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“TERRIFIC, YOU DID IT!”
THE INFLUENCE OF FEEDBACK ON A CROWDSOURCING PARTICIPANT’S SATISFACTION

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ABSTRACT

As markets are changing, companies are looking for the most efficient and most effective ways to discover how they can innovate in order to maintain a competitive advantage. In particular, crowdsourcing has grown in popularity due to the increasing ability of firms to be able to reach the public. Since mass communication has exploded with Web 2.0 technology, crowdsourcing has become an effective tool for firms to utilize the public to help the firm create new innovations. Researchers have explored how to obtain participants as well as how to achieve the best results with those that wish to participate. Therefore, research has been heavily focused on how to improve the crowdsourcing process for the firm but what it has not studied is how to improve the process for the participants. In this study, I aim to analyze how to improve crowdsourcing in a manner that will increase the participant’s satisfaction with the crowdsourcing event. Specifically, I am focusing on how different forms of feedback can be implemented by the host of the event in order to enhance the satisfaction of their participants with the event. An experiment was conducted in order to empirically test how different forms of feedback have an effect on a participant’s satisfaction toward a crowdsourcing event. This thesis contains the results and analysis of a crowdsourcing experiment looking at the effects of the valence of feedback, timing of feedback, and the privacy of feedback on the participant’s satisfaction toward the event. Positive valence of feedback and potentially the early timing of the feedback, have a significant and nearly significant positive effect on a participant’s satisfaction toward a crowdsourcing event.
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Chapter 1

Review of Crowdsourcing

Background of Crowdsourcing

Crowdsourcing is when a firm outsources a problem to the general public rather than solving the issue internally (Howe 2006, 2008). Usually this is done using the Internet due to the hyper-connectivity created by Web 2.0. Social media and the Internet have broken down the barriers of distance of communication to allow anyone to be able to connect with each other (Walter 2013). Crowdsourcing capitalizes on this convenience to allow those looking for information to obtain it from others without needing internal access to extensive resources. In relation to business strategies, companies are able to use this strategy to connect with their customers more than ever before.

Because of the rapid increase in technology and the ".com" technology advancement of the Internet, companies have been able to easily connect with their customers and gain valuable knowledge from them (Howe 2006). Over the past decades we have seen a dramatic shift of business practice norms of just selling a product to a consumer to now providing a product that the consumer has generated a desire for (Brown 2009). Today, because of the social media enabled by Web 2.0 technology, companies are now able to have access to information that they could not have accessed.

Although crowdsourcing can be a great tool to get customers engaged with a brand (Park and Bae 2014) as well as supply ideas for innovations, it can lead to participant dissatisfaction if
not handled properly. After the crowdsourcing event has completed, the customer satisfaction of the participants could potentially be negative if they do not feel that they have received value from the crowdsourcing initiative. They may feel as though they were not compensated for their time and effort spent on participating in the event (Fornell, Johnson, Anderson, Cha and Bryant 1996). If those who participate are not satisfied with the crowdsourcing event, this could lead to many issues for the host of the crowdsourcing initiative such as loss of loyal customers, bad reputation due to negative word of mouth, and loss of sales due to the loss of that potential customer and most likely their reference group (Anderson 1998). In addition, the carefully recruited and managed crowdsourcing community decreases rapidly in case of dissatisfaction, which would limit the host’s future ability to use the same resource for innovation purposes.

This thesis is geared toward uncovering how feedback can be used such that a crowdsourcing participant should receive a satisfactory value from participating in the initiative. By looking at the different variables of feedback timing, feedback valence and social influence surrounding feedback, I look to analyze how a participant’s post crowdsourcing emotions towards the crowdsourcing event are affected. By looking at the variables of the valence of feedback they receive (through positive or negative feedback messages), when they receive it (either during their task or after they have completed it), as well as their reactions to social influences they encounter throughout the initiative (via publicly displayed feedback or private messages), I will examine methods that can be used to maintain positive satisfaction for the participants. Overall, I set out to identify how crowdsourcing hosts can ensure that their participants do not have any remorse after participating in the event regardless of the outcome.
Review of Crowdsourcing Literature

Open innovation occurs when a company chooses to utilize external ideas in combination with internal ideas for problem solving as well as innovation (Chesbrough 2003). When a firm thinks of a solution to a problem on their own, they generally only think of solutions from just their point of view (Andersen, Kragh and Lettl 2013). However, when the firm allows others from outside the firm to aid in generating a solution to a problem, it opens a completely new source of ideas from multiple angles such that the firm has a better chance of finding a sustainable solution (Howe 2006; Sloane 2011). Open innovation especially became increasingly popular after the development of the Internet, which sparked the creation of the term crowdsourcing.

Jeff Howe defines crowdsourcing in two ways. Primarily, it is the outsourcing of a task to the public in order to widen the opportunities for idea generation. The second definition is the overall application of open source principles to areas other than software technology (Howe 2006, 2008). Because of Web 2.0 social media and ongoing Internet developments, companies can use the Internet as a source of direct communication to their customer market.

Crowdsourcing goes beyond open innovation such that it does not solely focus on innovation alone, but can also provide solutions that do not pertain to (technological) innovation per se (Bakić, Kostić and Nešković 2014).

Crowdsourcing can be done in a number of different ways depending on the type of information that is being sought. Some companies might be in search of a solution to a specific problem, therefore, they will use a crowdsourcing model that will be very specific to solving that particular issue. An example is Lay’s “Do us a flavor” campaign (Brandsplash 2013). Lay’s started this campaign to create new chip flavors that their customers would enjoy. Other
companies such as Dell use a different crowdsourcing model. Dell’s crowdsourcing model asks the public for ideas for general potential improvements rather than for solutions to a specific problem. Furthermore, crowdsourcing campaigns differ in their competitive nature of the crowdsourcing initiative and the potential reward that can be received. In Dell’s model of “IdeaStorm,” Dell does not offer a reward for submissions but they offer interaction amongst their customer base through the ability to comment on others ideas as well as vote on them (Dell 2015). This open communication amongst the participants leads to a community type platform rather than competitive. This drastically differs from the Lay’s “Do us a flavor” campaign. In this campaign, Lay’s offers a one-million-dollar reward to the overall winner of their initiative. This one winner receiving not only the prize money but also the recognition of having the best flavor idea creates a primarily competitive nature, which differs greatly from the open community in Dell’s “IdeaStorm.” Although the crowdsourcing elements of the type of problem, prize/recognition, and type of competition are all vitally important when conducting a crowdsourcing initiative (Bayus 2013; Slot, Srinivasan, and Wuyts 2013; Toubia 2006), there is still one aspect that has not been researched thoroughly: feedback. The participants of a crowdsourcing initiative are likely customers or have the potential to become future customers; therefore, in order for the company to receive effective results from the initiative, it is imperative to ensure that their participants are satisfied just as customers through customer satisfaction. In addition, building a community for crowdsourcing purposes takes resources. It is important to keep participants satisfied in order to keep the community size stable. Feedback could potentially be a way to establish that satisfaction (Homburg, Koschate and Hoyer 2006).

Feedback is a form of communication such that provides information to an individual with outside information on what they are doing (Eruat 2006). Feedback was mainly studied to
analyze its effects on learning; there is not much research on how it can be utilized for things other than learning such as motivation and satisfaction. Overall, feedback can have many forms due to the fact that it can be opinionated but all feedback shares the main purpose of giving information to the recipient. There are two forms of information that can be received, namely verification and elaboration (Shute 2008). Verification is feedback that just provides clarification on correctness while elaboration can also address correctness but varies through offering additional information on a topic, a response, an error, and other examples as well as providing added guidance (Shute 2008).

Although feedback has a common root of providing information, the manner as to how that information is provided can vary. In Susan Brookhart’s book, *How to Give Effective Feedback to Your Students*, she explains that feedback strategies can vary based on Timing (When), Amount (How much), Mode (How), and Audience (Public or Private). Then Brookhart continues to explain that the content of the feedback can vary based on Focus (Purpose), Comparison (Others or Self), Function (Praise/Descriptive or Evaluative/Judgment), Valence (Positive or Negative), Clarity (Understanding), Specificity (Guidance), and Tone (Brookhart 2008). This overall concept of feedback as a form of communication to provide information is a powerful tool that can be utilized by businesses to help them connect with those who they are working with, customers, or others that participate in initiatives such as crowdsourcing, just as a teacher can utilize it to connect with their students in the classroom (Brookhart 2008). If done effectively, these principles of feedback and communication can cause the recipient of the feedback to have an increased benefit from that information which leads to feedback’s effects on satisfaction (Shute 2008).
In order for a business to maintain any competitive advantage, they must stay in direct communication with their customers, through customer feedback, to ensure that they are optimizing their business opportunities (Evans and Laskin 1994). The same concept applies to crowdsourcing. When a company uses crowdsourcing to gain something from its customers, they could utilize feedback as a direct form of communication to influence satisfaction to the participant of the crowdsourcing initiative. Feedback is an effective aspect of interpersonal communication because it allows a person to analyze something they have done from someone else's point of view (Eruat 2006). Feedback is a powerful method of communication because the positive or negative alternative point of view provided by the giver of the feedback (Hattie and Timperley 2007) can influence elements of motivation and satisfaction. Therefore, when the communication generated through feedback is established between the conductor of the crowdsourcing initiative and the participant, it will ultimately have an effect on participant’s motivation toward the task as well as their overall satisfaction.

In Dijk and Kluger's article on feedback and motivation, they explain that motivation is driven by different forms of focus that can be impacted by feedback (Dijk and Kluger 2003). Dijk and Kluger use many theories that revolve around Higgins's Theory that explains how people are either motivated through the avoidance of failure or through the desire to succeed and how these two influencers of motivation can be implemented by feedback responses (Dijk and Kluger 2003). When feedback is utilized, it helps people see things outside of their point of view, which allows them to discover factors that they might not have thought about, therefore, creating new inspiration and motivation.

In addition, feedback can support a feeling of understanding (Ryan and Deci 2000). As stated previously, feedback offers addition information to the recipient that he might not have
thought of, therefore, increasing his understanding of the situation. This increase of understanding through the intrapersonal event of feedback allows the individual to feel better connected to the action, which in turn increases their intrinsic motivation due to the psychological need of understanding, which is satisfied by the feedback (Ryan and Deci 2000).

Feedback also has an influence on work efficiency. As mentioned before, feedback is a powerful tool that can be used to heavily influence learning (Hattie and Timperley 2007). If the participant feels more informed, she will feel more connected with what she worked on, which in turn will lead to an increase in intrinsic value to the participant that will increase intrinsic motivation, thus resulting in a higher work efficiency (Ryan and Deci 2000).

Satisfaction and participant happiness are the ultimate goal of this study. According to Giese and Cote, in their study of "Defining Consumer Satisfaction," they outline three components of satisfaction: 1) It is either an emotional or a cognitive response; 2) The responses need to relate to a particular focus such as an expectation, product, experience, etc.; and finally, 3) The response occurs at a set time (Giese and Cote 2002). Feedback then plays an important role, in regards to an individual’s satisfaction, especially after an event that they participated in, because it directly affects the core principles of satisfaction (Giese and Cote 2002).

Customer satisfaction is crucial in order for a company to be successful (Singh 2006). Satisfied customers can lead to brand loyalty as well as a strong reputation through word of mouth (Martínez-Tur, Peiró, Ramos and Moliner 2006). Customers and crowdsourcing participants are all a part of the general community that create a company’s market, therefore, participants are among and have the potential to become customers. Companies can use customer satisfaction techniques to generate that satisfaction within the crowdsourcing community when they are in contact with crowdsourcing participants.
One model that can be used for analyzing customer satisfaction is the justice model. The justice model can be used to determine how well the company is interacting with the customer on three different levels: the customer’s satisfaction outcome (distributive justice), how the customer came to that outcome (procedural justice), and finally how the company affected those outcomes (interactional justice; Tax, Brown and Chandrashekaran 1998). Distributive justice refers to the fairness that one feels they have received from the result of an event between two or more parties (Tax, Brown and Chandrashekaran 1998). Fairness is the result of both of the parties’ involved receiving equity from the result of the event between the parties. This resulting feeling of fairness will logically result in satisfaction due to the feeling of equity among the parties. Procedural justice refers to the fairness that one feels he has received through the procedure of how the event had taken place (Tax, Brown and Chandrashekaran 1998). If the individual participating in the event feels as though the procedure and policies of the event were fair to them throughout the entirety of the event, and were “impartial, accurate, consistent, and ethical” (Tax, Brown and Chandrashekaran 1998), then he will receive satisfaction toward the events he participated in due to the perceived fairness that he feels he has experienced. Finally, interactional justice refers to the actual interaction between two parties that lead to the final result of their interaction. Interactional justice is based on how an individual feels he was treated through an interaction. If the individual feels as though he was treated with courtesy and respect with friendlies and or empathy, then he will develop satisfaction with the interaction (Tax, Brown and Chandrashekaran 1998). Alternatively, if an individual feels as though he was treated rudely or mistreated in anyway, then he will be dissatisfied with the interaction because he would feel as though he could have been treated better.
The justice model is a framework that can be used to describe a company’s decision-making process and to evaluate how each step could have been better to achieve higher customer satisfaction. This model relates also to crowdsourcing because, like customers, participants of a crowdsourcing event need to feel as though they are treated fairly in order to feel satisfied. The justice model can be applied to a crowdsourcing event due to the similarity of interaction between a company and its crowdsourcing participants on the one hand, and a company and its customers on the other hand.

Crowdsourcing revolves around an interaction between the company that is seeking information and the participants that are willing to provide it. That being said, because the company is interacting with individuals, the company must understand that participants want their experiences to be customized in order to achieve their perceived value (cf. Winer 2001). One way to make crowdsourcing a customizable experience would be to offer feedback to the participants.
Chapter 2
Hypotheses

Conceptual Framework

When analyzing how feedback can be implemented to increase the participant’s satisfaction toward the crowdsourcing event, there are many variables that could potentially have major effects on satisfaction. Those variables could include aspects of customization such as length, comparison, praise/judgment, guidance, tone, verification, as well as other general aspects such as valence, audience and timing. In this study, the effects of general conditions such as feedback valence, audience privacy level and feedback timing on participant satisfaction towards the crowdsourcing event were analyzed due to their simplicity as well as their direct effects on the recipient of the feedback. Aspects of the feedback such as the amount of feedback as well as the degree of customization of the feedback were not used for reasons of operational simplicity of the experimental setup; keeping the amount of feedback stable and keeping the feedback general allowed for isolation of the other effects. Apart from these reasons, one could argue it could be in a company’s best interest to utilize limited length, non-customized feedback because the potential volumes of participants and corresponding submissions could potentially be prohibitive.

On the following page is a diagram of the three key feedback conditions of Valence (Positivity), Timing (Earliness), and Audience (Privacy) and how they are posited to directly affect the satisfaction of a participant toward a crowdsourcing event. It is also important to note that the Positivity of the feedback are posited to have added interaction effects with both the Earliness of the feedback as well as the Privacy of the feedback.
Crowdsourcing is fueled by those who choose to participate in the crowdsourcing initiative. A participant might not necessarily be a customer, but they have the potential to be. The best way to maintain a competitive advantage in business is to listen to your customers (Evans and Laskin 1994), therefore, companies must treat their crowdsourcing participants as customers to achieve the best results from an event. Thus, a company hosting a crowdsourcing event will want to use customer satisfaction methods to create satisfaction with their participants, as well as increase their motivation, which can be done through open communication such as feedback (Homburg, Koschate and Hoyer 2006).

Feedback is a form of communication that provides outside information to an individual’s point of view (Eruat 2006). Receiving information outside of the receiver’s own point of view can trigger an emotional or cognitive response that relates to the task at hand and will occurs at a

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**Figure 1 Conceptual Framework**

**Overall Effect of Feedback on Satisfaction with Crowdsourcing**

Crowdsourcing is fueled by those who choose to participate in the crowdsourcing initiative. A participant might not necessarily be a customer, but they have the potential to be. The best way to maintain a competitive advantage in business is to listen to your customers (Evans and Laskin 1994), therefore, companies must treat their crowdsourcing participants as customers to achieve the best results from an event. Thus, a company hosting a crowdsourcing event will want to use customer satisfaction methods to create satisfaction with their participants, as well as increase their motivation, which can be done through open communication such as feedback (Homburg, Koschate and Hoyer 2006).

Feedback is a form of communication that provides outside information to an individual’s point of view (Eruat 2006). Receiving information outside of the receiver’s own point of view can trigger an emotional or cognitive response that relates to the task at hand and will occurs at a
set time, which fulfils the three core components of satisfaction: 1) It is either an emotional or a cognitive response, 2) The responses need to relate to a particular focus such as an expectation, product, experience, etc., 3) The responses occurs at a set time (Giese and Cote 2002). Furthermore, when an individual receives outside information, it opens their mind to new ideas which can lead to inspiration for new motivation. This new motivation can lead to joining new crowdsourcing tasks or even to a growth in the participant’s relationship with the company. That added motivation and satisfaction will be generally directed towards the source of the feedback because the participant will feel more connected through the interaction with the company due to interactional justice within the justice model (Tax, Brown and Chandrashekarar 1998).

Therefore, because the feedback is tied to the crowdsourcing event, it can lead to an increase in the participant’s satisfaction with the crowdsourcing event. This leads to the formulation of the following hypothesis:

**H1:** Utilizing feedback in a crowdsourcing event will increase the participant’s satisfaction toward the crowdsourcing event compared to not implementing feedback.

**Main Effect of Positivity on Satisfaction with Crowdsourcing**

Feedback is a powerful method of communication because the positive or negative alternative point of view provided by the giver of the feedback (Hattie and Timperley 2007) can influence elements of motivation and satisfaction. As Higgins’s theory explains, individuals can be either motivated through the avoidance of failure or through the desire to succeed (Dijk and Kluger 2003). Thus, if a participant receives negative feedback, her satisfaction might decrease
because of her being incorrect, but her motivation might increase because she may be afraid of failing. When a participant receives positive feedback, her satisfaction can increase because she is praised for her work (Shute 2008) while her motivation can remain the same or increase due to an increase in her desire to succeed because she will feel as though she is making good decisions due to positive feedback (Dijk and Kluger 2003).

Also, a big factor regarding the positivity condition is its effect on the participants understanding of the situation. If a participant receives negative feedback, his level of understanding will decrease because he did something wrong which will increase his fear of failure (Ryan and Deci 2000; Dijk and Kluger 2003). Conversely, if a participant receives positive feedback, his level of understanding will increase because what he was working on was encouraged, which will create an increase in his desire to succeed (Ryan and Deci 2000; Dijk and Kluger 2003). This increase in understanding and desire to succeed will increase the participant’s feelings of competence, which in turn, according to the Self Determination Theory (Deci and Ran 2008), will result in an increase in psychological well-being, which would logically relate to an increase in satisfaction.

When the feedback is given, it is creating an interaction between the participant and the giver of the feedback. Following distributive justice as well as interactional justice from the justice model (Tax, Brown and Chandrashekaran 1998), when the host of the event distributes feedback it will lead to the participant to not only judge the fairness that he believes he is receiving from the event but also how he was treated based on the feedback. For example, when positive feedback is given, according to the distributive justice mechanism, the participant will perceive that he is being treated fairly for the work that he has done for the company such that he received a fair level of equity from the event, thus leading to an increase in satisfaction (Tax,
Brown and Chandrashekaran 1998). Alternatively, if the participant were to receive negative feedback, it will lead to the participant feeling as though he did not receive justice for his input, leading to a decrease in his perception of fairness received, resulting in a decrease in satisfaction. In addition, the positivity of the feedback will likely affect how the participant feels he was treated through the *interactional justice* mechanisms (Tax, Brown and Chandrashekaran 1998). Positive feedback may increase the participant’s satisfaction with the event because the participant will have a more positive view of the event due to the respect and courtesy given to the participant (Tax, Brown and Chandrashekaran 1998). Conversely, negative feedback can result in the participant viewing his treatment in the event as rude and disrespectful, which would decrease the participant’s satisfaction toward the event. I formulate the following hypothesis based on the preceding expectations:

**H2**: The Positivity of feedback will increase the participant’s satisfaction towards the crowdsourcing event.

**Main Effect of Earliness on Satisfaction with Crowdsourcing**

Along with the content of the feedback, the timing of when participants receive the feedback can make a difference as well. Feedback is a powerful tool that is strongly used for learning and understanding (Hattie and Timperley 2007; Ryan and Deci 2000). If the participant can gather more understanding of what he is working on when he is working on the task through feedback from the company, it will increase his intrinsic motivation because the feedback will satisfy his psychological need of understanding (Ryan and Deci 2000). The increase of intrinsic
motivation will also lead to an increase of work efficiency because the participant will feel more connected to what he is working on at that very moment (Ryan and Deci 2000), therefore not only increasing the participant’s satisfaction but also his motivation to provide something useful for the company.

Furthermore, when the participant receives his feedback during the event it will also impact the experienced *procedural justice* (Tax, Brown and Chandrashekaran 1998) towards the event. The increase of earliness of when the participant receives his feedback will increase procedural justice because he will feel as though he was given a fair opportunity to react to the feedback, thus increasing the participant’s satisfaction due to the increase perception of fairness (Tax, Brown and Chandrashekaran 1998). This increased satisfaction that is generated from the procedural justice should be directed toward the event since the participant’s involvement in the event is what connected him to the procedure of the feedback he received. Therefore, an increase of earliness should increase the participant’s satisfaction toward the crowdsourcing event.

Now the opposite is expected for crowdsourcing events in which the participant receives their feedback late in the process. The longer it takes before feedback is received, the more time the participant works on the task, the more connected he becomes with the work he has already been working on. Furthermore, a decrease in earliness of the feedback will decrease his procedural justice perception since he can no longer do anything about the feedback he received (Tax, Brown and Chandrashekaran 1998), which could make the process feel unfair to the participant. This decrease in procedural justice should then result in a decrease in satisfaction toward the event since the event is the source that connects the participant to the feedback. Reflecting this thinking, the following hypothesis is formulated:
**H3:** The earliness of feedback will increase the participant’s satisfaction toward the crowdsourcing event.

**Interaction Effect between Earliness and Positivity**

I will now cover the interaction effects of positivity and earliness on satisfaction towards the crowdsourcing event. These two factors combined create a new series of potential outcomes that could create different satisfaction levels of the participant, depending on how the variables interact. As previously mentioned, the increase of earliness of when the participant receives his feedback will increase procedural justice, thus increasing the participant’s satisfaction (Tax, Brown and Chandrashekaran 1998) and the increase of positivity will increase the participant’s understanding, thus increasing his satisfaction (Ryan and Deci 2000; Dijk and Kluger 2003). That being said, if there were to be an increase in positivity as well as an increase in earliness, the participant would receive positive feedback early which might give him praise for his work but it might not necessarily increase his procedure justice because he will really only be receiving satisfaction from the fact that they are being praised for their work (Shute 2008; Tax, Brown and Chandrashekaran 1998), but only for a part of his work as the participant had only started on his idea. Hence, distributive justice experienced should be limited as the underlying base is limited. Furthermore, if positive feedback were to be given later in the process, the participant is expected to have an increase in satisfaction from the feeling of being praised for all of his work. In addition, the participant is expected to experience an increase in procedural justice since the positive closing remarks are coming later in the event, such that he will feel as
though he was treated fairly in the whole event (Shute 2008; Tax, Brown and Chandrashekaran 1998).

Conversely, if there was negative feedback present, the participant will have a decrease in satisfaction because he will likely develop a fear of failure, but if negative feedback is given to the participant early enough, then the participant might experience an increase in procedural justice because he will be offered a chance to have enough time to respond to that feedback. Offering extra time to respond will likely also give him motivation to succeed because the feedback increased his understanding of the situation since the negative feedback is signaling that he went wrong somewhere (Dijk and Kluger 2003; Tax, Brown and Chandrashekaran 1998). Furthermore, according to the Self Determination Theory (Deci and Ryan 2008), the increase in understanding will lead to an increase in psychological well-being, which would contribute to an increase in satisfaction. Therefore, if negative feedback were to be given later in the process, the results could be the opposite effect because the participant could feel as though he did not have the time to respond to the feedback, therefore leaving the participant in a state of misunderstanding because although he would know where he went wrong, he was not given the time to go back and understand his errors.

Overall, although both of these variables independently create separate effects on a participant’s satisfaction toward a crowdsourcing event, when they interact, they create totally different effects depending on the situation of the feedback. Negative, early feedback will increase the participant’s satisfaction toward the event through the increase of the perception of procedural fairness by the participant (Tax, Brown and Chandrashekaran 1998). Alternatively, positive, late feedback could increase satisfaction toward the event through the participant having a feeling of being praised for the work that he has completed, as well as an increase in
procedural justice because the closing positivity will give the participant a feeling of the fairness toward the procedure of the event (Shute 2008; Tax, Brown and Chandrashekaran 1998). I formulate the following hypothesis to reflect this thinking:

**H4:** The positive effect of the earliness of feedback on the participant’s satisfaction with crowdsourcing will be weakened by the positivity of the feedback.

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**Main Effect of Privacy on Satisfaction with Crowdsourcing**

As mentioned previously, feedback can play a role in an individual’s feeling of understanding of the task at hand, but in order to achieve an effective understanding, the individual must have a sense of autonomy (Ryan and Deci 2000). Ryan and Deci explain that the classroom setting has the best methods for achieving autonomy, since students constructively work on assignments given to them, somewhat comparable to crowdsourcing events that are organized by companies for their crowdsourcing participant. This makes the connection to Brookhart’s book (2008) on effective ways to give feedback to students since the host of the crowdsourcing event can communicate with its participants just as a teacher would communicate with her students in order to drive satisfaction and motivation.

From the literature on feedback, the notion of self-referenced feedback is defined as a form of verification feedback (Shute 2008) that, if done privately, can allow an individual to evaluate himself based on the feedback that is given without comparing themselves to anyone else – in contrast to situations in which other people were provided with that individual’s feedback as well (Brookhart 2008). *Private feedback* offers a channel of feedback that can
provide information without the recipient comparing themselves to anyone else because the recipient would not receive others’ feedback. In addition, other participants will not hear the individual’s feedback. Conversely, in public feedback, a participant can base his interpretation of his feedback based on the comparison of his feedback with other participants’ feedback. Therefore, although the content of the feedback is not comparative, the public channel that elicits the feedback may lead to comparison amongst participants.

In addition, the privacy that private feedback offers provides a sense of customized, personal feedback to the recipient which leads to an increase in value for the recipient, therefore, leading to an increase in satisfaction (Winer 2001). This increase in satisfaction can also be tied to fact that an increase in privacy can lead to an increase in interactional justice since it will create an interpersonal connection between the giver and recipient of the feedback (Tax, Brown and Chandrashekaran 1998). Then, that increase of satisfaction can be directed toward the event specifically since the event is what generated the resulting interpersonal connection. Reflecting these arguments, the following hypothesis is formulated:

**H5:** The privacy of feedback will increase the participant’s satisfaction with crowdsourcing event.

**Interaction Effect between Privacy and Positivity**

I will now cover what happens when one combines the effects of the social influence of feedback and the positivity of feedback on satisfaction towards the crowdsourcing event.

As previously mentioned, an increase in privacy overall will increase interactional justice through increased customization and self-reference which should then increase satisfaction (Tax,
Brown and Chandrashekaran 1998). Increased positivity can also increase satisfaction by increasing the participant’s desire to succeed as well as by increasing perceptions of distributive justice, which should lead to increased satisfaction as well (Tax, Brown and Chandrashekaran 1998; Dijk and Kluger 2003). Conversely, negative feedback is expected to be associated with a fear of failure and a decrease in experienced distributive justice; and public feedback is expected to be associated with a decrease in interactional justice experienced through the participant comparing themselves to other participants, which will cause a decrease in satisfaction toward the event (Tax, Brown and Chandrashekaran 1998). Now, I will analyze what happens when these two variables interact.

Although an increase in positivity of the feedback received will increase a desire for success as well as the perception distributive justice (Tax, Brown and Chandrashekaran 1998; Dijk and Kluger 2003), a combination with a decrease in privacy, the results could counter balance or even increase satisfaction. The underlying mechanism for this reversal lies in the possibility that positive, public feedback could make the participant feel superior to others that he is comparing himself to. Subsequently, the desire to succeed could increase feelings of confidence due to the positive nature of the feedback (Deci and Ryan 2008). Conversely, negative, public feedback could result in the participant feeling inferior to others, therefore decreasing its feelings of competence and understanding of the situation, leading to a decrease in satisfaction towards the event (Deci and Ryan 2008). Negative, private feedback is expected to lead to an increase in interactional justice because the participant will feel as though he is being treated fairly by not having the negative comments being public (Tax, Brown and Chandrashekaran 1998). Positive, private feedback is expected to result in an increase in experienced interactional justice through the personalized positive communication, but it will not
lead to as much satisfaction as positive, public feedback because the private nature does not allow others to see the participant’s success, essentially leading to a zero net effect on the participant’s satisfaction. Overall, a decrease in positivity will strengthen the effects of privacy on satisfaction and a decrease in privacy will strengthen the effects of positivity on satisfaction. I formulate the following hypothesis, reflecting these expectations:

**H6:** The positive effect of privacy of feedback on satisfaction toward a crowdsourcing event will be weakened by the positivity of the feedback.
Chapter 3
The Study of Feedback

Method

Participants and Design. This experiment was a 2 (Social Influence: Private Feedback vs. Public Feedback) x 2 (Valence: Positive Feedback vs. Negative Feedback) x 2 (Timing: During Feedback vs. After Feedback) + Base (No Feedback) design. The experiment utilized a sample of 229 Penn State Sophomores (59% Male and 41% Female) via the Smeal study Laboratory and Qualtrics services, where they were asked to participate in a computer based crowdsourcing event in which each subject had a cubicle that was numbed between one and twelve. The crowdsourcing event developed specifically for the experiment was a (fake) idea generation task for a fictional division of a consumer electronics company (Samsung) within the domain of solar energy.

The subjects started the survey by filing in what day and time they participated in the experiment as well as their cubicle number in order to be able to not only identify them later but also for their feedback to be given to them properly later on in the experiment. Following, they were given a definition of crowdsourcing and proceeded to answer questions on the subject’s attitude towards several consumer electronics brands including the focal firm, their knowledge level of solar energy, their attitude towards solar energy, the likelihood that they would purchase a solar energy product and their current mood. To analyze the subjects’ brand preference, they were given a 5 point Likert scale ranging from strongly dislike to strongly like followed by a list
of brands. Later on they were asked specifically if they owned a Samsung product followed by a multiple choice question in which they were to select what type of Samsung product they owned: a (smart)phone, TV, Tablet, Wearable Technology, Home Appliance (microwave, washer/dryer), Camera, Portable hard disks or other memory card, LED light bulbs, or Other. Then the subjects were given a seven point Likert scale on their knowledge of solar energy ranging from No Knowledge to Expert Knowledge (Rijsdijk, Hultink and Diamantopoulos 2007). Then the subjects filled out two more seven point Likert scales on rating how well a series of attributes describes their opinion of solar energy, as well as the Samsung brand, ranging from describes very poorly to describes very well (Thomson, MacInnis, and Park 2005). The series of attributes used were likeable, sophisticated, attractive, appealing, stimulating, cool, pleasant, and exciting. Then they were asked to rate the likelihood that they would purchase a solar energy product on a seven point Likert scale ranging from very unlikely to very likely (Mittal 1989). Finally, the last portion of the beginning of the survey concluded by asking the subject to rate how much they agree or disagree with the mood statements of: “Currently, I am in a good mood,” “As I answer these questions I feel cheerful,” “For some reason I am not very comfortable right now,” “At this moment I feel edgy or irritable.” The subjects were asked to rate how much they agree with the given statements through a seven point Likert scale ranging from strongly disagree to strongly agree (Peterson and Sauber 1983).

After the subjects completed the first portion of the survey, they moved onto the information about solar energy and Samsung’s (fictional) Solar Me Green department’s initiative of “Green Sun,” they proceeded to the idea generation phase of the experiment, in which subjects were asked to describe in words and illustrate graphically their idea for a new solar product for the Green Sun initiative. The experimental manipulations are described in a further section. After
the subjects finished the crowdsourcing part of the experiment, they moved onto the final series of questions. In this final series of questions, the subjects were given manipulation checks to check the subjects’ experience of the different conditions, which are reported on in detail later. The subjects began the second portion of the survey with a repetition of the main questions on their attitude toward solar energy, their likelihood to buy a solar product, and their attitude toward the Samsung brand, to see if their answers have changed after the event. They were also asked to do another series of Likert scales to evaluate their attitude towards crowdsourcing by rating a series of statements on how well they describe crowdsourcing (Thomson, MacInnis, and Park 2005). The Likert scale ranged from describes very poorly to describes very well and used the same attributes that were asked in the similar question about the subject’s opinion on solar energy and the Samsung brand. Then they were again given a seven point Likert scale on their current mood ranging from strongly disagree to strongly agree just like before. New statements included attitude towards the crowdsourcing event (Peterson and Sauber 1983). Those added statements included: “I enjoyed the crowdsourcing experience,” “I would participate in a crowdsourcing event again in the future,” and “I enjoyed participating in this product development task.” Creative ability was also measured with the following statement: “Compared to others, I would say that my creative abilities are above average”. The survey continued with a question asking whether or not they went back to change their idea or if they would have liked to if given the chance. Then the subject was given another series of seven point Likert scales to rate how much they agree with given statements about their feedback ranging from strongly disagree to strongly agree (Brakus, Schmitt, and Zarantonello 2009). The statements that were used to evaluate the feedback were: “The feedback I received was very relevant,” “The feedback I received was very personal,” “The feedback I received was very credible,” “The feedback I
received was very useful,” and “The feedback I received was very suitable.” Finally, before the subject concluded with basic demographic information of age, gender, and school year, they were asked to complete one final series of seven point Likert scales in which they had to choose how much they agree with the series of mood statements on a range of strongly disagree to strongly agree (Peterson and Sauber 1983). The mood statements included: “I felt motivated,” “I felt encouraged to do better,” “I felt confident,” “I felt angry,” “I felt praised for my work,” “I felt insulted,” “I felt happy,” “I felt upset,” “I felt like I did something wrong,” “I received sufficient guidance for the task,” “I felt informed,” “I felt confused,” “I did not want to fail,” “I felt competent,” “I felt lost,” “I understood the situation,” “I felt like I made good decisions.” The survey was followed by thanking them for their participation as well as a debriefing of how the experiment was a fake event, and described the purpose of the study. The ages of all of the students were between 18 and 21. All of the survey questions can be viewed in Appendix A.

Experimental conditions. During the idea generation phase of the event, subjects received varying types of feedback, depending on their combination of the Timing, Privacy, and Valence conditions. Details are offered later, when the manipulations are discussed. Combined, there were nine forms of feedback that a subject could receive: 1) No Feedback (n = 26), 2) During-Positive-Public (n = 23), 3) During-Negative-Public (n=27), 4) During-Positive-Private (n=23), 5) During-Negative-Private (n=26), 6) After-Positive-Public (n=25), 7) After-Negative-Public (n=22), 8) After-Positive-Private (n=26), and 9) After-Negative-Private (n=25). The forms of feedback were given to the subjects at random.

During the idea generation phase, the researcher was dressed professionally and walked around the room in order to provide the subjects with the feeling as though the feedback they were receiving was actually coming from the observer watching them. Along with the observer,
there was a timer that was displayed on the subject’s screen to replicate the effect of having a deadline in a real crowdsourcing task, such that the experiment could emulate a real task as close as possible. Then, once the subjects had either clicked through or had run past their deadline, causing them to be bumped out of the idea generation phase, they were then asked to continue the survey in which they had begun in the beginning of the event.

Experimental conditions and manipulation. Subjects were exposed to one of nine feedback conditions: 1) No Feedback, 2) During-Positive-Public, 3) During-Negative-Public, 4) During-Positive-Private, 5) During-Negative-Private, 6) After-Positive-Public, 7) After-Negative-Public, 8) After-Positive-Private, and 9) After-Negative-Private. Each of the feedback statements used similarly worded statements for the positive and negative conditions and were merely rephrased for the ‘during’ condition (reflecting early feedback) and ‘after’ condition (reflecting late feedback) that were selected through a pretest (details follow). These statements were designed as similarly as possible in order to focus on how the conditions in general could affect the subject’s attitude and satisfaction toward the event, and not be affected by the content or other characteristics of the actual feedback message. As mentioned within each condition, manipulation checks were used to analyze whether the subject was actually able to understand what conditions they were receiving.

Valence. The statement that the subjects received was either positive or negative in nature. The valence of the statements was tested through multiple pre-tests, in which 77 college students were asked to rate fourteen candidate statements based on how positive they perceived the message on a seven point Likert scale ranging from extremely negative to extremely positive (Brakus, Schmitt, and Zarantonello 2009). Two pre-test surveys were distributed in order to analyze how subjects would evaluate the valences of fourteen statements in the ‘during’ format
and the ‘after’ format. Some of the statements included: “Good job on your submission, I found your idea very interesting,” “I am not sure your idea is exactly what I was looking for.”, “I loved your idea, it might actually work!”, “Your Ideas are very interesting.” and “I don’t think I understand where you are going with this idea.” All of the statements used in the pretest can be found in Appendix B.

In the pre-test, subjects rated the valence of each of these statements. Following, they evaluated each statement on how much they agreed/disagreed with a series of statements that identify how the feedback statement affected the subject’s mood and attitude. Some of the identifying statements used included: “Motivates me to work harder,” “I feel praised for my work,” and “Makes me not want to fail.” All of the identifying statements can be found in Appendix B. These statements helped the selection of statements to be used in the experiment without causing any confounds due to other differences, for example, mood effects.

Then, in order to come to our final statements, individual sample t-tests were conducted to analyze each statement compared to one another based on their valence ranking to find potential pairs of positive and negative statements that were distinctly positive and negative. Once those potential pairs were discovered, another series of independent sample t-tests were conducted to analyze how each of the pairs compared to one another on the identifying statements, to check that the pair of statements selected was balanced across the other aspects, such as the effect on a subject’s mood, to avoid confounds. Through this, I was able to identify the main statements from the ‘after statement’ and ‘during statements’ surveys.

For the ‘Feedback After’ condition, the main statements selected were: “Good job on your submission, I found your idea very interesting” (5.68 out of 7 where 1 means negative and 7 means positive) and “I am not sure your idea was exactly what I was looking” (2.84 out of 7
where 1 means negative and 7 means positive). These two statements differ in their valence ($t = 1.69, \ p = 0.05$), which indicates that when these statements are used, the subject can clearly signify the statements as positive or negative.

Then in the ‘during statement’ survey, the main statements were: “Your ideas are very interesting,” (5.45 out of 7 where 1 means negative and 7 means positive) and “I don’t think I understand where you are going with this idea” (2.55 out of 7 where 1 means negative and 7 means positive). These two statements differ in their valence ($t = 1.49, \ p = 0.07$), which indicates that when these two statements are used, the subject can again clearly signify the statements as positive or negative. In order to achieve consistency in the effects of the feedback within the experiment, as well as the closeness in the phrasing of the four statements, the statements found in the ‘Feedback After’ condition were used because of their stronger ability to signify positivity and negativity.

Overall, both of these pairs were extremely similar and along the same lines of expressing interest and expressing a feeling of doubt with the subjects submission, therefore, in order to stay consistent with the appropriate, effective, phrasing of the statements, the final statements in the experiment were: “Good job on your submission, I find your idea very interesting,” and “I am not sure if your idea is exactly what I am looking for,” which are rephrased and used in both the during and after feedback as well as in the public and private feedback. The manipulation checks from the experiment show a distinct significance between positive and negative phrases in the experiment ($t = 1.65, \ p = 0.02$) as well as no significant different between using the statements for both during and after ($t = 1.65, \ p = 0.30$) as well as for private and public ($t = 1.65, \ p = 0.20$).
Timing. For the next condition, the timing of when the subject received the feedback was manipulated. The subject would either receive his feedback during the idea creation phase of the crowdsourcing event or after he had completed it. The ‘during’ feedback popped up on the subject’s screen while he was working on his crowdsourcing task. Then, the ‘after’ feedback was triggered either right after he finished the ideation phase in the crowdsourcing task or after the timer runs out, whichever came first.

During the manipulation check, when the subjects were asked to answer questions about their feedback, 87 percent of subjects were able to correctly identify when they received their feedback. Of the twenty-nine subjects that incorrectly answered when they received their feedback, six of them were incorrect because they mistakenly thought they had not received feedback at all while twenty-two did not understand that they received feedback during the task, and one subject did not understand he received feedback after the task. Incorrectness as to when they received feedback could just be because respondents might have felt finished with task. The manipulation check showed a significant difference between the conditions related to the timing of the feedback ($t = 1.66, p = 0.000$). Therefore, the respondents might have felt as though feedback came after they had completed their work although it was intended to come during the task, or vice versa. Overall, the subjects were still subjected to the feedback, therefore, the timing of the feedback can still have had an effect on their overall attitudes, even if they did not correctly reproduce how it was given to them. As a result, all subjects were kept in the analysis.

Social Influence. Social influence was manipulated in how the subject received his feedback. The public feedback was displayed on the subject’s screen in a list format having every cubical number with feedback next to it so the subject would not only have believed that he saw other people’s feedback, but he would also have felt as though other people were able to
see his feedback. In order to enhance the effects of this feedback, every cubicle had their number displayed with number signs above each of the subject’s individual cubicles so that everyone could see each other’s cubicle number. Each subject received the same positive or negative statement depending on which random condition they received but all of the other feedback items within the public list were randomized. Then, for those who received private feedback, they received a private message with just their cubicle number and feedback highlighted on their screen.

In the end portion of the survey, the subjects were asked questions on the privacy condition of their feedback, which provides a manipulation check to see whether or not they correctly identified the feedback that they had received. The manipulation test showed that 97 percent of the 97 subjects that received public feedback were able to identify that they had received public feedback and 93 percent of the 100 subjects that received private feedback were able to determine that they had received private feedback. For both of the conditions, there was a very low rate of error indicating the success of our manipulation check. The subjects that were not able to correctly identify whether their feedback was private or public are included in the analysis, as they may still have been affected by the feedback even if they were not aware of the way they received it.

*Control group.* The subjects who did not receive feedback encountered similar circumstances as the other subjects with the exception that when their timer ran out or when they clicked to continue, they just proceeded to the second half of the survey questions. Their survey differed only in the aspect that they skipped the manipulation checks after clicking that they did not receive feedback, but continued to the questions regarding their overall satisfaction towards the crowdsourcing event, the brand Samsung, and the topic of solar energy products. By having
this base control group, I am able to analyze how the satisfaction levels of those who did receive feedback actually compare to those who did not receive any feedback at all. Although the subjects in this condition were not exposed to the detailed manipulation checks on the feedback characteristics, they did complete the main manipulation check about whether they received feedback or not. All of the subjects that received no feedback correctly identified that condition after the crowdsourcing task. Of the 223 subjects that participated, 97 percent of them were able to correctly identify whether they received feedback or not. Of the six subjects that were incorrect, they all had received feedback but did not realize that they did. One of them had received During-Positive-Private feedback while the other five had received After-Positive-Private feedback, which could just mean that they either clicked through it too fast or since it was private they might not have realized it was actually feedback. To double check, the manipulation check for feedback vs. no feedback came back to be nearly significant ($t = 1.69, p = 0.14$). The misidentified conditions do not mean the feedback did not have any effect on them because they still had the experience of receiving it. They might have just overlooked it since it was positive. For these reasons, these subjects were kept in the analysis.
**Results**

*Controls* – In order to understand whether and how Positivity, Privacy and Earliness have an effect on a participant’s attitude toward the crowdsourcing event (Cronbach’s Alpha = .94), I first established control measures that could have an effect on the participant’s satisfaction. These controls include variables such as whether the participant has previously participated in a crowdsourcing event, prior knowledge on the topic of the event, and their opinion on their level of creativity. Significance levels for each of these controls can be found in the table below. One control variable turned out to be insignificant: multiple regression analysis indicated that having a connection to the brand, such as owning one of their products, actually does not appear to impact the participant’s satisfaction toward the event (Beta = -0.20, Std. Error = 0.14, p = 0.17). Having more knowledge of solar power improves the participant’s satisfaction towards the crowdsourcing event (Beta = 0.13, Std. Error = 0.16, p = 0.03), and a higher self-evaluation of creativity also improves the participant’s satisfaction towards the crowdsourcing event (Beta = 0.12, Std. Error = 0.05, p = 0.02). (Table on Following Page)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Beta</th>
<th>Std. Error</th>
<th>Standardized Beta</th>
<th>T</th>
<th>Sig.</th>
<th>VIF</th>
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<td>15.63</td>
<td>0.00</td>
<td>-</td>
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<tr>
<td>Past Participation</td>
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<td>0.53</td>
<td>0.75</td>
<td>0.45</td>
<td>1.06</td>
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<tr>
<td>Knowledge of Solar Energy</td>
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<td>0.16</td>
<td>2.22</td>
<td>0.02</td>
<td>1.10</td>
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<tr>
<td>Self-Evaluation of Creativity</td>
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<td>0.05</td>
<td>0.18</td>
<td>2.46</td>
<td>0.02</td>
<td>1.12</td>
</tr>
</tbody>
</table>

R2: 0.08; R2 adjusted: 0.07, F=5.88 (p=0.00), n= 197
Main Variables – Before I analyzed the three main effects of Privacy, Positivity and Earliness, I analyzed whether feedback in general has a positive effect on the participant’s attitude toward the crowdsourcing event. Multiple regression analysis determined that feedback in general does not have a significant positive effect on the participant’s satisfaction toward the event (Beta = -0.23, Std. Error = 0.21, p = 0.14 (One Sided)).

Table 2. Effect of Feedback on a Participant's Satisfaction Toward a Crowdsourcing Event

<table>
<thead>
<tr>
<th>Variable</th>
<th>Beta</th>
<th>Std. Error</th>
<th>Standardized Beta</th>
<th>T</th>
<th>Sig.</th>
<th>VIF</th>
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<td>0.64</td>
<td>0.52</td>
<td>1.07</td>
</tr>
<tr>
<td>Knowledge of Solar Energy</td>
<td>0.12</td>
<td>0.06</td>
<td>0.14</td>
<td>2.05</td>
<td>0.04</td>
<td>1.10</td>
</tr>
<tr>
<td>Self-Evaluation of Creativity</td>
<td>0.11</td>
<td>0.05</td>
<td>0.17</td>
<td>2.42</td>
<td>0.02</td>
<td>1.11</td>
</tr>
<tr>
<td>Feedback</td>
<td>-0.23</td>
<td>0.21</td>
<td>-0.07</td>
<td>-1.09</td>
<td>0.14</td>
<td>1.01</td>
</tr>
</tbody>
</table>

R2: 0.07; R2 adjusted: 0.05, F= 4.18 (p= 0.00), n= 223

Once the proper control variables were determined, and the analysis focused on only those respondents that received feedback, it was time to add our main effect variables of Privacy, Positivity, and Earliness. For Privacy, I used a binary variable that designated whether the participant received private feedback or public feedback. Then for Positivity, I used a 7-point Likert scale measuring the participant’s perception of how positive he believed his feedback was in order to capture a more fine-grained measure of the perception of valence of the feedback received rather than using a binary variable that is less sensitive to variation. Then for the final variable Earliness, I created a percent variable that measured how much time the participant spent working on their task after he received feedback to reflect the timing of receiving his
feedback. This percent variable consisted of subtracting the time that the participant used after he received his feedback from the total time used for idea generation in the event, proceeded by dividing by the total time used for idea generation.

Multiple regression analysis indicated that Privacy was not significant (Beta = -0.07, Std. Error = 0.15, t = -0.48, p = 0.32 (one-sided)), Positivity was the only variable to be truly significant (Beta = 0.09, Std. Error = 0.04, t = 2.40, p = 0.01 (one sided)), and Earliness was marginally significant (Beta = 0.34, Std. Error = 0.27, t = 1.29, p = 0.10 (one sided)).

Table 3. Main Effect Variables on a Participant’s Satisfaction Toward a Crowdsourcing Event

<table>
<thead>
<tr>
<th>Variable</th>
<th>Beta</th>
<th>Std. Error</th>
<th>Standardized Beta</th>
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<th>Sig.</th>
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<td>0.15</td>
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<td>Earliness</td>
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<td>1.06</td>
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</table>

R2: 0.12; R2 adjusted: 0.09, F= 4.09 (p= 0.00), n= 191

Interaction Variables – Following the main variables, two interaction terms were tested as well: the interaction between Privacy and Positivity as well as the interaction between Earliness and Positivity. Although Positivity was indicated to be significant and Earliness was nearly significant in the main effects model, the interaction affects between the two variables did not come out to be significant (Beta = -0.02, Std. Error = 0.15, t = -0.13, p = 0.45 (one sided)).
Following, the interaction between Positivity and Privacy also did not indicate a significance either (Beta = 0.04, Std. Error = 0.07, t = 0.53, p = 0.30 (one sided)).

<table>
<thead>
<tr>
<th>Variable</th>
<th>Beta</th>
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<th>Standardized Beta</th>
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<td>Privacy</td>
<td>-0.24</td>
<td>0.35</td>
<td>-0.14</td>
<td>-0.68</td>
<td>0.25</td>
<td>5.77</td>
</tr>
<tr>
<td>Earliness</td>
<td>0.41</td>
<td>0.63</td>
<td>0.11</td>
<td>0.65</td>
<td>0.26</td>
<td>5.80</td>
</tr>
<tr>
<td>Positivity</td>
<td>0.08</td>
<td>0.07</td>
<td>0.14</td>
<td>1.17</td>
<td>0.12</td>
<td>3.07</td>
</tr>
<tr>
<td>Earliness x Positivity</td>
<td>-0.02</td>
<td>0.15</td>
<td>-0.02</td>
<td>-0.13</td>
<td>0.45</td>
<td>6.62</td>
</tr>
<tr>
<td>Privacy x Positivity</td>
<td>0.04</td>
<td>0.08</td>
<td>0.09</td>
<td>0.53</td>
<td>0.30</td>
<td>6.39</td>
</tr>
</tbody>
</table>

R2: 0.12; R2 adjusted: 0.08, F= 3.08 (p=0.00), n= 191

*Further Analysis* – After analyzing the data that was collected, another dependent variable was analyzed that a company might find interesting when working with feedback in its crowdsourcing event. Not only would a corporation be interesting in knowing whether their feedback will have an effect on the participant’s satisfaction toward crowdsourcing event but it may also want to know how feedback will affect the participant’s attitude toward the brand. By taking the participants average attitude toward the brand after they had completed the task (agreeableness to eight statements describing the brand on a 7-point Likert scale; statements included: ‘Likable,’ ‘Sophisticated,’ ‘Attractive,’ ‘Appealing,’ ‘Stimulating,’ ‘Cool,’ ‘Pleasant,’ and ‘Exciting;’ Cronbach’s alpha = .96), the analysis uncovered interesting results.
Controlling for previously owning a product from the brand (Beta = 0.75, Std. Error = 0.15, p = 0.00), receiving feedback in general is not significant (Beta = -0.24, Std. Error = 0.22, p = 0.27 (two sided)), but both Positivity (Beta = 0.17, Std. Error = 0.07, p = 0.01 (two-sided)) and Earliness (Beta = 1.33, Std. Error = 0.63, p = 0.01 (two sided)) of the feedback had significant, positive effects on the participant’s attitude towards the brand. In addition, the interaction between the Positivity and Earliness was found to be negatively significant (Beta = -0.34, Std. Error = 0.15, p = 0.02 (two sided)). In the discussion section, I will discuss the interpretation of these results.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Beta</th>
<th>Std. Error</th>
<th>Standardized Beta</th>
<th>T</th>
<th>Sig.</th>
<th>VIF</th>
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</thead>
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<td>Intercept</td>
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<td>0.32</td>
<td>-</td>
<td>11.29</td>
<td>0.00</td>
<td>-</td>
</tr>
<tr>
<td>Owning Company’s Product</td>
<td>0.77</td>
<td>0.15</td>
<td>0.35</td>
<td>5.15</td>
<td>0.00</td>
<td>1.01</td>
</tr>
<tr>
<td>Privacy</td>
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<td>0.10</td>
<td>0.59</td>
<td>0.57</td>
<td>5.73</td>
</tr>
<tr>
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<td>0.07</td>
<td>0.30</td>
<td>2.58</td>
<td>0.01</td>
<td>2.30</td>
</tr>
<tr>
<td>Earliness</td>
<td>1.63</td>
<td>0.63</td>
<td>0.42</td>
<td>2.57</td>
<td>0.01</td>
<td>5.70</td>
</tr>
<tr>
<td>Earliness x Positivity</td>
<td>-0.34</td>
<td>0.15</td>
<td>-0.40</td>
<td>-2.30</td>
<td>0.02</td>
<td>6.45</td>
</tr>
<tr>
<td>Privacy x Positivity</td>
<td>-0.05</td>
<td>0.08</td>
<td>-0.10</td>
<td>-0.58</td>
<td>0.56</td>
<td>6.37</td>
</tr>
</tbody>
</table>

R2: 0.16; R2 adjusted: 0.13, F= 5.66 (p= 0.00), n= 191
Discussion of Results

When analyzing the results, it turns out that on average, feedback does not have a significant effect on the participant’s satisfaction toward the crowdsourcing event in general, therefore, H1 cannot be confirmed. However, it was found that some of the main effect variables had a significant or marginally significant impact on the participant’s satisfaction towards the crowdsourcing event. Thus, although on average, feedback in general does not have a significant effect on the participant’s satisfaction toward the event, it could have an effect if feedback is crafted along certain dimensions, which leads me to the discussion of the main effects of privacy, earliness, and positivity of feedback.

As I have discovered in the results, positivity was determined to have a highly significant effect on the participant’s satisfaction toward the event when testing a main effects model. As shown in the results, for every 1-unit increase of the perception of positivity, on a 7-point scale, it will result in a 0.09 increase in satisfaction. This then confirms H2 hypothesis that the positivity of feedback will increase the participant’s satisfaction towards the crowdsourcing event. Therefore, if feedback is used, the more positive the feedback appears to be, the higher the participant’s satisfaction toward the event that he is participating in will be. This also shows that if positivity decreases, so will satisfaction, therefore in order to increase the participant’s satisfaction, feedback must be formulated as positive for the participant or else it will have a reverse effect on the participant’s satisfaction toward the event.

Following, the tests on the effect of earliness showed some interesting results. Earliness was not found to have a marginally significant positive effect on satisfaction toward the crowdsourcing event, when tested in a main effects model, thereby confirming H3. This result could be interpreted that the sooner the participant receives feedback, the higher the participant’s
satisfaction towards the event. Therefore, a participant is expected to be more satisfied with the
event if he is given enough time to respond to the feedback such that he will feel as though he is
given every opportunity available to succeed. Following, H5 could not be confirmed due to the
insignificance of the effect of privacy on a participant’s satisfaction toward a crowdsourcing
event. According to the data analysis, it turns out that the effect of privacy is highly insignificant
in relation to a participant’s satisfaction toward the event. This shows that the participant is not
affected by how private his feedback might be. Although the analysis determined privacy as
insignificant, I believe this might be due to how the variable was implemented during the
experiment. The privacy of feedback might not have had a significant effect on the participants
because the participant might not have fully felt as though their feedback was private or public
due to the environment of the experiment, which I will discuss further in the limitation section.
Although it could very well be that privacy just does not have a significant effect on satisfaction
toward the event; it could still have an effect on other variables not studied in this research –
which is an avenue for future research on the topic.

Interaction Terms – After analyzing the significance of the main effect variables studied,
the interaction of some of the key variables were analyzed to determine whether the presence of
both variables could have some type of effect on the participant’s satisfaction. The analysis
showed that neither of the interactions of positivity and earliness as well as positivity and privacy
have significant effects on a participant’s satisfaction toward a crowdsourcing event. Therefore,
H4 and H6 cannot be confirmed. Although the interaction terms might not have an effect on
satisfaction towards the event, they might influence other variables not directly studied in this
research.
Further Analysis – After analyzing the data from the main dependent variable, I was able to uncover some interesting insights on how these variables might affect another important variable that a company would be very interested in knowing: the effect on the participant’s attitude towards the brand involved in the crowdsourcing event. Just as in the first analysis, regarding satisfaction toward the event, when it comes to the participant’s attitude toward the brand, on average, feedback does not have a particularly significant effect on the participant’s attitude but positivity and earliness of the feedback both indicated a significant positive effect on the participant’s attitude towards the brand involved in the event. Therefore, although these variables might not have as strong of an effect on the participant’s satisfaction toward the event, if they are used it could potentially have a positive effect on the attitude toward the company’s brand involved which could lead the participants having an improved relationship with that brand, which could lead to other benefits for the company such as increase brand awareness, brand likeability, or maybe even purchases. Even more interesting was that although neither of the interaction terms were found significant in regards to the participant’s satisfaction toward the event, one of the interaction terms was found to be highly significant in regard to the participant’s attitude toward the company’s brand. It turns out that not only positivity and earliness individually are positive effects, but the interaction between these two variables was also found to be significant.

To be specific, the analysis revealed a negative relationship between the interaction term and the dependent variable of attitude toward the brand. This means that a decrease in positivity alone will decrease the participant’s attitude toward the brand, however when a decrease in positivity is counterbalanced by an increase in earliness, attitude towards the brand will increase because the negative feedback came earlier in the crowdsourcing event. Therefore, it seems that
A participant will develop a better attitude towards the brand if he receives negative feedback sooner because he will have time to respond to it rather than be left with negative feedback late in the crowdsourcing event, negatively affecting the relationship between the participant and the brand. Following the mechanisms that underlie H4, I tentatively suggest post hoc that if the participant has more time to react to the negative feedback he will feel as though he received a fair opportunity to improve his performance rather than if he received it later in the event because then he will feel as though he did not receive sufficient time to react to the feedback. Therefore, the participant is likely to be left with a feeling of remorse, resulting in a negative impact on the attitude toward the brand that he is interacting with. The exact pattern of the interaction effect is displayed in the Brand Attitude Interaction Graph below (the levels of positivity and earliness are depicted at one standard deviation from the mean):

**Table 6. Brand Attitude Interaction Graph**
Chapter 4
Managerial Implications

A key purpose of this research is to understand how a company could utilize this information to receive optimal results if they were to perform a crowdsourcing event. Based on the results found in the analysis, since there is no significant positive effect of feedback on average on a participant’s satisfaction towards the event, it would not hurt the company if they chose not to implement feedback in their crowdsourcing event. However, based the positive effect positivity has on a participant of crowdsourcing, it appears that if a company were to decide to utilize feedback, it would be beneficial to a company to focus on making that feedback more positive in nature such that that company can increase the participant’s satisfaction toward the event. Furthermore, despite Earliness having only a marginally significant effect on a participant’s satisfaction toward the event, based on its effect on attitude toward the brand involved, it might be important to also use the interaction effect results found in the further analysis to make sure that the feedback received to the participant is truly effective and beneficial to not only the participant but the company as well. If a company were to utilize feedback to their advantage, it should not only make sure that their feedback is positive but it should also keep in mind the timing of the feedback. If the feedback provided is not as positive, the company should understand how the timing of that feedback might affect the participant’s attitude toward the brand even if it does not have an effect on the participant’s satisfaction towards the event itself. Specifically, this means that positive feedback is best presented late in the process, whereas negative feedback is best provided early in the process.

In the end, a company engaging in a crowdsourcing event will want to do everything they can do to not only gain insights from the participants but also improve the company’s
relationships with the participants. Even in the case that the participant does not gain satisfaction toward the event, there is a chance that the participant could have an increased attitude toward the brand which could lead to alternative benefits from the company hosting the event.
Chapter 5
Looking Back and Moving Forward

Limitations

Looking back there are some things in the research setup that could have been improved in order to better test my hypotheses. Most of the issues are related to the experiment that could have been executed better. The first thing that could have improved was the implementation of privacy condition in the experiment. In theory, the manipulation of the private feedback and the public feedback could have been effective, but in reality, it seemed to be very easy for the participant to tell that the feedback was generic and that it was fake. After all, for those that received the public feedback, the participants could see that feedback was given to the cubicles that did not have a participant in them (not all cubicles appeared to be filled during the execution of the experiment). This really discredited the feedback that was given therefore, rendering the Privacy manipulation less effective, such that it could have caused the Privacy effect to be insignificant. It could have even been improved if the environment that the participants participated in could have been different, such as in a more public atmosphere such that they could have felt the Privacy effect even more.

Next to the Privacy variable, the timing aspect within the Earliness variable could have been improved or utilized better within the experiment. When I was walking around and watching people work on the event, I got the feeling that either some people had too much time and other people just took too much time and they were not able to finish the event. On the one
hand, the timer did simulate a time limit for the crowdsourcing task; on the other hand, the participants may have felt a bit rushed now. I suspect that the timing effect could have been better examined if there was a larger time limit given to the participants such that they would have had been more invested into the event in order to feel a greater impact from the feedback given.

**Future Research Directions**

There are other aspects related to feedback in crowdsourcing events that can be researched that can add insights to the efforts to improve participant satisfaction with the crowdsourcing event. Some of those variables include different variables that can be used to implement the feedback given to the participant, such as the personalization of the feedback through the length and or a customized message, comparison to themselves or others, and even guidance through specificity of the message (Brookhart 2008). In addition, there are other dependent variables that can be looked into to find out further effects feedback could have. For example, it would be interesting to explore the effects of feedback on purchase intentions or future participation in crowdsourcing events. It would also be interesting to look into how feedback affects the quality of the ideas that are submitted by the participant or even how it affects the length of time that they participate on the task. That length of time could also potentially be used to analyze other things such as connection to the brand, or overall satisfaction. Overall, the findings in this research were insightful but can be further expanded to offer even more insights that businesses could use to create a very effective and efficient crowdsourcing event that could benefit everyone involved.
Appendix A

Mock Samsung Crowdsourcing Experiment

Consent for Research

CONSENT FOR RESEARCH

The Pennsylvania State University

Title of Project: Performance in Crowdsourcing

Principal Investigator: Johanna Slot

Address: 476 Business Building, University Park PA 16802


We are asking you to be in a research study. This form gives you information about the research. Whether or not you take part is up to you. You can choose not to take part. You can agree to take part and later change your mind. Your decision will not be held against you. Please ask questions about anything that is unclear to you and take your time to make your choice.

1. Why is this research study being done?
   · This research study is being done to understand the performance of individuals in crowdsourcing tasks (description of crowdsourcing: when companies ask individuals outside the firm to come up with ideas, totally for innovation purposes).
   · We ask you to participate in the crowdsourcing task we have organized. We are interested in your performance in various situations.
   · We are asking you to be in this research because your background as a Smeal College of Business student gives you the perfect background knowledge that is necessary for the task.
   · Overall, approximately 250 participants are needed to take part in the research, all at the Behavioral Research Lab at the Smeal College of Business.

2. What will happen in this research study?
   · Everybody who signs up for the study who is above 18 years of age is eligible to take part in this study. No further screening will happen;
The experiment will be conducted as follows:

- First, you will be asked to answer some questions (survey);
- Second, you will read about a certain technology that is used by a certain firm that will ask you to think of a new product application of that particular technology. This is the crowdsourcing task;
- Third, you will be asked to describe your new product idea (you can provide a description and you may draw your idea). In this phase, you may or may not receive feedback from the crowdsourcing task manager;
- Fourth, you will be asked to answer some more questions (survey) about your experiences in the crowdsourcing task.
- We will randomize assignment to the exact conditions you will experience during the crowdsourcing task;
- You are free to skip any questions in the survey that you prefer not to answer;
- After the study is concluded, your new product ideas will be collected and will be evaluated for research purposes. There will be no identifier that ties your name or identity to your new product idea or your survey answers. Also, the new product ideas are solely collected for the purpose of research.

3. **What are the risks and possible discomforts from being in this research study?**
   There is a risk of loss of confidentiality if your information or your identity is obtained by someone other than the investigators, but precautions will be taken to prevent this from happening. The confidentiality of your electronic data created by you or by the researchers will be maintained to the degree permitted by the technology used. Absolute confidentiality cannot be guaranteed.

4. **What are the possible benefits from being in this research study?**
   4a. **What are the possible benefits to you?**
   You may enjoy the creative task of thinking of and designing a new product. In addition, you may learn something about the technology central in the crowdsourcing task.

   4b. **What are the possible benefits to others?**
   In understanding how feedback affects crowdsourcing participants’ attitude towards the task, the researchers hope to gain insights that will help us to create guidelines for companies on how to manage their crowdsourcing community.

5. **What other options are available instead of being in this research study?**
   - You may decide not to participate in this research.
   - Since the Behavioral Research Lab will be used to recruit participants you will receive course credit for participating as specified in the syllabus provided by your instructor.
   - Students are also permitted to complete a brief review of a marketing paper as an alternative means of obtaining extra credit. This assignment is to read and review a marketing research article from journals such as the Journal of Consumer Research or the Journal of Marketing Research, which are available through the Penn State Library.
website. The review should be 3 double-spaced pages (12 point, Times New Roman font). This assignment should take approximately 30 minutes to complete.

6. **How long will you take part in this research study?**
   If you agree to take part, it will take you about 30 minutes to complete this research study. Being in this research study does not require any additional time on your part beyond today’s time investment.

7. **How will your privacy and confidentiality be protected if you decide to take part in this research study?**
   Efforts will be made to limit the use and sharing of your personal research information to people who have a need to review this information.
   - Your product sketches will be labeled with a code consisting of the date, time and cubicle number that links your product sketch to your survey answers. They will not be linked to personally identifiable information. The product sketches will be stored in the principal researcher’s university office. The survey data will only be accessible to the researchers through their online survey account; after download the survey data will be stored on secure university computers. The data will be stored for at least five years following any potential publication of the results.

In the event of any publication or presentation resulting from the research, no personally identifiable information will be shared. We will do our best to keep your participation in this research study confidential to the extent permitted by law. However, it is possible that other people may find out about your participation in this research study. For example, the following people/groups may check and copy records about this research.
   - The Office for Human Research Protections in the U. S. Department of Health and Human Services
   - The Institutional Review Board (a committee that reviews and approves research studies) and
   - The Office for Research Protections.

Some of these records could contain information that personally identifies you. Reasonable efforts will be made to keep the personal information in your research record private. However, absolute confidentiality cannot be guaranteed.

8. **Will you be paid or receive credit to take part in this research study?**
   You will receive 0.5% extra course credit for participating in this study. As an alternative means to receive 0.5% extra course credit, you are also permitted to complete a brief review of a marketing paper as an alternative means of obtaining extra credit. You are asked to read and review a marketing research article from journals such as the Journal of Consumer Research or the Journal of Marketing Research, which are available through the Penn State Library website. The review should be 3
double-spaced pages (12 point, Times New Roman font). This assignment should take approximately 30 minutes to complete.

9. **What are your rights if you take part in this research study?**
   Taking part in this research study is voluntary.
   § You do not have to be in this research.
   § If you choose to be in this research, you have the right to stop at any time.
   § If you decide not to be in this research or if you decide to stop at a later date, there will be no penalty or loss of benefits to which you are entitled.

10. **If you have questions or concerns about this research study, whom should you call?**
    Please call the head of the research study Johanna Slot at (814) 865-4170 or (814) 380-6724 if you:
    § Have questions, complaints or concerns about the research.
    § Believe you may have been harmed by being in the research study. You may also contact the Office for Research Protections at (814) 865-1775, ORProtections@psu.edu if you:
    § Have questions regarding your rights as a person in a research study.
    § Have concerns or general questions about the research.
    § You may also call this number if you cannot reach the research team or wish to offer input or to talk to someone else about any concerns related to the research.

**INFORMED CONSENT TO TAKE PART IN RESEARCH**
*Your participation implies your voluntary consent to participate in the research. Please keep or print a copy of this form for your records.*
Beginning Survey Questions

Dear Participants

Thank you for your interest in this research study. We appreciate you taking the time out of your schedule to participate.

Please enter the following information before we begin.

Today’s date

- Thursday October 22
- Friday October 23
- Monday October 26

What is the time of your session?

- 10 am
- 10.30 am
- 11 am
- 11.30 am
- 12 pm
- 12.30 pm
- 1 pm
- 1.30 pm
- 2 pm
- 2.30 pm
- 3 pm
- 3.30 pm
- 4 pm
- 4.30 pm
- 5 pm
Please enter your cubicle number
- Nr 1
- Nr 2
- Nr 3
- Nr 4
- Nr 5
- Nr 6
- Nr 7
- Nr 8
- Nr 9
- Nr 10
- Nr 11
- Nr 12

We would like you to answer the following questions before you start a crowdsourcing task.

**Definition of crowdsourcing:** an event in which you use your insights and creative opinions to help a firm accomplish a desired goal. For example, the “Lay’s Do us a Flavor” event, in which Lay’s asks for input regarding a new chips flavor.

Have you ever participated in a crowdsourcing event before?
- Yes
- No
How would you rate your attitude towards the following brands?

<table>
<thead>
<tr>
<th></th>
<th>Strongly Dislike</th>
<th>Somewhat Dislike</th>
<th>Neither Like nor Dislike</th>
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<th>Strongly Like</th>
</tr>
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<td>o</td>
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</tr>
<tr>
<td>Lenovo</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
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<tr>
<td>Asus</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
</tbody>
</table>
Do you own any Samsung products?

☐ Yes
☐ No

If you own a Samsung product, please select all the products that you own. (select all that apply)

☐ (Smart)phone
☐ TV
☐ Tablet
☐ Wearable technology (e.g., smartwatch)
☐ Home appliance (e.g., microwave or washer/dryer)
☐ Camera or camcorder
☐ Portable hard disks or other memory card
☐ LED light bulbs
☐ Other

On a scale of 1-7, how would you rate your understanding of solar energy? 1 = No Knowledge 7 = Expert Knowledge

☐ 1
☐ 2
☐ 3
☐ 4
☐ 5
☐ 6
☐ 7
How would you rate your attitude towards the solar energy? Please select the number that best reflects your opinion for each statement.

<table>
<thead>
<tr>
<th></th>
<th>Describes very poorly</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
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</tr>
</thead>
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<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
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<tr>
<td>Appealing</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Stimulating</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
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<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
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<td>•</td>
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<td>•</td>
<td>•</td>
</tr>
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<td>•</td>
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<td>•</td>
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<tr>
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<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Pleasant</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
</tbody>
</table>
On a scale of 1-7, how likely are you to purchase a solar energy product? 1 = Very Unlikely = Very Likely
- 1
- 2
- 3
- 4
- 5
- 6
- 7

How would you rate your attitude towards the **Samsung brand**? Please select the number that best reflects your opinion for each statement.

<table>
<thead>
<tr>
<th></th>
<th>Describes very poorly</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
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<tr>
<td>Attractive</td>
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<td>Exciting</td>
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</tbody>
</table>
For the following statements, please select how much you agree with each statement: 1 = Strongly Disagree  7 = Strongly Agree

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Solar Energy and Samsung Solar Me Green “Green Sun” Initiative Descriptions

Now take a brief moment to read the following text about solar energy.

What is Solar Energy?

Solar energy is the process of converting sunlight into usable energy. Technology has given us the abilities to mimic the process of photosynthesis that plants undergo to convert sunlight into usable energy. Through the use of special solar panels, we can capture the energy given off through sunlight and convert that into clean energy that can be stored in batteries or generators for later use or to power products for immediate use of the energy. As technology advances and pollution continues to increase, we need to use alternative methods of clean energy, such as this, to maintain a stable environment. This is why more and more companies are looking for new ways to incorporate technology such as this into their products and business practices.

Now please pay attention to the details in this scenario before you are going to complete the task at hand.
Solar Me Green is Samsung’s environmentally conscious organization, that is known for its efforts in utilizing solar energy to create green consumer products. Their mission is to significantly reduce pollution by making solar powered products available to everyone. They make products that can be seen around the house as well as helping people work more efficiently. They believe that it is a waste to not take advantage of the vast amount of sunlight that is just waiting to be turned into clean energy. Therefore with their new initiative, “Green Sun” they plan to develop new products that will decrease overall energy pollution by 25% by 2025.

Solar Me Green is here today because they were impressed with the Smeal College of Business’s efforts to decrease its footprint on the environment. In fact, they were so impressed with Smeal’s accountability that they felt as though Penn State Students would be the perfect candidates to help them generate new product ideas. Solar Me Green correspondents would love to hear the creative thoughts of college students to get a better idea of where the market is going so they can continue to help decrease pollution, one ray of sunlight at a time.

So please, join in Solar Me Green’s “Green Sun” initiative by taking the time to work with us today and come up with some create new product ideas. Solar Me Green is just looking for creative ideas and does not want you to worry about the technical or scientific feasibility of the product nor how much the product will cost. Just use your general knowledge of solar energy to create a new product idea. Directions can be found on the next page.

Important: the Samsung Solar Me Green team is looking for ideas that they can turn into new product lines, so the time and effort you invest in this activity is important!
**Task - Idea Generation Phase**

Please take some time to gather your thoughts and begin to develop a new product that in some way has solar energy connect to it. We want you to:

Create a design for a new product that utilizes solar energy to either solve a current pollution issue or just to enhance current products on the market.

1. Make a drawing of your idea using paper and colored pencils provided. Think of indicating the use of materials, size of the product, the location of solar technology, etc.

2. In the textbox below, describe how your idea works as well as what consumer need it addresses or what environmental issue it aims to contribute to.

Below, the timing gives an indication of how much time you still have left.

When you are done, please write the time and date as well as your cubicle number on the sketching paper you have used, you will be asked to hand them in to the assistant at the end.

Then click the red arrow to continue.
Forms of Feedback for Participants

During-Positive-Public:

Feedback

Thanks for your input so far!

I know that you may not have finished, but I have some intermediate feedback on your work. I have added your feedback in the list below. Please find your cubicle number below to find the feedback that is relevant to you. The other feedback is meant for the people in the cubicles around you.

Please continue to work on your idea!

- The Samsung-Solar Me Green Crowdsourcing Team

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<td>I am not sure if you're on the right track, but let's see where this idea goes.</td>
</tr>
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<td>4</td>
<td>Interesting, your ideas are really coming along. I can't wait to see what the final product will look like.</td>
</tr>
<tr>
<td>5</td>
<td>Your idea might need a little tweaking before it is done.</td>
</tr>
<tr>
<td>6</td>
<td>You are doing a great job, keep up the good work!</td>
</tr>
<tr>
<td>7</td>
<td>I look forward to seeing your final results.</td>
</tr>
<tr>
<td>8</td>
<td>Hmm... your ideas seem a little weird. Keep working on it, I am curious to see if the final product will clear up my confusion.</td>
</tr>
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<td>9</td>
<td>I have a few questions about your idea. Keep working on it. Maybe the end result will answer my question.</td>
</tr>
<tr>
<td>10</td>
<td>You might be onto something here, your idea might turn into something very interesting.</td>
</tr>
<tr>
<td>11</td>
<td>Everyone is going to love your idea.</td>
</tr>
<tr>
<td>12</td>
<td>I don't think I understand where you are going with this idea.</td>
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Please continue working on your idea. The timer below shows how much time you have left to work on your idea.

When you are done, please write the time and date as well as your cubicle number on the sketching paper you have used, you will be asked to hand them to the assistant at the end. Then click the red arrow to continue.
**During-Negative-Public**

**Feedback**

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During-Positive-Private

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After-Positive-Public

Feedback

Thanks for your input!

Now that you have finished, I have some feedback on your work. Please find your cubicle number below to find the feedback that is relevant to you. I have added your feedback in the list below. Please find your cubicle number below to find the feedback that is relevant to you. The other feedback is meant for the people in the cubicles around you.

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<td>5</td>
<td>I think your ideas might work under certain circumstances, but I am not sure it was really what I was looking for.</td>
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<td>After looking over it again, I don’t think your idea is clear from your explanation.</td>
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<td>I am not sure if your idea is exactly what I was looking for.</td>
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<td>8</td>
<td>After looking over your final ideas, I think your design could prove to be very useful</td>
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<td>I am not sure if your idea was exactly what I was looking for.</td>
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<td>10</td>
<td>Unfortunately, your product did not really fit exactly what we were looking for, but thank you for your submission.</td>
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<td>11</td>
<td>Interesting, I think you may have created an idea that could become a product one day.</td>
</tr>
<tr>
<td>12</td>
<td>Your ideas are very innovative and have the potential to be very useful to society.</td>
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Please continue filling in the rest of the survey.
After-Negative-Public

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**After-Positive-Private**

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**After-Negative-Private**

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Second Portion of the Survey

Questions About Attitude Toward Brand / Solar Energy / Crowdsourcing Event

How would you rate your attitude towards the solar energy? Please select the number that best reflects your opinion for each statement.

<table>
<thead>
<tr>
<th></th>
<th>Describes very poorly</th>
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<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>Describes very well</th>
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<td>Sophisticated</td>
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</table>

How likely are you to purchase a solar energy product in the coming year? 1 = Very Unlikely 7 = Very Likely
○ 1
○ 2
○ 3
○ 4
○ 5
○ 6
○ 7
How would you rate your attitude towards the crowdsourcing? Please select the number that best reflects your opinion for each statement.

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How would you rate your attitude towards the Samsung brand? Please select the number that best reflects your opinion for each statement.

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<th>5</th>
<th>6</th>
<th>Describes very well - 7</th>
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**Current Mood Questions**

For the following statements, select how much you agree with each statement. 1 = Strongly Disagree  7 = Strongly Agree

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<tr>
<td>Currently, I am in a good mood.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>As I answer these questions I feel cheerful.</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
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<td>For some reason I am not very comfortable right now.</td>
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<td></td>
<td></td>
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<tr>
<td>I enjoyed the crowdsourcing experience.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I would participate in a crowdsourcing event again in the future.</td>
<td></td>
<td></td>
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<tr>
<td>Compared to others, I would say that my creative abilities are above average.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I enjoyed participating in this product development task.</td>
<td></td>
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</tbody>
</table>
Feedback Manipulation Check

At any point, did you receive feedback on your idea? In case you received feedback, it showed up on your screen: It may have come in a list format with feedback for everybody in the room It may have come only just for you to read Or it may not have come at all

☐ Yes
☐ No

If you received feedback, when did you receive it?

☐ While I was working on my idea. I was asked to continue to work on my idea after I read the feedback
☐ After I finished working on my idea

If you received feedback, what type of feedback did you receive?

☐ Private, I only saw my feedback popping up on my screen, I did not see others' feedback. There was only one line of feedback, specific to my cubicle
☐ Public, I saw my feedback grouped together with others' feedback popping up on my screen. My feedback was highlighted among the feedback for the others in the room

How negative or positive was your feedback? 1 = Strongly Negative 7 = Strongly Positive

☐ 1
☐ 2
☐ 3
☐ 4
☐ 5
☐ 6
☐ 7
To which extent do you agree with the following statements?

1 = Strongly Disagree  
7 = Strongly Agree

<table>
<thead>
<tr>
<th>The feedback I received was very relevant</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>The feedback I received was very personal</td>
<td>0</td>
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<tr>
<td>The feedback I received was very credible</td>
<td>0</td>
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<tr>
<td>The feedback I received was very useful</td>
<td>0</td>
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<tr>
<td>The feedback I received was very suitable</td>
<td>0</td>
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</tbody>
</table>

After you received your feedback, did you continue to work on your idea or did you change your idea?

- Yes, I continued to work on my original idea
- No, I decided to change my idea after the feedback
- I received it after I was done with my idea but based on the feedback, I would have changed my idea.
- I received it after I was done with my idea but based on the feedback, I would not have changed my idea.
**Mood During Task Questions**

How did you feel during the crowdsourcing task? 1 = Strongly Disagree  7 = Strongly Agree

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<thead>
<tr>
<th></th>
<th>1</th>
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<th>4</th>
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<tbody>
<tr>
<td>I felt motivated</td>
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<td>I felt encouraged to do better</td>
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<td>I felt confident</td>
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<tr>
<td>I felt angry</td>
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<tr>
<td>I felt praised for my work</td>
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<td>I felt insulted</td>
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<td>I felt happy</td>
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<tr>
<td>I felt upset</td>
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<tr>
<td>I felt like I did something wrong</td>
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<td>I received sufficient guidance for the task</td>
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<td>I felt informed</td>
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<td>I felt confused</td>
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<tr>
<td>I did not want to fail</td>
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<tr>
<td>I felt competent</td>
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<tr>
<td>I felt lost</td>
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<tr>
<td>I understood the situation</td>
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<tr>
<td>I felt like I made good decisions</td>
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<td></td>
</tr>
</tbody>
</table>
**Demographic Questions**

Please enter your age

Please select your gender.

- Male
- Female

What year are you in school?

- Freshman
- Sophomore
- Junior
- Senior
Appendix B

Pretest

After Statements & Statistics (7pt Scale)

1. “I loved your idea, it might actually work!”
   a. Valence Average: 5.91
   b. Standard Deviation: 1.03
2. “Good job on your submission, I found your idea very interesting.”
   a. Valence Average: 5.68
   b. Standard Deviation: 1.14
3. “You really pulled together a great idea!”
   a. Valence Average: 6.45
   b. Standard Deviation: 0.82
4. “I am not sure if your idea was exactly what I was looking for.”
   a. Valence Average: 2.84
   b. Standard Deviation: 1.31
5. “I don’t think I understand where you were going with your idea.”
   a. Valence Average: 2.86
   b. Standard Deviation: 1.53
6. “Are you sure this product fits what we are looking for?”
   a. Valence Average: 2.70
   b. Standard Deviation: 1.36
7. “After looking over it again, I don’t think your idea is clear from your explanation.”
   a. Valence Average: 2.89
   b. Standard Deviation: 1.22
8. “Unfortunately, your product did not really fit exactly what we were looking for, but thank you for your submission.”
   a. Valence Average: 3.18
   b. Standard Deviation: 1.43
9. “Your hard work really paid off. You created a greatly unique product concept.”
   a. Valence Average: 6.43
   b. Standard deviation: 0.85
10. “Interesting, I think you may have created an idea that could become a product one day.”
    a. Valence Average: 5.43
    b. Standard Deviation: 1.02
11. “Your ideas are very innovative and have the potential to be very useful to society.”
    a. Valence Average: 5.98
    b. Standard Deviation: 0.95
12. “I think your ideas might work under certain circumstances, but I am not sure it was really what I was looking for.”
    a. Valence Average: 3.57
    b. Standard Deviation: 1.21
13. “After looking over your final ideas, I think your design could prove to be very useful.”
a. Valence Average: 5.77
b. Standard Deviation: 1.01
14. “I think your idea might have taken a wrong turn somewhere. It might have been better with a clearer explanation.”
a. Valence Average: 3.16
b. Standard Deviation: 1.31

After Identifying Statements

1. “Motivates me to work harder”
2. “Encourages me to do better”
3. “Makes me confident”
4. “Makes me angry”
5. “I feel praised for my work”
6. “Insults me”
7. “Makes me happy”
8. “Makes me upset”
9. “I feel like I did something wrong”
10. “Gives me guidance”
11. “Is informative”
12. “Does not tell me what to do next”
13. “Makes me feel lost”
14. “Confuses me”
15. “Makes me not want to fail”
16. “Helps me understand the situation”
17. “Helps me make better decisions”

During Statements & Statistics (7pt Scale)

1. “You are doing a great job. Keep up the good work!”
a. Average Valence: 6.55
   b. Standard Deviation: 1.12
2. “Your ideas are very interesting.”
a. Average Valence: 5.45
   b. Standard Deviation: 1.15
3. “Keep up the good work, your ideas are creative.”
a. Average Valence: 6.03
   b. Standard Deviation: 0.85
4. “I look forward to seeing your final results.”
a. Average Valence: 5.33
   b. Standard Deviation: 1.29
5. “Everyone is going to love your idea.”
a. Average Valence: 6.36
   b. Standard Deviation: 1.19
6. “I don’t think I understand where you are going with this idea.”
a. Average Valence: 2.97
b. Standard Deviation: 1.26
7. “Are you sure this product fits what we are looking for? Try to explain it better.”
   a. Average Valence: 3.21
   b. Standard Deviation: 1.27
8. “Your idea might need a little tweaking before it is done.”
   a. Average Valence: 4.36
   b. Standard Deviation: 1.27
9. “I have a few questions about your idea. Keep working on it, maybe the end result will answer my questions.”
   a. Average Valence: 4.45
   b. Standard Deviation: 1.46
10. “Interesting, your ideas are really coming along. I can’t wait to see what the final product will look like.”
    a. Average Valence: 5.85
    b. Standard Deviation: 0.97
11. “Hmm… your ideas seem a little weird. Keep working on it, I am curious to see if the final product will clear up my confusion.”
    a. Average Valence: 3.27
    b. Standard Deviation: 1.33
12. “Your idea might not be what we are looking for.”
    a. Average Valence: 2.91
    b. Standard Deviation: 1.38
13. “I am not sure you’re on the right track, but let’s see where this idea goes.”
    a. Average Valence: 3.64
    b. Standard Deviation: 0.99
14. “You might be onto something here; your idea might turn into something very interesting.”
    a. Average Valence: 5.55
    b. Standard Deviation: 1.12

During Identifying Statements

1. “Motivates me to work harder”
2. “Encourages me to do better”
3. “Makes me confident”
4. “Makes me angry”
5. “I feel praised for my work”
6. “Insults me”
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8. “Makes me upset”
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13. “Makes me feel lost”
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15. “Makes me not want to fail”
16. “Helps me understand the situation”
17. “Helps me make better decisions”


Füller, Johann (2010), “Refining Virtual Co-Creation From A Consumer Perspective,”


   [available at http://www.forbes.com/sites/alanhall/2013/05/17/listening-to-customers-yields-success/].

Haro, Maria Angeles Garcia, María Pilar Martínez Ruiz, and Ricardo Martínez Cañas (2014),
   “The Effects of the Value Co-Creation Process on the Consumer and the Company,”


ACADEMIC VITA

Joseph Sullivan
Jis5501@psu.edu

You can make excuses or you can make it happen.

EDUCATION
The Pennsylvania State University, Smeal College of Business May 2016
Bachelor of Science in Marketing, Minor in Supply Chain Management and IST
- Member of the Schreyer Honors College – Honors in Marketing
- Dean’s List 2012 – 2016
- Walker Award acknowledging leadership, character, citizenship and scholarship
- Pennsylvania Automotive Association Scholarship academic excellence, citizenship
- Sam Wherry Honors Scholarship Smeal College of Business academic excellence
- Member of Beta Gama Sigma, Phi Kappa Phi, and The Gold Key Honor Society

PROFESSIONAL EXPERIENCE
Customer Development Intern June 2015-August 2015
Unilever Englewood Cliffs, NJ
- Northeast Division, New York Metro Area Independent Grocery Market
  - Developed Several Virtual Pallet program designed to improve product distribution as well as new product integration.

Tutor January 2013-May 2014
The Learning Center, Penn State University Center Valley, PA
- Tutor seven subjects:
  - College Algebra, Business Calculus, Statistics, Microeconomics, Macroeconomics, Accounting and Finance

Advising Ambassador January 2014-May 2014
Division of Undergraduate Studies, Penn State University Center Valley, PA
- Enhanced communication skills, exhibited customer satisfaction, organizational and leadership skills through planning events for student academic awareness

CAMPUS ACTIVITIES
Marketing Chair January 2015–January 2016
PSREA, The Pennsylvania State University University Park, PA
- Managed organization website, social media and event promotion

Project Manager January 2015-May 2015
Advertising & Promotions Course, Penn State University University Park, PA
- Schlow Library Marketing Campaign

Member September 2012-May 2016
Business Society, The Pennsylvania State University
- Center Valley, PA
  - Organized events to increase the awareness of opportunities for business major.

Lion Ambassador
- September 2012-May 2013

Enrollment Management, The Pennsylvania State University
- Center Valley, PA
  - Managed events to encourage potential students to enroll into Penn State

Fleming Ethics Bowl, DeSales University
- March 2013-March 2014

Business Ethics Team, The Pennsylvania State University
- Center Valley, PA
  - Fourth place in The Fleming Ethics Bowl Competition at DeSales University

Johnson & Johnson Case Competition
- February 2015

Business Strategy Team, The Pennsylvania State University
- University Park, PA
  - Currently research and developing a new product design and campaign strategy

Smeal Case Competition, The Pennsylvania State University
- March 2014

Business Strategy Team, The Pennsylvania State University
- Center Valley, PA
  - Researched improvements for Kohl's supply chain and customer retention