hand, observers may perceive more consistency of behavior and focus on dispositional traits as attributed causes (Lenauer et al. 1976; Nisbett et al. 1973). In addition, Eisen (1979) estimated actor-observer differences in the information availability to understand the causes of their own behavior with valence of behavior. Consistent with this difference, actors showed positive behaviors to less distinctively and more consistently than did observers, whereas they reported negative behaviors to more distinctively and less consistently than did observers. However, he showed that actors and observers have no difference in casual attributions given the same situation. Specifically, when both actors and observers have all three types of information (consensus, distinctiveness, and consistency) informed by actors, they both attribute positive behavior to internal factors, and not negative behavior. Alternatively, actors’ and observers’ attributions did not show any difference regardless of valence (positive and negative) and causal attribution (external and internal) when subjects were given the information from observers.
The third possible factor to explain differences between actors and observers is motivation that might induce actors to emphasize external causes and internal causes for observers (Jones and Nisbett 1972). Although the situation or event actors face is dynamic and changing over time, actors are consistently concerned with their own behavior through their experience. In other words, the actor is motivated to explain discrepancies in his own behavior over time, so he tends to look to the surrounding situation as an explanatory factor. On the other hand, the observer is motivated to understand the actor’s behavior in this specific context, so he tends to look primarily to the actor as an explanatory factor.

All of these factors conclude that actors tend to attribute their own behavior to more external factors, whereas observers tend to attribute actors’ behavior to more internal factors. However, researchers have disagreed with Jones and Nisbett’s (1972) basic hypothesis (Bradley 1978; Miller & Ross 1975; Riess, Rosenfeld, Melburg, and Tedeschi 1981). They have argued that actors use more dispositional attributions (internal attribution) for their own positive behaviors and more situational attributions (external attribution) for their own negative behaviors. This tendency seems to be based on outcome valence: success or positive behavior and failure or negative behavior. These results are explained by using self-esteem motives or the self-serving bias, which suggest that individuals are motivated to enhance their self-esteem with good outcomes and protect their self-esteem from bad outcomes (Tice 1991). On the other hand, observers tend to attribute the success of others to situational factors and the failure of others to personal factors.

In terms of this study, when actors recommend a specific product, receivers, as observers, are likely to attribute the recommender’s recommendation to situational factors, like the referral
reward, rather than personal factors, like brand loyalty, since I assume that the recommendation is positive. In other words, when the receivers knows that the recommender is receiving a reward if the receiver purchases, the receiver is more likely to attribute the recommender’s behavior to the extrinsic reward (referral reward), and not to intrinsic motivation. When the receiver is also given a referral reward, he also attributes his purchase to the referral reward because extrinsic rewards undermine people’s intrinsic motivation (Deci 1971).
CHAPTER 3

HYPOTHESES DEVELOPMENT

Effect of Reward Scheme and Tie Strength on Recommender’s Referral Likelihood

No Reward

In this condition, a recommender does not receive any rewards from a firm. People make a referral about products, service and companies because they like to, it makes them feel good. In other words, the recommender makes a referral motivated by intrinsic motivation. Ryan and Deci (2000) argue that people are more likely to be motivated when the thing people do is inherently interesting or enjoyable. Without referral rewards, I assume that the recommender might enjoy sharing the product experience. Thus, the recommender makes a referral of a good product or service provided by a firm even though they incur some cost related to the time and effort in communicating (Jin and Huang 2014). Many studies (Brown and Reingen 1987; Frenzen and Nakamoto 1993; Bansal and Voyer 2000; Ryu and Feick 2007; Bruyn and Lilien 2008; East et al. 2008) find that tie strength plays an important role in spreading WOM and demonstrate a positive relationship between tie strength and WOM. Specifically, spreading WOM is more likely to occur from a strong tie than from a weak tie (Ryu and Feick 2007; Wirtz and Chew 2002; Frenzen and Nakamoto 1993; Brown and Reingen 1987). In conclusion, although the recommender is willing to make a recommendation to strong ties more than to weak ties when they experience a good product, they are less likely to make a referral without referral rewards.
In this condition, the recommender only receives the rewards for referral from a company after the receiver purchases a recommended product. According to Deci (1971), the recommender attributes their own behavior to the reward, which undermines their intrinsic motivation. Homans (1974) emphasized that individuals are motivated to take some action when they are rewarded. In more detail, people consider the perceived benefit (reward) and the cost of the exchange when they take some action, which is called exchange theory. Therefore, according to this theory, people will make referrals when the expected rewards they perceive are greater than the perceived cost (Frenzen and Nakamoto 1993).

This reward scheme is also likely to be moderated by tie strength. With strong ties, the recommender should be concerned about the benefit the receiver can get and might feel uncomfortable because they only receive the rewards. Thus, the recommender would be less likely to make a referral than if the receiver also received a reward. Therefore, I expect that this reward scheme with strong ties will be less effective than Reward Both, but greater than No Reward.

On the other hand, with weak ties, a recommender can be motivated by self-interest (Jin and Huang 2014; Ryu and Feick 2007). Recommenders attempt to maximize their benefits and minimize their costs (Ryu and Feick 2007). Referral rewards motivate the recommender to make referrals more to weak ties than to strong ties. In terms of the relationship between them, the recommender is less likely to be concerned about the weak tie’s welfare. Thus, I expect that the highest referral likelihood will be for Reward Only the Recommender when ties are weak.
**Reward Both**

When referral rewards are provided to both the recommender and the receiver, the effect of rewards will be maximized compared to other reward schemes because both can receive the rewards as a mutual economic benefit if the receiver purchases the product. In terms of tie strength, the recommender will make a recommendation to a strong tie because he wants to share this opportunity which is a good benefit. This is likely even though there could be a risk to the relationship with the receiver if the recommended product or service does not satisfy the receiver (Ryn and Feick 2007). From the recommender’s perspective, the recommender feels intrinsically motivated to help others as well as receives the extrinsic reward when he provides a referral. Based on these explanations, I expected the highest referral likelihood for Reward Both when ties are strong. On the other hand, for weak ties, the recommender will still make a recommendation even though he is not as concerned with their relationship. He still feels comfortable or good even if the weak ties are not satisfied with the recommended product because the receivers also get rewards. I expected that this reward scheme with weak ties will be less effective than Reward Only Recommender, but greater than No Reward.

Hypothesis 1a

**With strong ties:** The referral reward program rankings on referrals will be as follows: Reward Both will be highest, followed by Reward Only the Recommender and No Reward.

Hypothesis 1b

**With weak ties:** The referral reward program rankings on referrals will be as follows: Reward Only the Recommender will be highest, followed by Reward Both, and No Reward.
**Effect of Reward Scheme and Tie Strength on Receiver’s Purchase Likelihood**

**No Reward**

In this condition, no reward is offered to either the recommender or the receiver. The information the receiver has is that the recommender recommended this product with no extrinsic reward for doing so. According to Deci (1972), people are intrinsically motivated if they perform an activity without a reward. Therefore, the only possible attribution the receiver can make is that the recommendation was intrinsically motivated.

Since recommending a product is a positive behavior (Sedikides, Campbell, Reeder, and Elliot 1998), based on the self-serving bias discussed in chapter 2, the recommender is likely to attribute their own behavior to more dispositional or personal factors. The receiver is likely to believe that the recommender genuinely liked the product and thought the receiver would as well. Thus, the receiver knows that the recommender did not receive a reward, and therefore attributes the recommendation to intrinsic motivations, so his likelihood of purchase will be high.

The purchase behavior of receivers will be same as the effect of spreading WOM in tie strength. When given the recommendation, the receiver with a strong tie is more likely to purchase the product than with a weak tie because the receiver’s purchase decision is based on trusting the recommender, and he is more likely to trust a strong tie.

**Reward Only the Recommender**

In this case, the receiver knows that the recommender is receiving a reward. From the fundamental attribution error as discussed in chapter 2, people tend to attribute others’ positive behaviors to situational factors, not to personal factors. In other words, the receiver is likely to
attribute the recommender’s recommendation to the referral reward as a situational factor, and not to personal factors, like brand loyalty. In addition, according to overjustification hypothesis proposed by Deci (1971), when the recommenders receive the referral reward as an extrinsic reward, they attribute their own behavior to the referral rewards and not to intrinsic motivation. Based on the fundamental attribution error and the overjustification hypothesis, the receiver is more likely to attribute the recommender’s recommendation to the extrinsic reward, and not to intrinsic motivation. Therefore, the receiver is less likely to trust the recommendation, making him/her less likely to purchase.

This is also likely to be moderated by tie strength. Specially, with a weak tie, a receiver is less concerned about the relationship with the recommender. Since the receiver does not receive the referral reward, only the recommender does, and the receiver is not concerned about the recommender benefitting, I expect the lowest purchase likelihood for Reward Only the Recommender when ties are weak. On the other hand, people are more likely to have greater trust in strong ties (Levin and Cross 2004) and concern about the relationship. In addition, people are more likely to listen to each other’s needs and do not expect anything in return (Frenzen and Nakamoto 1993). Thus, although the receiver is less likely to trust the recommendation, he may still buy the product. I expect that this reward scheme with strong ties will be less effective than Reward Both, but greater than No Reward.

*Reward Both*

The information the receiver has is that both the recommender and the receiver are receiving a reward together. The receiver may still attribute the recommender’s behavior to the reward. Like the recommenders, however, the receivers are more likely to attribute their own
activities to extrinsic rewards and decrease their intrinsic motivation such as interest in the product and brand. Deci et al. (1974) empirically found that individuals become more extrinsically motivated and be less intrinsically motivated when given extrinsic rewards. Therefore, although the receiver is less likely to trust the recommendation, the likelihood of the receiver purchasing will be higher regardless of tie strength. The reason is that the receiver will purchase in order to get the reward regardless of whether the receiver attributes the recommendation to intrinsic or extrinsic motivation on the part of the recommender. Thus, I expect the highest product purchase with the Reward Both scheme for both strong and weak ties.

Hypothesis 2a

With strong ties: The referral reward program rankings on receiver’s purchase behavior will be as follows: Reward Both will be highest, followed by Reward Only the Recommender, and No Reward.

Hypothesis 2b

With weak ties: The referral reward program rankings on receiver’s purchase behavior will be as follows: Reward Both will be highest, followed by No Reward, and Reward Only the Recommender.

**Moderating Effect of Product Value on Recommender’s Referral Likelihood**

Customer-perceived value is the “consumer’s overall assessment of the utility of a product based on perceptions of what is received and what is given” (Zeithaml 1988, p. 14). In addition, De Matos and Rossi (2008) defined perceived value as a trade-off between benefits and
costs.” Many researchers have found that customer satisfaction leads to WOM (e.g. Oliver 1980) and that perceived value is directly related to customer satisfaction. For example, customer-perceived value is one of considerable factors that influence purchase intention (Chang and Wildt 1994), and Yang and Peterson (2004) consider perceived value to be a key factor in significantly influencing customer satisfaction and customer loyalty in the online market. However, perceived value has received relatively little attention in the WOM literature. A few studies found that customers who perceived high value are willing to spread positive word of mouth (Keiningham et al. 2007; McKee et al. 2006; Hartline and Jones 1996). Therefore, I expect that when recommenders are satisfied with their perceived high value, they are willing to increase WOM regardless of tie strength. Thus, referral reward programs are less likely to influence the recommender’s response.

Hypothesis 3a

When recommenders perceive high value, the referral reward program rankings on referrals will not significantly differ regardless of tie strength.

On other hand, consumers are dissatisfied when products perform worse than expected (Kopalle and Lehmann 2001). Dissatisfied customers are more likely to engage in negative WOM than satisfied customers (e.g. Anderson 1998; Richins 1983). Research has suggested that negative WOM has the power to influence consumers’ behaviors (e.g., Haywood 1989). Previous research has also confirmed that dissatisfied consumers are driven by referral rewards (Garnefeld et al. 2013) and immediately accept rewards when they are dissatisfied because “giving immediate rewards would enhance affective value and more effectively buffer the displeasure” (Keh and Lee 2006, p. 129). In addition, the consumers experience a loss when the
product has low value, and the opportunity to receive the reward helps them recoup that loss and return to a state of equity. Dissatisfied consumers are less likely to increase referrals to strong ties because they are concerned about the relationship with strong ties by recommending low value products. When receivers attribute their dissatisfaction to the recommender, their relationship might be break up. However, with weak ties, dissatisfied recommenders can be most actively motivated by self-interest when given referral rewards. The reasons for this are (1) dissatisfied consumers do not need to take care of their weak ties and (2) they are likely to try to minimize their loss by earning referral rewards. Therefore, I expect that both Reward Both and Reward Only the Recommender increase referral likelihood to weak ties compared to No Reward when the value is low.

Hypothesis 3b

When recommenders perceived low value,

(a) the referral reward program rankings on referrals will not significantly differ for strong ties.

(b) the referral reward program rankings with weak ties on referrals will be as follows: Reward Both and Reward Only the Recommender will not significantly differ and will be greater than No Reward.

_Moderating Effect of Reward Size on Recommender’s Referral Likelihood_

Previous research has yielded mixed results regarding the relationships between reward size and referral likelihood. Only a few researchers have examined reward size in the referral
reward context. For example, Ryu and Feick (2007) did not find an effect of reward size on referral likelihood, while Jin and Huang (2014) showed a significant effect of reward size on referral likelihood; especially the Reward Both scheme increased referrals more when consumers were given large rewards than small rewards. Jin and Huang (2014) also found an interaction effect between reward size and brand strength. Compared to weak brands, customers who perceived strong brands were likely to increase referrals more when they were given large rewards. In addition, there exist some differences between these two studies. Ryu and Feick (2007) used a scenario-based experiment without cash while Jin and Huang (2014) offered customers referral rewards in cash.

The effect of reward size has also been examined with customer loyalty and the results were again mixed. Garnefeld and his colleagues (2013) used a phone credit worth €10 and found that referral programs increase attitudinal and behavioral loyalty when consumers are given large rewards whereas rewards only increase behavioral loyalty when consumers are given small rewards. However, Kuester and Benkenstein (2014) used a scenario-based experiment without financial rewards and found the opposite results, that referral rewards have no impact on the recommender’s attitude and loyalty with large rewards while small rewards increase the recommender’s attitude and loyalty.

I expect that there is a cash effect (Shen and Takahashi 2013) in these experiments that examine the effect of reward size. The reason for this expectation is that “using cash may cause subjects to more carefully consider the consumption they are sacrificing” (Shen and Takahashi 2013, p. 95). In addition, a scenario-based approach might have a hypothetical bias in the difference between stated and revealed values. For example, “in experimental studies, this
typically involves payment for a good by the participant. Most studies of hypothetical bias assume that these cash-based estimates are unbiased. On the other hand, stated or hypothetical values refer to survey responses that lack any salient economic commitment” (Murphy et al. 2005, p. 323). This dissertation uses cash as a reward, so based on previous research explained above, I expect that a large reward will have more impact on recommender referrals.

Hypothesis 4

A larger reward will have the same pattern of effects as a smaller reward, but the magnitude of the effects will be greater.

Moderating Effect of Reward Size on Receiver’s Purchase Likelihood

From the receiver’s perspective, I expect that large rewards will also increase receivers’ purchases because large rewards could increase the extrinsic motivation of receivers. The receiver is also more likely to attribute the recommender’s recommendation to the extrinsic reward, and not to intrinsic motivation. However, a large reward may also diminish the impact of the recommendation on the receiver’s purchase due to the influence of overjustification (Bem 1972). The receiver is less likely to trust the recommendation when recommenders only receive a reward. I therefore expect that a larger reward size will also have more impact on receiver purchases.

Hypothesis 5

A larger reward will have the same pattern of effects as a smaller reward, but the magnitude of the effects will be greater.
Effect of Reward Scheme, Recommender Referrals, and Receiver Purchases on Firm Profit

The manager rationally anticipates the customer’s purchase behavior and takes this into account when choosing a referral reward scheme that maximizes the firm’s profits. From the firm’s perspective, managers must consider the economic benefits of the referral reward scheme. Although two existing papers (Biyalogorsky et al. 2001 and Kornish and Li 2010) discussed in chapter 1 have identified the optimal referral rewards scheme based on the recommender’s referral likelihood, this paper proposes the optimal referral reward scheme based on the receiver’s purchase likelihood. The model uses a simple equation as follows.

Firm’s Profit = Recommender’s Purchase* Product Price + Receiver’s Purchase*Product Price – Referral Rewards

I assume that the recommender’s referral likelihood and the receiver’s purchase likelihood follow the ranking suggested by hypothesis 1 and 2 in regards to reward scheme and tie strength. Based on hypothesis 1 and 2, I hypothesize:

Hypothesis 6a

With strong ties: The referral reward program rankings on firm’s profit will be as follows: Reward Both will be highest, followed by Reward Only the Recommender, and No Reward.

Hypothesis 6b

With weak ties: The referral reward program rankings on firm’s profit will be as follows: Reward Both will be highest, followed by No Reward, and Reward Only the Recommender.
In addition to the reward scheme, the size of the reward is also likely to influence the firm’s profit. The reward money is a cost the firm has to pay for customers, and a larger reward will be more costly for the firm regardless of its effectiveness. The Reward Both scheme is especially influenced by reward size. I therefore hypothesize:

Hypothesis 7a

When a reward is large and ties are strong, Reward Both will increase the firm’s profit more than Reward Only the Recommender.

Hypothesis 7b

When a reward is large and ties are weak, Reward Only the Recommender will increase the firm’s profit more than Reward Both.
CHAPTER 4

EXPERIMENTS

In order to test the hypotheses developed in Chapter 3, two laboratory experiments were conducted to combine recommender decisions and receiver responses. The experiments varied who receives the referral reward (no reward, only the recommender, both the recommender and the receiver), and examined how the reward scheme influences the recommender’s referral likelihood (recommend or not recommend) and the receivers’ product purchase likelihood (purchase or not purchase). The tie strength between recommenders and receivers also was manipulated as a moderator variable and product value was also used as a moderator. The research design of the experiment was a 3 (reward recipient reward: no reward, only the recommender, both the recommender and the receiver) x 2 (tie strength: weak vs. strong) x 2 (product value: high vs. low) between subjects design. In each round, pairs of subjects were randomly generated as each participant was randomly assigned as either recommender or receiver. The reward scheme and tie strength were randomly assigned for each pair and this assignment was consistent across 20 decision rounds. Furthermore, the reward size was held constant in each study: study 1(25 cents) and study 2(50 cents). A total of 206 undergraduate students at Kent State University participated in this research for extra credit and cash: 124 in Study 1 and 82 in Study 2.

Study 1

**Independent Variables**

*Referral Reward Recipient.* Three referral reward recipient conditions were manipulated to represent no reward, only the recommender, and both the recommender and the receiver. These
referral reward conditions are very similar to two previous studies (Ryu and Feick 2007; Verlegh et al. 2013). In addition, each reward scheme used $0.25 as a reward in Study 1.

_Tie strength._ I manipulated the relationship between the recommender and the receiver. There were two types of tie strength: strong tie (close friend or family) and weak tie (distant friends). The relationship between the recommender and the receiver was manipulated using the Relationship Closeness Induction Task (RCIT) procedure developed by Sedikides, Campbell, Reeder, and Elliot (1999a). The RCIT is “a structured self-disclosure procedure for the induction of relationship closeness” (p.1). Previous research (Campbell et al., 2000; Gaertner and Schopler, 1998; Sedikides et al., 1998, 1999) has successfully used the RCIT to generate close relationships among strangers. Based on these successful results, this study used the RCIT to manipulate tie strength, specifically to induce strong ties among subjects.

_Product Value_: The price of the product was held constant at $1.10 across all conditions and all rounds. The value of the product was randomly generated by the computer program (Z-tree software, Fischbacher 2007) to vary between $0.00 and $2.00. The variable was dichotomized by treating values that were greater than the product price ($1.10 < product value) as high values and values that were less than the product price (product value ≤ $1.10) as low values. The important thing was that the product value changes each round and that recommenders can see the product value while receivers cannot see it.

**Dependent Variables**

_Referral Likelihood_. Referral likelihood toward the product was measured using a YES-NO scale question as follows: Will you recommend this product to your close or distant friend?
**Purchase Behavior.** Purchase behavior towards the referral reward recipient was measured using a YES-NO scale question as follows: Will you purchase the product that the recommender recommends?

**Procedure**

Participants were recruited from business courses at Kent State University. The recruitment process included contacting instructors of classes for the appropriate population. Initial contact with the participants was made by the instructor, who announced an extra credit and cash opportunity to the class. The study was open to everyone enrolled in the class.

This study used the “general product concept” proposed by Rierson (1966) and Lillis and Narayama (1974). This concept was used “to minimize or eliminate the effects of product influences on respondents’ willingness to buy ratings” (Wang and Lamb 1983, p.74). Thus, this study could isolate the effect of the reward scheme and control for attitude toward the product itself by using the “general product concept” instead of using a specific product.

A total of 124 individuals was participated in this study. I conducted 5 or 6 experimental sessions for each of the six treatments, with each session having 4 participants. In other words, each subject participated in the experiment with three different partners in total. For participants who were assigned to the weak tie condition, the instructor confirmed their weak relationship before conducting the experiment. For participants who were assigned to the strong tie condition, participants participated in the RCIT relationship-building task to increase their relationship from strangers to close friends (Sedikides, Campbell, Reeder, and Elliot 1999a, see Appendix A). Each subject in the strong tie condition answered three sets of questions: the first set of questions (7 questions) for 5 minutes, 10 minutes on the second set (12 questions), and 15 minutes on the third...
set (10 questions; see Appendix A). After completing the RCIT test, the participants responded to one question (single 9 point scale) that makes up the closeness induction manipulation check. According to Campbell, Sedikides, Reeder and Elliot (1999), they used four questions: (a) closeness, (b) similarity, (c) liking, and (d) likelihood of future friendship with the partner (see Appendix B). However, I used only a single item to measure a relationship for both strong and weak ties. The question is as follows: “How close do you feel to the participants with whom you are working on this study?” (1 = not at all close, 9 = very close).

After the RCIT procedures, participants were seated at separate computers and were handed the instructions, which included the manipulation of the reward scheme. Participants in the weak tie condition began the procedure at this point. The reward scheme was varied across sessions but not within session. Before conducting the experiment, the experimenter made sure that participants understood that the product price was held constant throughout the study at $1.10 and the product value was from a range of $0.00 - $2.00. Participants practiced for three rounds and completed twenty experimental rounds.

In each experiment round, participants were randomly assigned to pairs and then randomly assigned to roles as either a recommender or a receiver. Second, the recommenders were asked whether or not they would purchase the product with a Yes-No scale. If the recommenders purchased, the recommenders were then shown the value of the product. Then, recommenders decided whether to recommend the product or not based on the product value. Next, the receivers were shown whether the recommenders recommended or not. The receivers did not know the product value, but might infer it from the recommender’s behavior. The final decision was from the receivers. They chose to either purchase or not purchase the product based on the
recommender’s decision with a Yes-No scale (see Figure 2). Even if the recommenders did not recommend the product, the receivers still had a chance to purchase the product, but it was a risky decision. Receivers could not see the product value generated by the program. This case was almost a 50/50 chance (case 5 or 6 in figure 2).

Figure 2. Referral Reward Decision Making Tree

Note: V: Product Value; C: Product Price; I: Incentives; P: Payout
After completing one round, each subject was re-matched with a new partner for another round to indentify the discounting effects discussed in the hypothesis development chapter. At the end of the twenty rounds, the participants were paid based on the decisions they made and the reward scheme condition they were in. The experiment procedure and a full introduction of the experiment are provided in Exhibit 4 and Exhibit 5.

**Experimental Results**

*Manipulation check:* Tie strength was manipulated at two different levels: strong primary (such as spouse and close friend) and weak secondary (such as seldom-contacted acquaintance (e.g., Reingen and Kernan 1986; Frenzen and Nakamoto 1993). The manipulation of tie strength was successful for study 1. Participants in the strong ties condition (mean = 6.97) reported a higher level of perceived closeness than participants in the weak tie condition (mean = 3.09; t(122) = 9.659, p < .01)

In the decision making game shown in Figure 2, there were 8 possible decision outcomes (Recommender’s Purchase (Yes or No) x (Recommender’s Recommendation (Yes or No) x Receiver’s Purchasing (Yes or No)). As you can see in table 1 and 2, the outcome decision was quite stable across the two halves of the 20 rounds. Table 1 and 2 also show the relative frequencies of the decision outcomes for the six treatments.

*Tests of Hypotheses*

To test hypothesis 1, I used a logistic regression model that included reward scheme, tie strength, and product value, as well as all of their interactions. The three main effects of the experimental variables in study 1 were significant: reward scheme (β = .87, p < .01), tie strength
(β = -1.20 p < .01), and product value (β = 2.28, p < .01). The three two-way interactions were a significant reward x tie strength interaction (β = -8.02, p < .01), a reward scheme x product interaction that was not significant (β = -.309 p = .229), and a significant tie strength x product value interaction (β = 2.18, p < .01). The three-way interaction among reward scheme, tie strength, and product value was not statistically significant (β = .525, p = .231). Although the three-way interaction was not statistically significant, I wanted to examine the effect of reward on referral likelihood in a more detailed manner. I tested it in the two different ways. First, Ryu and Feick (2007) already found a main effect of referral reward on referral likelihood (Reward vs. No Reward) so I wanted to test how Reward Both and Recommender Only are different on referral likelihood. Thus, I tested three-way interaction without No Reward (Recommender Only vs. Reward Both). The results showed that a three-way interaction was significant without no reward scheme (β = 3.496, p < .01). To better understand the three-way interaction, I conducted separate a logistic regressions with different product values (High vs. Low). When product value was high, the results showed that the main effect of reward and tie strength on referral likelihood was not significant (Reward: β = .405, p = .351 and Tie Strength: β = -.574, p = .578) and the two-way interaction also was not significant (β = .740, p = .317). On the other hand, when the product value was low, there was a marginally significant main effect of tie strength (β = 1.576, p = .062) and the interaction between reward scheme and tie strength was significant (β = -2.756, p < .01).

The second way was that I used a spotlight analysis to test the three-way interaction (Jin and Huang 2014; spiller et al. 2013). The reason why I used this analysis was that splitting the data could be reducing the power and with this analysis I can still figure out the effects of referral rewards on referral likelihood depending on tie strength and product value without splitting the data. When product value was high, the results did not show main effects of reward scheme (β
or tie strength ($\beta = .905, p = .138$) and the interaction between Reward Both and tie strength was not significant ($\beta = .740, p = .317$). On the other hand, when product value was low, the results showed the main effect of reward scheme was not significant ($\beta = .351, p = .186$) while tie strength was significant ($\beta = -3.936, p < .01$). In addition, the interaction between reward scheme and tie strength was significant ($\beta = -2.756, p < .01$).

In summary, both analyses showed the same results. When product value was high, the main effects and interaction effect were not significant while when product value was low, tie strength and the interaction effect were significant.

To test hypothesis 2, I also used a logistic regression because receivers made a decision whether to purchase a product or not. I conducted a two-way interaction because receivers could not see the product value, which means that product value did not affect the receivers’ decisions. The results showed that the main effect of tie strength was not significant ($\beta = -.217, p = .243$), the main effect of reward scheme was marginally significant ($\beta = .205, p < .10$) and the interaction between reward scheme and tie strength was significant ($\beta = -.256, p < .01$). Table 3 shows the percentage frequencies of referral likelihood and purchase likelihood across all treatments in a more detailed manner. The data has been divided into two periods: Period 1 (Rounds 1-10) and Period 2 (Rounds 11-10). The relative frequencies appear quite stable across the two halves of the 20 decision rounds. The proportion of times the recommender purchased the product is stable across periods in the Reward Both and the Strong Tie condition. In this case, 90 representatives the total product purchased by the recommender in the first 10 rounds and 89 represents the number purchased by the same recommender in the second 10 rounds. This format would apply to table 4, 8, and 9 as well.
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<th>Study 1 Reward Scheme</th>
<th>Recommender's Purchase Decision</th>
<th>Recommender's Recommendation Decision</th>
<th>Receiver's Purchase Decision</th>
<th>Percent Frequency (Round 1-10)</th>
<th>Percent Frequency (Round 11-20)</th>
<th>Percent Frequency (All Rounds)</th>
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<tr>
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<tr>
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<td>1.0%</td>
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Recommender behavior in reward schemes. When recommenders chose to purchase (RP), I found that in the Strong Tie condition, Reward Both resulted in a higher likelihood of recommendation than both the Recommender Only condition (RB = 60.9%, RO = 48.7%, \(z = 2.35, p < .05\)) and the No Reward condition (RB = 60.9%, NR = 49.5%, \(z = 2.20, p < .05\)). The Recommender Only and No Reward conditions were not significantly different from each other (\(z = 0.16, p = 0.873\)). The experimental results show that Hypothesis 1a, which states (RB) was highest, followed by (RO) and (NR) for strong ties, was partially supported.

On the other hand, in the Weak Tie condition, Reward Both resulted in a higher likelihood of recommendation than No Reward (RB = 72.1%, NR = 50.9%, \(z = 4.33, p < .01\)). In addition, Recommender Only also increased the likelihood of recommendation compared to No Reward (RO = 78.0%, NR = 50.9%, \(z = 5.43, p < .01\)). The Reward Both and Recommender Only conditions were not significantly different from each other (\(z = -1.37, p = 0.171\)). As a result, I only obtained partial support for hypothesis 1b, which states (RO) was highest, followed by (RB) and (NR) for weak ties.

Furthermore, I found that tie strength was significantly different in the likelihood of recommendation in Reward Both (SB = 60.9%, WB = 72.1%, \(z = -2.38, p = 0.017\)) and in Recommender Only (SO = 48.7%, WO = 78.0%, \(z = -5.92, p < 0.01\)). However, when given No Reward, there was no statistical difference between Strong Ties (49.5%) and Weak Ties (50.9%, \(z = -0.27, p = 0.787\)).
**Receiver behavior in reward schemes.** After recommenders decided whether to recommend the product, the receiver chose whether or not to purchase the product. In the Strong Tie condition, there were no significant differences across all treatments: RB (96.3%) versus RO (97.8%) ($z = -0.61, p = 0.542$); RO (97.8%) versus NR (98.9%) ($z = -0.60, p = 0.549$); RB (96.3%) versus NR (98.9%) ($z = -1.18, p = 0.238$). Therefore, the result shows that Hypothesis 2a, which states (RB) was highest, followed by (RO), and (NR) for strong ties, was not supported.

On the other hand, figure 4 displays that in the Weak Tie condition, Reward Both resulted in a higher likelihood of purchase than both the Recommender Only condition (RB = 96.8%, RO = 74.5%, $z = 5.64, p < .01$) and the No Reward condition (RB = 96.8%, NR = 88.6%, $z = 2.576, p = .05$). The No Reward condition increased purchase likelihood compared to the Recommender Only condition ($z = 2.617, p < .05$). Hence, I conclude that H2b, which states (RB) was highest, followed by (NR), and (RO) for strong ties, was supported by the data.
Figure 4. Comparing the Percentage of the Receiver’s Purchase between Strong and Weak ties

![Bar chart showing the comparison of purchase percentages between Strong and Weak ties for different conditions: Both, R only, and No.]

**Incidence of receiver’s purchase for non-recommended product.** If recommenders did not make a recommendation after purchasing the product, receivers still had a chance to purchase the product.

Figure 5 displays the differences between strong ties and weak ties for receivers. Weak Ties resulted in a higher likelihood of purchase than Strong Ties in Reward Both (SB = 8.6%, WB = 29.5%, $z = -3.09, p < .01$) and in Recommender Only (SO = 6.3%, WO = 40.5%, $z = -4.96, p < .01$). However, the Strong Tie and Weak Tie conditions in the No Reward were not significantly different from each other (SN = 9.5%, WN = 17.6%, $z = -1.61, p = .107$).
Figure 5. Comparing the Percentage of the Non-recommended Purchases in Strong Ties versus Weak Ties for Receivers

![Comparison of recommended and non-recommended purchases by tie strength]

**Incidence of receiver’s recommended purchases versus non-recommended purchases by tie strength.** I compared the receiver’s purchase likelihood between when recommenders chose recommendation (RR) and when recommenders chose No Recommendation (NR).

With strong ties, there were significant differences across all treatments: RR (96.3%) versus NR (8.6%) in Reward Both ($z = 11.80, p < .01$); RR (97.8%) versus NR (6.3%) in Recommender Only ($z = 12.52, p < .01$); RR (98.9%) versus NR (9.5%) in No Reward ($z = 12.30, p < .01$).

Weak ties had the same pattern as strong ties: RR (96.8%) versus NR (29.5%) in Reward Both ($z = 10.80, p < .01$); RR (74.5%) versus NR (40.5%) in Recommender only ($z = 4.14, p < .01$); RR (88.6%) versus NR (17.6%) in No Reward ($z = 9.36, p < .01$).
Three-way interaction

Recommender behavior under high value. Table 4 shows the incidence of likelihood of recommendation across all treatments under product value.

Strong ties: When given a high value product, Recommender Only resulted in a higher likelihood of recommendation than both Reward Both (RB = 95.5%, RO = 100%, $z = -2.02$, $p < .05$) and No Reward (RO = 100%, NR = 96.8%, $z = 1.68$, $p < .1$). However, the Reward Both and No Reward conditions were not significantly different from each other ($z = -0.49$, $p = 0.624$).

Weak ties: When given a high value product, Reward Both resulted in a higher likelihood of recommendation than No Reward (RB = 95.7%, NR = 85.7%, $z = 2.28$, $p < .05$). In addition, Recommender Only increased likelihood of recommendation compared to No Reward (RO = 93.7%, NR = 85.7%, $z = 1.74$, $p < .1$). The Reward Both and Recommender Only conditions were not significantly different from each other ($z = 0.62$, $p = 0.535$).

As a result, I only obtained partial support for hypothesis 3a, which state the referral reward program rankings on referrals will not significantly differ regardless of tie strength when recommenders perceive high value.
<table>
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<th>Reward Scheme</th>
<th>Recommender's Purchase Decision</th>
<th>Product Value</th>
<th>Recommender's Recommendation</th>
<th>Receiver's Purchase Decision</th>
<th>Percent Frequency (Round 1-10)</th>
<th>Percent Frequency (Round 11-20)</th>
<th>Percent Frequency (All Rounds)</th>
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<td>2%</td>
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Table 4. Relative Frequency of the Decision Outcome under Product Value: Study 1
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</table>

Note: The numbers in parentheses indicate the frequency of each category.
Recommender behavior under low value.

**Strong ties:** When given a low value product, Reward Both resulted in a higher likelihood of recommendation than both the Recommender Only condition (RB = 27.5%, RO = 3.4%, z = 4.47, \( p < .01 \)) and the No Reward condition (RB = 27.5%, NR = 1.1%, z = 5.14, \( p < .01 \)). The Recommender Only and No Reward conditions were not significantly different from each other (z = 1.06, \( p = .289 \)). Thus, I only obtained partial support for hypothesis 3b (a) which states

**Weak ties:** When given a low value product, Reward Both resulted in a higher likelihood of recommendation than No Reward (RB = 53.2%, NR = 22.9%, z = 4.56, \( p < .01 \)). In addition, Recommender Only also increased likelihood of recommendation compared to No Reward (RO = 62.5%, NR = 22.9%, z = 5.54, \( p < .01 \)). The Reward Both and Recommender Only conditions were not significantly different from each other (z = -1.39, \( p = 0.165 \)). Hence, I conclude that H3b-b, which states (RB) was highest, followed by (NR), and (RO) for strong ties, was supported by the data.
Figure 6: Comparing the Percentage of the Recommender’s Recommendation under High versus Low Product Value with Tie Strength

![Bar chart showing comparison of recommendation percentages under high and low product value with tie strength.]

**Optimal profit for a firm:** I identified the optimal referral rewards scheme based on the recommender’s referral likelihood and the receiver’s purchase likelihood. The total profits the firm obtained depending on tie strength are shown in Figure 6. To calculate firm’s profit I used a formula as follows:

\[
\text{Profit} = \text{Price} \times \text{Number of Purchases (Recommender + Receiver)} - \text{Cost of Rewards}
\]

Here are the total profits in each rewards scheme. I found that the no reward scheme was the optimal referral rewards scheme for the firm’s profit.
No Reward

Strong ties: $1.10 \times (188 + 101) = $317.90

Weak ties: $1.10 \times (173 + 92) = $291.50

Total profit = $317.90 + $291.50 = $609.40

Recommender only: $0.25

Strong ties: $1.10 \times (187 + 104) - (89 \times $0.25) = $275.60

Weak ties: $1.10 \times (191 + 149) - (111 \times $0.25) = $319.00

Total profit = $275.60 + $319.00 = $594.60

Reward Both: $25 each

Strong ties: $1.10 \times (179 + 125) - (105 \times $0.25 + 105 \times $0.25) = $281.90

Weak ties: $1.10 \times (183 + 150) - (125 \times $0.25 + 125 \times $0.25) = $312.60

Total profit = $281.90 + $312.60 = $594.50

Therefore, the results show that Hypothesis 6a, which states that RB would be the highest, followed by RO and NR for strong ties, was partially supported and Hypothesis 6b, which states that RB would be the highest, followed by NR and RO for weak ties, was not supported.
Figure 7: Comparing Firm Profits under Strong Ties versus Weak Ties
Study 2

Study 2 of this dissertation tested the effect of reward size. While ideally Study 2 would have completely replicated the results of Study 1, I was limited in funding, so I ran only the additional Recommender Only and Reward Both conditions with the higher reward size. When the benefit more than offset the cost of product value, the reward was thought to enhance referral and purchase. Specifically, when low product value was shown, the larger reward sufficiently provided the potential opportunity for recommenders to offset their loss from the low value. However, as referral and purchase increased, the challenge has moved to effectively implementing those reward strategies for firms. The reason is that the reward money is a cost the firm has to pay for customers. Consequently, Study 2 was designed to understand the effect of reward size on firm’s profit and to help seek the optimal reward scheme for firms. Study 2 investigated how reward size influences the three parties’ responses. The only change compared to study 1 was the amount of the referral rewards changed from $0.25 to $0.50.

Experimental Results

Manipulation check: The manipulation of tie strength was successful for study 2. Participants in the strong ties condition (mean = 8.50) reported a higher level of perceived closeness than participants in the weak tie condition (mean = 3.57; t (80) = 12.368, p < .01).

Tests of Hypotheses

To test the effect of reward size I used a logistic regression with a four-way interaction. To test the four-way interaction, I combined the data from Studies 1 and 2. I coded the reward size with a small reward as 0 and a large reward as 1. The main effects for study 2 were
significant as follows: reward size ($\beta = 1.423, p < .01$), tie strength ($\beta = 1.180, p < .01$), reward scheme ($\beta = -2.405, p < .01$), and product value ($\beta = 3.906, p < .01$). In addition, two-way interactions showed a significant reward size x tie strength interaction ($\beta = -0.912, p < .05$), a significant reward scheme x tie strength interaction ($\beta = 2.756, p < .01$), a significant tie strength x product value interaction ($\beta = -1.345, p < .05$), and a significant reward scheme x product value interaction ($\beta = 3.55, p < .01$). However, a reward size x reward scheme interaction ($\beta = -0.031, p = .966$) and a reward size x product value interaction ($\beta = -0.171, p = .798$) were not significant.

There were two significant three-way interactions: a marginally significant reward scheme x reward size x product value interaction ($\beta = -2.21, p < .10$), and a significant reward scheme x tie strength x product value ($\beta = -3.50, p < .05$), which replicated the results from study 1 (without No Reward Case). However, a reward size x tie strength x reward scheme interaction ($\beta = -0.181, p = .828$) and a reward size x tie strength x product value interaction ($\beta = -0.460, p = .574$) were not significant. Last, the four-way interaction was marginally significant ($\beta = 2.212, p < .10$).
Table 5. Analysis of Four-way Interaction

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>Wald</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reward Size (A)</td>
<td>1.423</td>
<td>23.238</td>
<td>$p &lt; .01$</td>
</tr>
<tr>
<td>Tie Strength (B)</td>
<td>1.180</td>
<td>16.964</td>
<td>$p &lt; .01$</td>
</tr>
<tr>
<td>Reward Scheme (C)</td>
<td>-2.405</td>
<td>14.621</td>
<td>$p &lt; .01$</td>
</tr>
<tr>
<td>Product Value (D)</td>
<td>3.096</td>
<td>64.831</td>
<td>$p &lt; .01$</td>
</tr>
<tr>
<td>A x B</td>
<td>-0.912</td>
<td>5.289</td>
<td>$p &lt; .05$</td>
</tr>
<tr>
<td>A x C</td>
<td>-0.031</td>
<td>0.002</td>
<td>$p = .966$</td>
</tr>
<tr>
<td>A x D</td>
<td>-0.171</td>
<td>0.066</td>
<td>$p = .798$</td>
</tr>
<tr>
<td>B x C</td>
<td>2.756</td>
<td>16.301</td>
<td>$p &lt; .01$</td>
</tr>
<tr>
<td>B x D</td>
<td>-1.345</td>
<td>7.091</td>
<td>$p &lt; .05$</td>
</tr>
<tr>
<td>C x D</td>
<td>3.550</td>
<td>16.755</td>
<td>$p &lt; .01$</td>
</tr>
<tr>
<td>A x B x C</td>
<td>-0.181</td>
<td>0.047</td>
<td>$p = .828$</td>
</tr>
<tr>
<td>A x B x D</td>
<td>-0.460</td>
<td>0.316</td>
<td>$p = .574$</td>
</tr>
<tr>
<td>A x C x D</td>
<td>-2.206</td>
<td>3.792</td>
<td>$p &lt; .10$</td>
</tr>
<tr>
<td>B x C x D</td>
<td>-3.496</td>
<td>12.079</td>
<td>$p &lt; .01$</td>
</tr>
<tr>
<td>A x B x C x D</td>
<td>2.212</td>
<td>2.742</td>
<td>$p &lt; .10$</td>
</tr>
</tbody>
</table>

To better understand the four-way interaction, I conducted separate logistic regressions and examined the three-way interaction under different levels of product value (figure 8).
In more detail, recommenders who perceived low value were more likely to make a recommendation when the reward was large than when the reward was small regardless of tie strength within each reward scheme. I only obtained partial support for hypothesis 4, which states that a larger reward would have the same pattern of effects as a smaller reward, but the magnitude of the effects would be greater. In addition, it seemed that the interaction between reward scheme and tie strength was influenced by reward size (table 6).
Table 6. Referral Likelihood as a Three-way Interaction under High Value

<table>
<thead>
<tr>
<th></th>
<th>Small</th>
<th>Large</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Reward Both</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strong Ties</td>
<td>95.5%</td>
<td>100%</td>
<td>$z = -2.13, p &lt; .05$</td>
<td></td>
</tr>
<tr>
<td>Weak Ties</td>
<td>95.7%</td>
<td>90.8%</td>
<td>$z = 1.32, p = .187$</td>
<td></td>
</tr>
<tr>
<td>Recommender Only</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strong Ties</td>
<td>100%</td>
<td>93.7%</td>
<td>$z = 2.40, p &lt; .05$</td>
<td></td>
</tr>
<tr>
<td>Weak Ties</td>
<td>93.7%</td>
<td>93.8%</td>
<td>$z = -0.19, p = 0.984$</td>
<td></td>
</tr>
</tbody>
</table>

However, recommenders who perceived low value were more likely to make a recommendation when the reward was large than when the reward was small in both tie strength conditions within each reward scheme. It looks like the same pattern which shows an increasing pattern from small to large reward.

Table 7. Referral Likelihood as a Three-way Interaction under Low Value

<table>
<thead>
<tr>
<th></th>
<th>Small</th>
<th>Large</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Reward Both</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strong Ties</td>
<td>25.5%</td>
<td>58.8%</td>
<td>$z = -4.8, p &lt; .01$</td>
<td></td>
</tr>
<tr>
<td>Weak Ties</td>
<td>53.2%</td>
<td>68.4%</td>
<td>$z = -2.30, p &lt; .05$</td>
<td></td>
</tr>
<tr>
<td>Recommender Only</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strong Ties</td>
<td>3.4%</td>
<td>11.0%</td>
<td>$z = -1.97, p &lt; .05$</td>
<td></td>
</tr>
<tr>
<td>Weak Ties</td>
<td>62.5%</td>
<td>70.0%</td>
<td>$z = -1.14, p = 0.254$</td>
<td></td>
</tr>
</tbody>
</table>

Second, I examined the four-way interaction within reward size and product value (figure 6). First of all, as can be seen, referral was high regardless of tie strength and reward scheme when given high value compared to low value (case A and B). Specifically, as I expected, referral was highest when high value and larger reward were provided (case A). In addition, when the larger reward was shown with high value, the recommender only increased referrals with weak ties and not with strong ties (case A). When given low value with larger reward, reward scheme was not different with strong ties, whereas recommenders increased referrals to
weak ties (case B). Compared A to B, referral likelihood was higher with Recommender Only than with Reward Both when given weak ties. Last, when low value was shown, Reward Both slightly increases referrals compared to Recommender Only with strong ties whereas Recommender Only had greater referrals to weak ties regardless of reward size.

Figure 9. The four-way Interaction within Reward Size and Product Value

In summary, when given a larger reward and high value, referral was increased. Specifically, there was no difference in referral likelihood with strong ties regardless of product value and reward size. However, with weak ties, Recommender Only increased referral compared to Reward Both. The following results show the frequencies of referral likelihood and purchase likelihood across all treatments in a more detailed manner.
To test hypothesis 2, I also used a logistic regression because receivers made a decision whether to purchase a product or not. I conducted a three-way interaction without product value. The results showed a significant main effect of reward size ($\beta = 0.687$, $p < .01$), a significant main effect of tie strength ($\beta = 0.750$, $p < .01$), and a significant main effect of reward scheme ($\beta = -0.431$, $p < .05$). The interaction between a reward size and tie strength is significant ($\beta = -0.768$, $p < .05$), and the interaction between a reward size and reward scheme is also significant ($\beta = -0.678$, $p < .05$). However, the result did not show a significant interaction effect between reward scheme and tie strength ($\beta = -0.189$, $p = .523$) and the three-way interaction (reward scheme, reward size and tie strength) was not significant ($\beta = 0.282$, $p = .508$).

Figure 10. Purchase Likelihood as a Function of Reward Size, Reward Scheme and Tie Strength

In more detail, receivers were more likely to make a purchase when the reward was small than when the reward was large only for weak ties within each reward scheme. As you can see, even though a larger reward had the same pattern of effects as a smaller reward, the magnitude of
the effects was actually smaller. I only obtained partial support for hypothesis 5, which states that a larger reward would have the same pattern of effects as a smaller reward, but the magnitude of the effects would be greater. The following results showed the percentage frequencies of referral likelihood and purchase likelihood across all treatments in the more detailed manner like study 1.

**Recommender behavior in reward schemes.** Table 8 shows the percentage frequencies of recommender’s purchasing (RP) across the six treatments. In the Strong Tie condition, Reward Both resulted in a higher likelihood of recommendation than the Recommender Only condition (RB = 77.8%, RO = 49.4%, $z = 5.79$, $p < .05$). On the other hand, in the Weak Tie condition, the Reward Both (77.8%) and Recommender Only conditions (78.9%) were not significantly different from each other ($z = -.63$, $p = .529$).
<table>
<thead>
<tr>
<th>Reward Scheme</th>
<th>Purchase Decision</th>
<th>Recommendation Decision</th>
<th>Receiver's Purchase Decision</th>
<th>Percent Frequency (Round 1-10)</th>
<th>Percent Frequency (Round 11-20)</th>
<th>Percent Frequency (All Rounds)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Both (220)</td>
<td>Purchase (103,109)</td>
<td>Recommendation (78,87)</td>
<td>Purchase (75,87)</td>
<td>68.2%</td>
<td>79.1%</td>
<td>73.6%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No Purchase (3,0)</td>
<td>3.0%</td>
<td>0.0%</td>
<td>1.3%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No Recommendation (25,22)</td>
<td>Purchase (2,2)</td>
<td>1.8%</td>
<td>1.8%</td>
<td>1.8%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No Purchase (23,20)</td>
<td>20.9%</td>
<td>18.2%</td>
<td>19.5%</td>
</tr>
<tr>
<td></td>
<td>No Purchase (7,1)</td>
<td>Recommendation (40,44)</td>
<td>Purchase (36,42)</td>
<td>40.0%</td>
<td>46.7%</td>
<td>43.3%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No Purchase (4,2)</td>
<td>4.4%</td>
<td>2.2%</td>
<td>3.3%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No Recommendation (44,42)</td>
<td>Purchase (5,7)</td>
<td>5.6%</td>
<td>7.8%</td>
<td>6.7%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No Purchase (39,35)</td>
<td>43.3%</td>
<td>38.9%</td>
<td>41.1%</td>
</tr>
<tr>
<td></td>
<td>No Purchase (6,4)</td>
<td>Purchase (2,2)</td>
<td>No Purchase (4,2)</td>
<td>2.2%</td>
<td>2.2%</td>
<td>3.3%</td>
</tr>
<tr>
<td>Weak</td>
<td>Purchase (92,93)</td>
<td>Recommendation (71,75)</td>
<td>Purchase (62,69)</td>
<td>62.0%</td>
<td>69.0%</td>
<td>65.5%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No Purchase (9,6)</td>
<td>9.0%</td>
<td>6.0%</td>
<td>7.5%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No Recommendation (21,18)</td>
<td>Purchase (7,6)</td>
<td>7.0%</td>
<td>6.0%</td>
<td>6.5%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No Purchase (14,12)</td>
<td>14.0%</td>
<td>12.0%</td>
<td>13.0%</td>
</tr>
<tr>
<td></td>
<td>No Purchase (8,7)</td>
<td>Purchase (5,4)</td>
<td>No Purchase (3,3)</td>
<td>5.0%</td>
<td>4.0%</td>
<td>4.5%</td>
</tr>
<tr>
<td></td>
<td>R Only (220)</td>
<td>Recommendation (85,82)</td>
<td>Purchase (56,46)</td>
<td>50.9%</td>
<td>41.8%</td>
<td>46.4%</td>
</tr>
<tr>
<td></td>
<td>Purchase (105,101)</td>
<td></td>
<td>No Purchase (29,36)</td>
<td>26.4%</td>
<td>32.7%</td>
<td>29.5%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Purchase (6,3)</td>
<td>5.5%</td>
<td>2.7%</td>
<td>4.1%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No Recommendation (20,19)</td>
<td>No Purchase (14,16)</td>
<td>12.7%</td>
<td>14.5%</td>
<td>13.6%</td>
</tr>
<tr>
<td></td>
<td>No Purchase (5,9 )</td>
<td>Purchase (2,6)</td>
<td>No Purchase (3,3)</td>
<td>1.8%</td>
<td>5.5%</td>
<td>3.6%</td>
</tr>
<tr>
<td></td>
<td>R Only (220)</td>
<td></td>
<td>No Purchase (3,3)</td>
<td>2.7%</td>
<td>2.7%</td>
<td>2.7%</td>
</tr>
</tbody>
</table>
Furthermore, I found that tie strength was not significantly different in the likelihood of recommendation in Reward Both (SB = 77.8%, WB = 78.9%, \( z = -2.63, p = 0.795 \)) but it was significant in Recommender Only (SO = 49.4%, WO = 81.5%, \( z = -6.57, p < .01 \)).

**Figure 11. Comparing the Percentage of the Recommendation between Strong and Weak Ties**

![Graph comparing percentage of recommendation between strong and weak ties](image)

**Receiver behavior in reward schemes.** After recommenders decided whether to recommend the product, the receiver chose whether or not to purchase the product. In the Strong Tie condition, Reward Both resulted in a higher likelihood of purchase than the Recommender Only condition (RB = 98.2%, RO = 92.9%, \( z = 2.13, p < .05 \)). On the other hand, figure 11 displays that in the Weak Tie condition, Reward Both resulted in a higher likelihood of purchase than the Recommender Only condition (RB = 89.7, RO = 61.1%, \( z = 5.80, p < .01 \)). Furthermore, I found that tie strength was significantly different in the likelihood of recommendation in Reward Both (SB = 98.2%, WB = 89.7%, \( z = 3.19, p < .05 \)) and in Recommender Only (SO = 92.9%, WO = 61.1%, \( z = 5.27, p < .01 \)).
Incidence of receiver’s purchase for non-recommended product. If recommenders did not make a recommendation after they purchased the product, receivers still had a chance to purchase the product. Weak Ties resulted in a higher likelihood of purchase than Strong Ties in Reward Both (SB = 8.5%, WB = 33.3%, \( z = -2.88, p < .01 \)). However, the Strong Tie and Weak Tie conditions in the Recommender Only were not significantly different from each other (SO = 14.0%, WO = 23.1%, \( z = -1.26, p = .208 \)).

Incidence of receiver’s recommended purchases versus non-recommended purchases by tie strength. I compared the receiver’s purchase likelihood between when recommenders chose recommendation (RR) and when recommenders chose No Recommendation (NR).

With strong ties, there are significant differences across all treatments: RR (98.2%) versus NR (8.5%) in Reward Both (\( z = 13.16, p < .01 \)); RR (92.9%) versus NR (14.0%) in Recommender Only (\( z = 10.31, p < .01 \)). Weak ties had the same pattern as strong ties: RR
(89.7%) versus NR (33.3%) in Reward Both ($z = 7.53, p < .01$); RR (61.1%) versus NR (23.1%) in Recommender only ($z = 4.29, p < .01$).

**Three-way interaction**

**Recommender behavior under high value.** Table 9 shows the incidence of likelihood of recommendation across all treatments by product value.

*Strong ties:* When given a high value product, Reward Both resulted in a higher likelihood of recommendation than Recommender Only (RB = 100%, RO = 93.7%, $z = 2.53, p < .05$).

*Weak ties:* When given a high value product, Reward Both was not significantly different from Recommender Only (RB = 90.8%, RO = 93.8%, $z = - .75, p = 0.453$)
Table 9. Relative Frequency of the Decision Outcome under Product Value: Study 2

<table>
<thead>
<tr>
<th>Reward Scheme</th>
<th>Recommender's Purchase Decision</th>
<th>Product Value</th>
<th>Recommender's Recommendation</th>
<th>Receiver's Purchase Decision</th>
<th>Percent Frequency (Round 1-10)</th>
<th>Percent Frequency (Round 11-20)</th>
<th>Percent Frequency (All Rounds)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Both (220)</td>
<td>Purchase (103,109)</td>
<td>High(46,52)</td>
<td>Recommendation (46,52)</td>
<td>Purchase (44,52)</td>
<td>40%</td>
<td>47.2%</td>
<td>43.6%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No Purchase (2,0)</td>
<td></td>
<td>1.8%</td>
<td>0%</td>
<td>0.9%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No Recommendation (0,0)</td>
<td>Purchase (0,0)</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>No Purchase (0,0)</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>Low(57,57)</td>
<td>Recommendation (32,35)</td>
<td>Purchase (31,35)</td>
<td>28.2%</td>
<td>31.8%</td>
<td>30%</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No Purchase (1,0)</td>
<td>0.9%</td>
<td>0%</td>
<td>0.5%</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No Recommendation (25,22)</td>
<td>Purchase (2,2)</td>
<td>1.8%</td>
<td>1.8%</td>
<td>1.8%</td>
</tr>
<tr>
<td></td>
<td>Strong</td>
<td>No Purchase (7,1)</td>
<td>Purchase (3,0)</td>
<td>2.7%</td>
<td>0%</td>
<td>1.4%</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No Purchase (4,1)</td>
<td>3.6%</td>
<td>0.9%</td>
<td>2.3%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>R Only (180)</td>
<td>High(38,41)</td>
<td>Recommendation (34,40)</td>
<td>Purchase (30,38)</td>
<td>33.3%</td>
<td>42.2%</td>
<td>37.8%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No Purchase (4,2)</td>
<td>4.4%</td>
<td>2.2%</td>
<td>3.3%</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No Recommendation (4,1)</td>
<td>Purchase (2,0)</td>
<td>2.2%</td>
<td>0%</td>
<td>2.2%</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>No Purchase (2,1)</td>
<td>2.2%</td>
<td>1.1%</td>
<td>1.7%</td>
</tr>
<tr>
<td></td>
<td>Purchase (84,86)</td>
<td>Low(46,45)</td>
<td>Recommendation (6,4)</td>
<td>Purchase (6,4)</td>
<td>6.7%</td>
<td>4.4%</td>
<td>5.6%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No Purchase (0,0)</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No Recommendation (40,41)</td>
<td>Purchase (3,7)</td>
<td>3.3%</td>
<td>7.8%</td>
<td>5.6%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>No Purchase (37,34)</td>
<td>41.1%</td>
<td>37.8%</td>
<td>39.4%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No Purchase (6,4)</td>
<td>Purchase (2,2)</td>
<td>2.2%</td>
<td>2.2%</td>
<td>2.2%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No Purchase (4,2)</td>
<td>4.4%</td>
<td>2.2%</td>
<td>3.3%</td>
<td></td>
</tr>
<tr>
<td>Reward Scheme</td>
<td>Recommender's Purchase Decision</td>
<td>Product Value</td>
<td>Recommender's Recommendation</td>
<td>Receiver's Purchase Decision</td>
<td>Percent Frequency (Round 1-10)</td>
<td>Percent Frequency (Round 11-20)</td>
<td>Percent Frequency (All Rounds)</td>
</tr>
<tr>
<td>---------------</td>
<td>--------------------------------</td>
<td>---------------</td>
<td>------------------------------</td>
<td>---------------------------</td>
<td>-------------------------------</td>
<td>-------------------------------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td>Both (200)</td>
<td>Purchase (92,93)</td>
<td>High(42,45)</td>
<td>Recommendation (37, 42)</td>
<td>Purchase (34,39)</td>
<td>34.0%</td>
<td>39.0%</td>
<td>36.5%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No Purchase(3,3)</td>
<td>No Purchase(3,3)</td>
<td>3.0%</td>
<td>3.0%</td>
<td>3.0%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No Recommendation (5,3)</td>
<td>Purchase (1,1)</td>
<td>1.0%</td>
<td>1.0%</td>
<td>1.0%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low(50, 48)</td>
<td>Recommendation (34,33)</td>
<td>Purchase (28,30)</td>
<td>28.0%</td>
<td>30.0%</td>
<td>29.0%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No Purchase(6,3)</td>
<td>No Purchase(6,3)</td>
<td>6.0%</td>
<td>3.0%</td>
<td>4.5%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No Recommendation (16,15)</td>
<td>Purchase (6,5)</td>
<td>6.0%</td>
<td>5.0%</td>
<td>5.5%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No Purchase(10,10)</td>
<td>No Purchase(10,10)</td>
<td>10.0%</td>
<td>10.0%</td>
<td>10.0%</td>
</tr>
<tr>
<td>Weak</td>
<td>No Purchase (8,7)</td>
<td></td>
<td>Purchase (5,4)</td>
<td>Purchase (5,4)</td>
<td>5.0%</td>
<td>4.0%</td>
<td>4.5%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No Purchase(3,3)</td>
<td>No Purchase(3,3)</td>
<td>3%</td>
<td>3%</td>
<td>3%</td>
</tr>
<tr>
<td>R Only (220)</td>
<td>Purchase (105,101)</td>
<td>High(52,44)</td>
<td>Recommendation (49, 41)</td>
<td>Purchase (34,422)</td>
<td>30.9%</td>
<td>20.0%</td>
<td>25.5%</td>
</tr>
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<td></td>
<td></td>
<td>No Purchase(15,19)</td>
<td>No Purchase(15,19)</td>
<td>13.6%</td>
<td>17.3%</td>
<td>15.5%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No Recommendation (5,3)</td>
<td>Purchase (1,1)</td>
<td>0.9%</td>
<td>0.9%</td>
<td>0.9%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low(53, 57)</td>
<td>Recommendation (36,41)</td>
<td>Purchase (22,24)</td>
<td>20.0%</td>
<td>21.8%</td>
<td>20.9%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No Purchase(14,17)</td>
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<td>12.7%</td>
<td>15.5%</td>
<td>14.1%</td>
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<td></td>
<td></td>
<td></td>
<td>No Recommendation (17,16)</td>
<td>Purchase (5,3)</td>
<td>4.5%</td>
<td>2.7%</td>
<td>3.6%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No Purchase(12,13)</td>
<td>No Purchase(12,13)</td>
<td>10.9%</td>
<td>11.8%</td>
<td>11.4%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No Purchase (5,9)</td>
<td>Purchase (2,6)</td>
<td>1.8%</td>
<td>5.5%</td>
<td>3.6%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No Purchase(3,3)</td>
<td>No Purchase (3,3)</td>
<td>2.7%</td>
<td>2.7%</td>
<td>2.7%</td>
</tr>
</tbody>
</table>
Recommender behavior under low value.

Strong ties: When given a low value product, Reward Both resulted in a higher likelihood of recommendation than Recommender Only (RB = 58.5%, RO = 11.0%, z = 7.02, p < .01).

Weak ties: When given a low value product, the Reward Both and Recommender Only conditions were not significantly different from each other (WB = 68.4 WO = 70.0, z = -0.25, p = 0.803).

Figure 13. Comparing the Percentage of the Recommender’s Recommendation under High versus Low Product Value with Tie Strength

Optimal reward scheme for firm’s profit: I used same formula as in Study 1 to calculate the firm’s profit as follows:

Profit = Price x Number of Purchases (Recommender + Receiver) – Cost of Rewards
I compared the two reward conditions from Study 2 to the no reward control condition from Study 1. No reward scheme is the optimal referral rewards scheme for the firm’s profit.

**No Reward**

Strong ties: $1.10 \times (188 + 101) = $317.90

Weak ties: $1.10 \times (173 + 92) = $291.50

Total profit = $317.90 + $291.50 = $609.40

**Reward Both ($0.50 each)**

Strong ties: $1.10 \times (193 + 154) - (147 \times 0.50 + 147 \times 0.50) = $234.70

Weak ties: $1.10 \times (185 + 153) - (131 \times 0.50 + 131 \times 0.50) = $240.80

Total profit = $234.70 + $240.80 = $475.50

**Recommender only ($0.50)**

Strong ties: $1.10 \times (189 + 100) - (87 \times 0.50) = $274.40

Weak ties: $1.10 \times (187 + 102) - (93 \times 0.50) = $271.40

Total profit = $274.40 + $271.40 = $545.80

Therefore, the results show that Hypothesis 7a, which states that Reward Both would increase the firm’s profit more than Recommender Only for strong ties, was not supported, and Hypothesis 7b, which states that Recommender Only would increase the firm’s profit more than Reward Both for weak ties, was supported.
Figure 14. Comparing Firm Profits under Strong ties versus Weak ties
CHAPTER 5

CONCLUSION AND DISCUSSION

Summary of Findings

In study 1, the finding which supports previous research was that referral rewards programs increase referral likelihood regardless of tie strength. Specially, Reward Both was the most effective at increasing the recommender’s referral likelihood in both strong and weak tie conditions. Furthermore, the recommenders were likely to make more referrals to weak ties than to strong ties. Recommenders did not want to take a risk to break the relationship with strong ties, but they could get more benefit from weak ties by increasing more referrals. In other words, recommenders did not care about the relationship with weak ties and might accept the risk to break the relationship while they increase referrals to get more rewards. In addition, recommenders made referrals regardless of reward schemes and tie strength when product value was high, while referral rewards schemes increased referral likelihood when product value was low, especially the Recommender Only scheme highly increased referral likelihood to weak ties. It might be the same logic that explains why dissatisfied customers increase negative WOM to others to compensate for a low product value or service (e.g., Richins 1983).

On the other hand, with regard to receiver’s purchase behavior, receivers who got a referral from strong ties were highly likely to purchase regardless of the reward scheme. This suggested that the firms may be wasting money because the purchase results were similar without a reward when ties were strong. An alternative explanation is that receivers relied more on the relationship with recommenders. On the other hand, with weak ties, the pattern was more
interesting. Recommender Only increased referral likelihood, but actually decreased purchase likelihood for weak ties. Thus, the only reward scheme that consistently increased both referrals and purchases was Reward Both.

Furthermore, the findings showed that tie strength was one of the most important influences in a referral reward context. The receivers heavily relied on the recommender’s recommendation. When the receivers got a recommendation, they were highly likely to purchase the recommended product regardless of the reward scheme. In addition, when the receivers knew that the recommenders did not purchase the product, they were more likely to purchase the product in the weak tie condition than in the strong tie condition. Strong ties do not want to take risks because they cannot recognize whether the product is good or bad. However, weak ties believe that their decision does not affect strong ties and take risks because with no information from the recommender, they perceived a 50:50 chance that the product will be high value.

Finally, from Study 1, I examined the firm’s profit based on the recommenders’ and receivers’ responses. Surprisingly, the No Reward scheme was the optimal reward scheme for firms. No reward made 2.5% more profit than both Recommender Only and Reward Both. However, Recommender Only maximized firm profits for weak ties.

Study 2 attempted to examine the effect of reward size with same variables as in study 1. Previous research has shown mixed findings about the effect of reward size on referral. Study 2 found that large rewards increase both referrals and purchases. Recommenders again made a referral regardless of the reward scheme, tie strength and reward size when product value was high. Recommenders highly recommended a good product to others. This finding replicated the results from study 1. On the other hand, recommenders were more likely to make a
recommendation to weak ties than to strong ties regardless of the reward scheme when product value is low. More specifically, a large reward increased referrals by 23% (average) when given Reward Both and increased referrals by 7.5% (average) when given Recommender Only. Although the large reward had a big impact on the increase in recommendations in the Reward Both scheme, Recommender Only was still the best reward scheme to increase referral likelihood among weak ties when product value was low. These results also showed the same pattern as study 1.

In addition, the large reward mainly increased the purchases of receivers. However, with strong ties, the large reward only increased purchase likelihood when given Reward Both. Surprisingly, large rewards actually decreased the purchases of receivers in the other conditions except Reward Both with strong ties. The large reward actually decreased purchases recommended by strong ties by almost 4.9% and decreased purchases recommended by weak ties by 13.4% when given Recommender Only. The large reward had more impact on purchase likelihood when receivers did not receive the rewards. Therefore, in study 1 and 2, Reward Both was the best reward scheme for both recommenders and receivers.

Finally, Study 2 also examined the firm’s profit when the firm provided large rewards. Recommender Only made more profit for firms because the Reward Both scheme spent more money as a reward. Also, No Reward as a control condition from study 1 was still the best reward scheme for firm’s profit. Surprisingly, Reward Both dropped down 28.5% and Recommender Only dropped down 12% in firm’s profit compared to the No Reward condition.
Contribution to Literature

This dissertation makes several contributions to the WOM literature. First, previous research has separately considered the effects of referral rewards on the recommender’s referral likelihood (e.g., Ryu and Feick 2007) and the receiver’s purchase likelihood (Verlegh et al. 2013). Most research has primarily looked only at the effect of rewards from recommender’s perspective. Ryu and Feick (2007) explained the effect of rewards on referral likelihood using exchange theory; recommenders can benefit from the reward while they also take the risk of harming their relationship with the receivers if the receivers do not like the recommended product. On the other hand, Verlegh and his colleagues (2013) examined the effect of rewards from the receiver’s perspective and used the multiple inference model which is part of attribution theory. This dissertation uses attribution theory to explain the receiver’s response to recommender’s behavior; receivers are apt to attribute the recommender’s behavior to the extrinsic reward when the receivers know that the recommender is receiving a reward. When the receivers are also given a referral reward, they also attribute their purchase to the referral reward because extrinsic rewards undermine people’s intrinsic motivation (Deci 1971). Thus, the receiver’s response to the recommender’s behavior is explained by attribution theory.

This dissertation is the first to consider the effects of referral rewards on recommenders and receivers simultaneously, as they both occur in practice. In particular, research on how the recommender’s motivation (recommendation or WOM) relates to the receiver’s response (actual purchase) and how both are influenced by rewards is notably lacking. The relationship is conceptually intriguing because referrals may not necessarily lead to purchases. This dissertation bridges two important theories, exchange theory and attribution theory, and shows the
relationship between WOM and the actual purchases when consumers are given rewards. Consistent with previous findings, referral rewards are likely to increase referrals among recommenders regardless of the reward scheme. The recommenders acquire the referral rewards by providing a recommendation to receivers. In contrast to the recommenders, referral rewards negatively affect the receiver’s response among weak ties when the referral rewards motivate receivers to think about reasons why the recommenders recommended this product and attribute the referral to the reward. Recommenders are likely to increase referrals to weak ties more than to strong ties, but this actually resulted in decreased purchase likelihood for weak ties. This finding shows evidence to validate the predictions made by attribution theory.

Furthermore, this dissertation serves as the first to identify the impact of product value in a referral reward context. This dissertation increases the understanding of how product value influences the recommender’s motivation and receiver’s response when given referral rewards. Referral likelihood is not highly influenced by referral rewards when product value is high because recommenders want to recommend a good product either with reward or without a reward. In addition, tie strength does not have big impact on referral likelihood when product value is high. This findings support extant research from the WOM and consumer satisfaction literature which demonstrate that people want to share the pleasure when they are satisfied with a product (Sundaram et al. 1998).

Finally, this dissertation provides important and novel insights into how firms incentivize consumers through referral reward programs and how incentives affect the firm’s profit. This dissertation empirically examines the effectiveness of referral rewards on recommender’s recommendations and receiver’s purchases and subsequently calculates and shows the best
reward scheme for firms. In addition, previous research has yielded mixed findings as to whether reward size affects referrals. Although the current dissertation supports the effect of large rewards to increase both referrals and purchases, large rewards also cost more money for firms. As a result, the best reward scheme for firms regardless of reward size was found to be No Reward.

Managerial Implications

This dissertation provides important insights to managers as to how to create a referral reward strategy depending on product value. Offering rewards is inefficient for firms when product value is high. Customers want to share the good product regardless of rewards. Thus, for a company that has a high value product, it might not be necessary to use a reward program. In the same vein, firms with a positive image, such as a good reputation and a strong brand, probably do not have a large benefit from a reward program or a high impact on their profit. In the opposite, with a low value product, this dissertation highly recommends a referral reward program. Recommenders are likely to increase referrals because recommenders want to overcome their loss by receiving rewards. It might be also lead receivers to increase further referrals to get more rewards and overcome their loss. However, this may raise ethical concerns because rewards for further referrals can have the undesirable effect of interfering with the truthfulness of the referral, especially for a low value product.

Managers should be careful when they design referral rewards programs. Managers also need to understand the potential tradeoffs between rewards size and cost. Although larger rewards increased both referral likelihood and purchase likelihood, as shown in study 2, larger rewards also increase the cost the firms need to pay as an incentive. The Reward Both scheme is
especially influenced by reward size. For example, if first movers use a large reward to increase consumer awareness and market share, it could harm their profit. Thus, rather than offering a large reward, managers might try a low reward size initially.

Limitations and Future Research

Although I find strong support for my hypotheses, there are several limitations of this dissertation. First, all the studies involve one–time purchases. Firms provide referral rewards after receivers purchase a recommended product. However, referral reward programs also exist for lifetime value products such as Direct TV or insurance. This type of product provides some credit every month for a specific time period. Future studies should examine the impact of a one time purchase versus a lifetime value product.

Second, this dissertation assumes that a large incentive is associated with the three party’s responses. However, the reward size in study 2 is 50% of the product price. This seems to be a large portion of the product price. Future research should examine the impact of reward size in a more realistic aspect, for example, small size (10%) versus large size (20%). In addition, the incentives and product price could have affected the receiver’s decision. Although participants were told they would receive the total amount after 20 rounds, they might feel that $0.25 or $0.50 was a small amount to affect their decisions for one round. Future research should measure the receiver’s perception of the amount of the reward size.

Third, this dissertation has not considered other variables that may influence the customer’s purchase decision. For instance, brand strength (Jin and Huang 2014; Verlegh et al. 2013), brand loyalty, or firm image may interact with how consumers respond to referral rewards.
Finally, although all participants have different cultural backgrounds, they were recruited from the undergraduate program at Kent State University. Thus, results from this dissertation may not generate to other populations.

Conclusion

This dissertation makes useful contributions to both academics and practitioners. This dissertation is the first experimental study to empirically examine the effectiveness of referral rewards from the perspective of three parties: the recommender, the receiver and the firm. This dissertation shows the different responses of each party to referral rewards and tests for moderating effects of tie strength, product value and reward size. In particular, this dissertation serves as the first to identify the impact of product value in a referral reward context. Our empirical results contribute by examining the gap between WOM and actual purchases when consumers are given referral rewards. Additionally, this dissertation provides managerial implications as to how referral reward programs should be designed by seeking to understand the effect of rewards on the firm’s profit and seeking the optimal reward scheme for firms.
REFERENCES


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——— (1986). An Attributional Theory of Motivation and Emotion, Springer Verlag,
New York.


## APPENDIX A: RCIT QUESTION SET

### RCIT Question Set 1

<table>
<thead>
<tr>
<th>1</th>
<th>What is your first name?</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>How old are you?</td>
</tr>
<tr>
<td>3</td>
<td>Where are you from?</td>
</tr>
<tr>
<td>4</td>
<td>What year are you at Kent State University?</td>
</tr>
<tr>
<td>5</td>
<td>What is your major? Why did you choose it?</td>
</tr>
<tr>
<td>6</td>
<td>What made you come to Kent State University?</td>
</tr>
<tr>
<td>7</td>
<td>What is your favorite class at Kent State University? Why?</td>
</tr>
</tbody>
</table>

### RCIT Question Set 2

<table>
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<tr>
<th>1</th>
<th>What are your hobbies?</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>What would you like to do after graduating from Kent State University?</td>
</tr>
<tr>
<td>3</td>
<td>What would be the perfect lifestyle for you?</td>
</tr>
<tr>
<td>4</td>
<td>What is something you have always wanted to do but probably never will be able to do?</td>
</tr>
<tr>
<td>5</td>
<td>If you could travel anywhere in the world, where would you go and why?</td>
</tr>
<tr>
<td>6</td>
<td>What is one strange thing that has happened to you since you’ve been at Kent State University?</td>
</tr>
<tr>
<td>7</td>
<td>What is one embarrassing thing that has happened to you since arriving at Kent State University?</td>
</tr>
<tr>
<td>8</td>
<td>What is one thing happening in your life that makes you stressed out?</td>
</tr>
<tr>
<td>9</td>
<td>If you could change anything that happened to you in high school, what would that be?</td>
</tr>
<tr>
<td>10</td>
<td>If you could change one thing about yourself, what would that be?</td>
</tr>
<tr>
<td>11</td>
<td>Do you miss your family?</td>
</tr>
<tr>
<td>12</td>
<td>What is one habit you’d like to break?</td>
</tr>
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</table>

### RCIT Question Set 3

<table>
<thead>
<tr>
<th>1</th>
<th>If you could have one wish granted, what would that be?</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Is it difficult or easy for you to meet people? Why?</td>
</tr>
<tr>
<td>3</td>
<td>Describe the last time you felt lonely.</td>
</tr>
<tr>
<td>4</td>
<td>What is one emotional experience you’ve had with a good friend?</td>
</tr>
<tr>
<td>5</td>
<td>What is one of your biggest fears?</td>
</tr>
<tr>
<td>6</td>
<td>What is your most frightening early memory?</td>
</tr>
<tr>
<td>7</td>
<td>What is your happiest early childhood memory?</td>
</tr>
<tr>
<td>8</td>
<td>What is one thing about yourself that most people would consider surprising?</td>
</tr>
<tr>
<td>9</td>
<td>What is one recent accomplishment that you are proud of?</td>
</tr>
<tr>
<td>10</td>
<td>Tell me one thing about yourself that most people who already know you don’t know.</td>
</tr>
</tbody>
</table>
APPENDIX B: REWARD BOTH TREATMENT INSTRUCTIONS

1. Introduction

This is an experiment in decision making. The instructions are simple, and if you follow them carefully, you will receive extra credit and cash paid privately at the end of the experiment for your participation. What you earn depends on your decisions, the decisions of others and chance. It is important that you do not look at the decisions of others, talk, or engage in activities unrelated to this experiment. You will be warned if you violate this rule at any time. If you violate this rule twice, we will cancel the experiment immediately and your earnings will be $0.

At the start of the experiment, you will be grouped into a group of four and complete a socialization task with the other group members.

2. Decision Steps

Upon completing the socialization task, you will be asked to make decisions for 20 rounds. In each round, the computer will randomly and anonymously assign participants from each group to be either Player A or Player B. The computer will also randomly and anonymously match the participants into pairs such that there is one Player A and one Player B in each pair from each group. Consequently, there will be two pairs matched together in each group. This matching procedure will be repeated every round. That is, you will be rematch with another player from your group in each round until all 20 rounds are complete. As will be described below, Player A’s decisions affect the earning of Player B and vice versa. The experiment begins with Player A’s decisions and then Player’s B decisions. We will use
a computer program to coordinate the experiment. The specific procedure and decisions for each player are described below.

Step 1: Player A’s decision

Player A: You have purchased a product at 110 cents. Your valuation of the product is random in each round and varies from 0 cents to 200 cents ($2) with each cent having an equal probability of being drawn. In each round, you will be shown the Valuation of the product. Upon viewing your Valuation, your decision task is to choose whether you want to recommend the product that you purchased to Player B. Note that Player B’s valuation of the product is identical to your realized valuation of the product. However, Player B does not know the valuation. If you recommend this product to Player B and Player B chooses to purchase the product, you will receive 50 cents and Player B will also receive 50 cents in the round.

In each of the 20 rounds, your task is to decide whether to make recommend the product to Player B. If you choose to recommend the product to Player B, Player B will be shown the following message: “Player A recommends the product to you.”

**Your Payout will be as follows:**

\[
\text{Player A’s Payout} = \text{Valuation} - 110 \text{ cents} \quad \text{if Player B does not purchase}
\]

\[
\text{Player A’s Payout} = \text{Valuation} - 110 \text{ cents} + 50 \text{ cents} \quad \text{if you recommend the product and Player B purchases the product}
\]
Step 2: Player B’s decision

Player B: You will view whether Player A recommends the product to you and your task is to decide whether to purchase the product. The price of the product is 110 cents and the Valuation that you obtain will be randomly drawn from 0 to 200 cents ($2). Please note that the Valuation that you obtain will be the same Valuation that was obtained for Player A. If Player A recommends the product to you and you purchase the product, you and Player A will each receive 50 cents in the round.

Your Payout will be as follows:

**Player B’s Payout = 0 if you do not purchase the product**

**Player B’s Payout = Valuation – 110 cents if Player A does not recommend the product and you purchase the product**

**Player B’s Payout = Valuation – 110 cents + 50 cent if Player A recommends the product and you purchase the product**

3. Determining Your Earnings (payment)

Your final earnings will be the sum of your cash earnings for the 20 decision rounds.

Are there any questions?