

NEW PRODUCT PRE-ANNOUNCEMENTS:  
INCUMBENT REACTIONS TO  
COMPETITIVE SIGNALS

By

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## PREFACE

This thesis is the result of contributions and sacrifices by many who merit my personal acknowledgement.

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## TABLE OF CONTENTS

Chapter	Page
I. INTRODUCTION.....	1
NPPA as Market Signals.....	2
Hypothesis.....	3
Methodology .....	6
Results.....	8
II. LITERATURE REVIEW.....	9
New Product Pre-Announcement.....	9
Definition .....	9
NPPA as Global Phenomenon.....	12
Benefits and Costs .....	13
NPPA as Market Signals.....	18
Competitive Response .....	20
Speed of Response .....	22
Aggressiveness of Response .....	23
Summary .....	24
Hypotheses .....	25
Signal Credibility.....	25
Signal Hostility.....	27
Interaction of Credibility and Hostility.....	29
III. METHODOLOGY .....	32
Experimental Design .....	32
Manipulations .....	33
Stimuli.....	35
Procedures.....	36
Sample.....	36
Instrument.....	37
Data Collection.....	38
Measures .....	39

Chapter	Page
IV. FINDINGS.....	41
Demographic Analysis.....	41
Psychometric Analysis.....	42
Manipulation Checks.....	48
Hypothesis Testing.....	49
Summary.....	52
V. CONCLUSION.....	53
Discussion of Results.....	53
Limitations.....	55
Sample.....	56
Measures.....	57
Stimuli.....	57
Pre-Test.....	58
Data Collection.....	59
Future Research.....	59
REFERENCES.....	63
APPENDIX.....	68
Appendix A – Stimulus.....	68
Appendix B – Instrument.....	72
Appendix C – Table III.....	78
Appendix D – IRB Approval Letter.....	80

## LIST OF TABLES AND FIGURES

Tables	Page
I. EFA and Reliability for Hostility .....	43
II. EFA and Reliability for Perceived Commitment .....	44
III. EFA and Reliability for Speed of Response .....	78
IV. EFA and Reliability for Strength of Response.....	45
V. EFA and Reliability for Perceived Consequence.....	46
VI. EFA and Reliability for Perceived Aggressiveness .....	47
VII. EFA and Reliability for Perceived Product Advantage.....	47
VIII. ANCOVA Results for Speed of Response.....	50
IX. ANCOVA Results for Strength of Response .....	51
X. Demographic Information.....	77

Figures	Page
A. Predicted Interaction of Strength of Reaction .....	30
B. Predicted Interaction of Speed of Reaction .....	31
C. 2×2 Factorial Design.....	33
D. Interaction Effect .....	51

## NOMENCLATURE

NPPA	New Product Pre-Announcement
NPA	New Product Announcement
NPI	New Product Introduction
alpha	Cronbach's Alpha
<i>df</i>	Degrees of Freedom
<i>F</i>	<i>F</i> – Test
<i>p</i>	<i>p</i> – value

## LIST OF SYMBOLS

$\alpha$	Cronbach's Alpha
$\chi^2$	Chi-Square



## CHAPTER I

### INTRODUCTION

The aim of this research is to assess the effect of manipulating hostility and credibility in a new product pre-announcement on the strength and speed of response by an incumbent competitive firm in a global market.

The thesis adopts the new product pre-announcement (NPPA) definition provided by Eliashberg and Robertson (1988). Eliashberg and Robertson (1988) define NPPA as “a formal, deliberate communication before a firm actually undertakes a particular marketing action such as a price change, a new advertising campaign, or a product line change.” One major factor in this decision lies in the flexibility and breadth of NPPAs to include not just new product introductions, but other important dynamics that reside in the domain of a new product introduction, like related alliances and strategic goals.

A reality of today's global competitive environment is that markets have become truly global in terms of global firms, from various countries around the globe, competing globally for customers. This is true for many industries, for example the automobile industry in which Toyota recently surpassed GM as world's largest automaker. The industry under study in this investigation, consumer electronics, is such an industry. Published literature suggests that even though markets have globalized, the U.S. is still

the predominant location for NPPA/NPA, even by foreign competitors. This is likely because of the size and importance of the market to global competition within these global markets.

### NPPA as Market Signals

At its most basic form pre-announcing behavior is a form of market signaling. All new product announcements (NPAs) and NPPAs are market signals that are sent by the signal sender and received by the signal receiver. How these signals are interpreted is largely dependent on the contingent factors of the particular market and other aspects like senders' reputation etc. NPPAs are often associated with competitive actions and reactions.

Competitive reactions have been defined as “a set of decisions by a firm in response to an observed competitive action (Kuester, Homburg, and Robertson 1999, p.90).” It is important to note that competitive responses or reactions can be multi-dimensional in nature (Kuester, Homburg, and Robertson 1999). Kuester, Homburg, and Robertson enumerate five such dimensions. These include an instrumental dimension, an intensity dimension (or aggressiveness), a breadth dimension, a speed dimension, and a domain dimension. This thesis looks at two of these dimensions in particular: 1) speed of response and 2) aggressiveness of response.

Speed of reaction is essentially the time it takes a competitor to react to a particular competitive signal that is sent by another firm in the industry. For example,

once a NPPA has been issued, a signal receiver or competitor will respond with varying degrees of speed, some might react immediately while others take longer to respond. Kuester, Homburg, and Robertson (1999) define speed of reaction as the time lag between competitive threat and response.

Competitive responses also differ in their aggressiveness. Based on factors like perceived signal credibility or perceived hostility, a competitive reaction may vary in aggressiveness. An aggressive response is one that tries to elicit a sense of threat within the original signal sender.

### Hypotheses

Signal credibility determines whether or not an incumbent is likely to react, and how strongly they will react, to a NPPA signal (Chen & Miller 1994). In this thesis, I argue that credible signals will induce faster reactions. Rao, Qu, and Ruekert (1999) argue that credibility is achieved when the signal sender will suffer a monetary penalty for sending false signals. Irreversibility of commitment, a second dimension of credibility, rates the likelihood of a signal not being fulfilled. Research has shown that high irreversibility increases the propensity to respond to a NPA signal (Chen and MacMillan 1992). Rao, Qu, and Ruekert show that when the brand ally provides a credible signal and quality information is unobservable, the brand ally's vulnerability to punishment is used by consumers to infer the quality of the focal brand's product. This suggests that the ally's vulnerability to loss of future sales serves as a credible signal of

unobservable quality. These results justify the use of an ally manipulation as mechanism for increasing the perceived credibility of an NPPA.

Therefore, in this thesis I manipulate the credibility of an NPPA signal through a strategic alliance with another firm which is widely perceived as highly reputable. The presence of an alliance in the signal is expected to increase the credibility of the NPPA. Based on the findings of Chen and Miller (1994), a credible NPPA signal should affect the strength of reaction and speed of reaction by incumbent firms (or signal receivers). Thus, the following hypotheses are offered in the thesis: a) The presence of a well-known, reputable ally in an NPPA will lead to a stronger response by the signal receiver and b) The presence of a well-known, reputable ally in an NPPA will lead to a speedier response by the signal receiver.

It has also been suggested that signal hostility has a positive relationship with speed and strength (magnitude) of reaction (Jervis 1976; Heil and Robertson 1991). Empirical tests have measured the relationship between hostile signals and magnitude of competitive reactions (Heil and Walters 1993; Mansfield 1990) concluding that the more hostile an NPPA signal, the stronger the competitive reaction will be. Studies have also found that the greater the perceived threat, that is the more a competitor's signal seems to attack a firm's existing position, the shorter or quicker the response time (Chen, Smith, and Grimm 1992; MacMillan, McCaffery, and Van Wijk 1985). I argue that an NPPA announcing the launch of a new product in one month would be more threatening for incumbent firms than if the announced launch is scheduled to occur in a year's time.

Including additional information about the status of a patent application provides credibility to the launch date and can be hypothesized to heighten the perceived hostility of the signal. Based on these arguments, this thesis presents the following hypotheses: a) An NPPA with a shorter lead-time will be associated with a stronger response by the signal receiver and b) An NPPA with a shorter lead-time will be associated with an increased speed of response by the signal receiver.

I also argue in this thesis that signal credibility is a minimum requirement for a competitor to respond to an NPPA. Chen and Miller (1994) have made the same suggestion. This is based on the premise that engaging in a competitive reaction involves certain costs, including time and financial resources. Unless the initial NPPA signal is credible, the incumbent firm would essentially be wasting time and money in formulating and implementing a response. Previous studies have failed to test the interaction of signal credibility and signal hostility as predictors of signal receiver response. This is a principal contribution of this thesis. This thesis argues when perceived signal credibility is low the immediacy of product introduction or lead-time mentioned in the NPPA is irrelevant. Essentially, the signal is not believable. In contrast, short lead-times and patent application status is predicted to affect anticipated response strength and speed when the presence of an ally increases signal credibility. The following hypotheses are presented: a) An NPPA with shorter lead-time will lead to an increased strength of reaction when an ally is present, but will have no effect when there is no ally and b) An NPPA with shorter lead-time will lead to an increased speed of reaction when an ally is present, but will have no effect when there is no ally.

## Methodology

In this thesis a 2X2 factorial design is used. One of the factors is the presence (absence) of an ally the new product and the other is the time to product launch. The alliance partner was manipulated by providing a previously unknown NPPA signal sender an ally that is credible and respected in the market. Apple Inc., a major firm in the global consumer electronics industry was chosen as the ally. The second manipulation was the time to product launch and patent status. In one scenario, the product launch would happen one month after the NPPA signal was sent. The other scenario had the product being launched one year after the NPPA signal is sent. In the one month to launch scenario, the patent application had already been filled prior to the release of the NPPA. In the twelve months to launch scenario, it is simply stated that a patent application will be submitted soon.

The NPPA signal was provided in the form of a press release. Since published literature suggests that the U.S. is the primary market for NPPA in the global consumer electronics industry, the press release adopts the English language and is based on actual press releases from the U.S. Previous data collected by Robertson, Eliashberg, and Rymon (1995) show that an overwhelming majority of NPPA signals were detected by the incumbent firms or signal receiving firms in trade journals and press announcements. Four versions of the press release were designed. They either had an ally or not, and time to introduction was either one month with a patent application already filed or one year with a patent application yet to be submitted. The stimuli were based on common press releases found in trade journals.

The sampling frame consisted of MBA students at Oklahoma State University. MBA students were chosen because of their ability and training in making business decisions as well the international dimension of the MBA student body. Ideally, the research would have been conducted with real world marketing managers. Due to availability within the required time frame, MBA students were used. Because MBA students vary in terms of their job histories, work experience and job titles were captured as potential covariates.

Each individual was randomly assigned to one of the four scenarios. The data were collected via questionnaire format. Upon reading the NPPA press release, the students are asked to answer questions based on their assumed role as the marketing manager of Pacific Corp. In total the instrument contained 36 questions, 22 of them were related to the measurement of the constructs being studied. The remaining 14 questions were split equally between manipulation checks and demographic questions. Most respondents took around 15 minutes to complete the process, from reading the NPPA press release to answering all the questions. A total of 100 completed and useable surveys were returned for a response rate of 83%.

I assessed all constructs as multi-item measures. In addition, I scored each item on a seven-point likert scale, ranging from “strongly disagree” (1) to “strongly agree” (7). Previously used measures of response speed and response strength were adopted from the literature. In addition, I collected data on perceived product advantage and familiarity

with the ally as potential covariates. I also collected items to use as manipulation checks as well as standard demographic items.

## Results

The empirical results generally do not support the hypotheses offered in this dissertation. In particular, there was no effect of the manipulations on speed of response. I was able to observe an effect of aggressiveness of response. Chapter IV goes in depth about the results of the study.



## CHAPTER II

### LITERATURE REVIEW

This chapter provides an in depth synopsis of the literature that has been reviewed in an effort to conceptualize the research question for this research, and to provide the theoretical background for the purposes of this study. I look at new product pre-announcement literature and competitive response literature. The chapter concludes with the hypotheses I plan to test in this thesis.

#### New Product Pre-Announcement

##### Definition

Extant literature in the field of Marketing has often used the terms New Product Pre-Announcement/s (NPPA) and New Product Announcement/s (NPA) interchangeably. Consequently, this thesis tries to make a distinction between the two terms in an effort to provide clarity, and more importantly, obtain an operationalizable definition for the purposes of its research.

Eliashberg and Robertson (1988) define NPPA as “a formal, deliberate communication before a firm actually undertakes a particular marketing action such as a price change, a new advertising campaign, or a product line change.” This appears to be

the first junction in the literature (if not the most important), where the term pre-announcement has been used. A similar definition for NPPA defines it as a communication about a product well in advance of its actual introduction, (Koku 1998). It has been suggested that the 'newness' of a product may or may not be perceived as such by the external environment (Eliashberg and Robertson 1988). According to Eliashberg and Robertson, direction and timing of preannouncements maybe multi-faceted. It may be directed to just one or many members of the audience, or sent either a day or months earlier

NPA have been defined as signals in the form of an announcement or a move that precedes an actual new product introduction (Robertson, Eliashberg, and Rymon 1995). Robertson et al. focus on intentional signals sent by the firm to their competitors. According to them, such signals can be directed at a single member or multiple members of the audience. This audience can include suppliers, retailers, consumers, competitors or other members of trade. It has been argued by Robertson et al. that intentional signals directed at competitors are often performed to influence competitive behavior. Another point that Robertson et al. make is that, product preannouncements as found in the literature usually refer to NPA signaling to consumers, and that such preannouncements maybe important to the success of a new product. Wind and Mahajan (1987) include preannouncement as part of pre-launch activities that a firm conducts to increase marketing hype for the new product.

It is clear from the definitions listed above that there are considerable similarities between the two terms, and in most cases they could be used interchangeably. For example, both definitions focus on the timing of the announcements; NPA and NPPA should precede the actual product introduction, and by definition they relate to a product or service offered by a firm. Another commonality between the two definitions is the fact that both are intentional, whether or not they are carefully planned and executed.

However, one could argue that a 'NPA' should solely be used to signal a new product *introduction* (and related information), whereas a 'NPPA' should be used to signal, not only a new product introduction, but a wider domain of information that might encompass the related marketing mix of the new product, strategic alliances formed in regards to the new product, or a new R&D/technological breakthrough related with the new product.

On the other hand, the distinction between NPA and NPPA has often been based on timing. Under this distinction, a NPA would succeed a NPPA, for example a firm could issue a NPPA one year in advance and follow up with an NPA at the time of product introduction. This would suggest that an NPPA could at times be false or unrealized, whereas an NPA in almost all cases would be followed by an introduction. Bayus, Jain, and Rao (2001) talk at length about the phenomenon of false or unrealized NPA/NPPA – what they call 'vaporware.' Bayus et al. argue that vaporware could be used by dominant firms in an industry to build entry barriers, and as such argue its strategic usefulness for dominant firms.

Therefore, this thesis makes a distinction between NPA and NPPA primarily based on its content and purpose, where a sole focus on product introduction related information would imply the use of a NPA, and anything else that falls within a wider domain would entail the use of a NPPA.

For the purposes of this research, the thesis adopts the NPPA definition provided by Eliashberg and Robertson (1988). One major factor in this decision lies in the flexibility and breadth of NPPA to include not just new product introductions, but as mentioned earlier, other important dynamics that reside in the domain of a new product introduction, like related alliances and strategic goals.

#### NPPA a Global Phenomenon

It is important to note that NPPA behavior is not specific to the U.S. business environment. This can be deduced from the fact that new product introductions are not specific to the U.S. market. Companies, regardless of their citizenship, often launch products in the global market (Chryssochoidis 2000). In many industries, for example the chemicals industry, global new product introductions are growing faster than domestic product introductions (Grabowski and Wang 2006). This is a direct result of globalization, where firms and industries compete against each other in an environment where national borders have no real relevance.

Regardless of globalization, it is important to note that the U.S. is the leading market as far as global product launches are concerned (Grabowski and Wang 2006). Taiwan is also a major source of new product introductions especially in the electronics and software industries (Chien and Wu 2006). For example Toshiba Inc. introduced a new product eight months before scheduled introduction, and Phillips announced a new product six months ahead of production, both announcements being made in the U.S. (Keenan 2002).

From the above argument, it becomes clear, that though NPPA behavior is largely turning into a global phenomenon, it is still an exercise that is mainly performed in the U.S. This could be a result of the fact that the U.S. is still the largest economy worldwide, and it introduces a larger number of new products. In light of this, I try to explain NPPA as a global phenomenon, however it must be noted that NPPA behavior is largely an exercise conducted in the U.S.

### Benefits and Costs

NPPA have many drivers and they are closely associated with the benefits of sending a NPPA signal along with the potential costs of not sending one. There are various benefits associated with signaling NPPA. These benefits accrue to both the signal sender and signal receiver.

Benefits of signaling a NPPA for the sender basically revolves around the fact that increased information and increased leverage outweigh the potential costs, (Heil and

Robertson 1991). According to Heil and Robertson (1991), the major potential benefits that arise from signaling for the sender include preemption to discourage competitors, and the development of competitive norms of conduct.

Competitive preemption is considered a common rationale for NPPA signaling. If the sender, signals early about a new product, then competitors might be discouraged from following the same market segment or product category. However, the likelihood of achieving such a preemptive advantage lies in the firm's ability to convey a position of high fixed commitment towards the product, or the ability to develop barriers to entry through strategic alliances or access to an efficient distribution system. On a related note, Robertson Eliashberg, and Rymon (1995) talk about using NPA signals to encourage early competitive reactions in an effort to reveal competitors plans, in other words to figure out what they have up their sleeve. This potential source of valuable information is indeed useful in forming strategic decisions for the firm. On the other hand, NPA signals can also be used as a signal of cooperative pursuit in an effort to find partners or alliances. This emphasis on cooperative pursuits is studied further by Rabino and Moore (1989), and state that a NPA signal could be sent in an effort to seek alliances or to encourage complimentary product designs. Rabino and Moore indicate that this is common practice in the computer industry. NPA signals are also used to encourage the use of a particular product design among competitors (Farrell and Saloner 1986; Gilbert 1992). Preemption via the use of NPA or NPPA signaling is also highly apparent when there is a battle over dominant designs. This is currently being witnessed in the battle between Blue-Ray and High-Definition DVD formats.

Competitive norms of conduct can be read as ‘rules of engagement’. Essentially, NPPA help establish certain ground rules for competition among the various competitors to a signal sender. Introductory price points, patent-protected technology, product features all which are potential information carried within a NPPA signal tend to establish these rules. However, regardless of the intentions of the signal sender in establishing these competitive norms of conduct, unless the sender has a certain level of market dominance or ability to enforce sanctions, the sender will be unable to establish any ‘rules’ (Heil and Robertson 1991).

It is important to note that preemption and establishing competitive norms of conduct serve as benefits of NPPA for competitors or signal receivers as well. A competitor instead of being discouraged by an NPPA, might realize that it is ahead of the signal sender in some aspect, and could send a retaliatory signal that negates the preemptive tactics of the original signal sender. When it comes to rules of engagement, a signal receiving firm might feel that it has the leverage to levy a sanction on the signal sender, and might take appropriate action in that direction. This would once again negate the tactic canceling the perceived benefits to the signal sender.

Other benefits to NPPA include the signal sender’s ability to advertise the firm’s presence at the cutting edge of technology, prepping the market for the new product introduction by giving customers and distributors early information, and providing information to financial markets (Fisher, McGowan, and Greenwood 1985; Landis and Rolfe 1985; Wu, Balasubramnian, and Mahajan 2004).

Many studies indicate a positive relationship between the benefits of pre-announcing and the advantages of being a market pioneer. There is empirical advantage to support the existence of a pioneering advantage (Biggadike 1979; Robinson and Fornell 1985; Urban et al. 1986). Many of these empirical studies draw on the use of the PIMS database for collecting data. However, there are many problems associated with the use of the PIMS database in regards to identifying first-mover advantage. For instance PIMS accounts for only 'survivor' or 'surviving' firms (that is, there might be a sampling bias), second PIMS data rely heavily on self reports or single informants to classify pioneers, and finally the definition of the word pioneer within the PIMS database is not the same term used by researchers (PIMS definition a of Pioneer: One of the pioneers in first developing such products or services), it does not identify the first firm (Golder, and Tellis 1993). Therefore the link between benefits of pre-announcing behavior and pioneer firm is, at best, questionable.

In addition to the many benefits of NPPA signaling, there are many potential costs associated with the activity. These costs lie in the form of potential risks to the signal sender. Many have advocated the use of a cost/benefit analysis in judging the signaling value of NPPA. The major risks associated with NPPA include competitive cuing, product line cannibalization, and potential risks to the senders' reputation (Eliashberg and Robertson 1988; Heil and Robertson 1991).



Perhaps the most important cost of NPPA signaling is the risk of competitive cuing. Competitive cuing implies revealing information to a firm's competitors about the firm's activities and strategic plans. Since NPPA contain various types of information regarding a 'yet to be released' product, competitors or signal receivers are provided the benefit of a partial look into the future of the signal sender. This allows them to alter their strategies or plans, to counter the perceived plans of the signal sender. This can be done in a variety of ways including shortening lead-times, initiate spoiler actions in the market place (by overloading distribution channels), or worse, make R&D investments to deliver a competing product (Heil and Robertson 1991). Thus, competitive cuing is a major potential pitfall to NPPA by signal senders if it is not planned thoroughly. However the cost of competitive cuing has been posited to have a negative relationship with barriers to entry the firm establishes. For example a strong patent in a particular technology or product will reduce the chances of competitive cuing.

Another cost associated with NPPA is the potentially serious risk of cannibalizing the signal senders' present product line. Once a NPPA has been executed, consumer demand for the present product line will drop in anticipation of the newly announced product, and distributors will reduce inventories to reflect the drop in consumer demand and prepare for the new product launch. This leaves the signal sending firm vulnerable in terms of product line cannibalization, and not to mention the related loss of sales and revenue. This situation might lead to delays or even cancellation of the new product introduction due to lack of financing or cash flow, in addition, main competitors might benefit at the signal senders expense.

Reputation of firm may also be affected as a result of a NPPA. For example, if there are any delays or problems after the NPPA, the firm could see a loss of credibility, thereby taking a hit on its reputation. Vaporware, as Bayus, Jain, and Rao (2001) studied in the software industry, is essentially the act of executing a NPPA without having any such product in the pipeline or any intention of introducing a product. Bayus et al. argue that vaporware leads to the same loss of reputation, if not at a bigger scale. All this is important because the credibility of a firm determines how effective its signals are going to be. A detailed discussion of credibility is offered later in the chapter.

Eventually one could argue that the benefits and costs of NPPA are an antidote of the information asymmetry of signals. The following section goes in depth about NPPA as market signals. It is important to note that Eliashberg and Robertson (1988) view pre-announcing and incumbent firms as relying on two main factors – consumer behavior and competitor behavior, where the pre-announcing firm focuses on the benefits and the incumbent competitors focusing on the perceived risks of preannouncement behavior

### NPPA as Market Signals

Much of the literature has adopted a practice of providing very broad definitions of signals. Economists tend to define signals through an information perspective (Heil and Robertson 1991). For example, Spence (1974), in his seminal piece, looks at signals through an employee productivity perspective. Signals can also carry product quality and/or brand quality information (Boulding 1989; Engers 1987; Nelson 1974; Rao, Qu,

and Ruckert 1999), or the reputations and intentions of firms (Kreps and Wilson 1982; Scherer 1980). Robertson and Eliashberg (1988) argue that this broad notion or definitions of the term leads to market inefficiencies.

George Akerlof combines the term information asymmetry with market signals. According to Akerlof (1970), firms are unsure as to what new products a competitor may introduce, consumers might find it difficult to decide on buying a product now or wait for a newer product, all based on market signals. This contends that signaling can lead to information asymmetry in the market, for example when a firm indulges in vaporware or tries to mislead a consumer, and as a result the market will deteriorate in size and potential.

In terms of competitive market signaling, Porter provides a more fitting definition of signals. His definition is as follows “A market signal is any action by a competitor that provides a direct or indirect indication of its intentions, motives, goals, or internal situation (1980, p. 75).” Heil and Robertson modify Porter’s definition to apply it to a pre-announcement context, “Competitive market signals are announcements or previews of potential actions intended to convey information or to gain information from competitors (1991, p.403).”

From signaling theory in information economics (Spence 1974) and information asymmetry (Akerlof 1970; Kreps 1991), Rao, Qu, and Ruckert (1999) introduce credibility to pre-announcing signals. They define signals as “an action that the seller can

take to convey information credibly ...” They state that signaling comes from two sources: 1) dissipative signals, which involve expenditure in reputation building that will be forfeit should the quantity turn out to be poor, 2) non-dissipative signals, which do not involve any up-front expenditure but do place future profits at risk.

At its most basic form pre-announcing behavior is a form of market signaling. All NPAs and NPPAs are market signals that are sent by the signal sender and received by the signal receiver. How these signals are interpreted is largely dependent on the contingent factors of the particular market and other aspects like senders’ reputation etc. The next section discusses competition among firms in a particular market and how it affects a signal receivers’ competitive response to a NPPA signal.

### Competitive Response

Competition in most global markets involves the many challenges that firms face from other firms within a particular market environment. Global marketing competition can take place in a variety of forms via the marketing mix, for example price wars or promotional battles. Since competition is a two-way process, it goes hand-in-hand with competitive responses. For every competitive action in a global market, more often than not, there will always be a competitive reaction or response. Porter (1980) argues that threatening competitive actions, like NPA/NPPA or price decreases, have a negative impact on other firms’ profitability, and as a consequence, competitive responses exhibit a higher likelihood of materializing.

In such an intense and globalized environment, information is a critical aspect of the competitive or competition domain. But simply having access to competitive information from around the world is not sufficient to effectively chart a strategy or plan for success. Companies must adapt by infusing globally competitive awareness throughout their organization, and into every business process that deals with customers, competitors, and products. The cycle of gathering external information, analyzing it, determining an optimal response, and then engaging the business to execute, is called the competitive response lifecycle (cf. Day and Wensley 1988; Hunt and Morgan 1995; Porter 1979; Kotler and Keller 2006). This is a key feature of competition in global markets.

Competitive reactions have also been defined as “a set of decisions by a firm in response to an observed competitive action” (Kuester, Homburg, and Robertson 1999, p.90). More relevant towards this thesis, Hultink and Langerak (2002) define competitive reactions as the set of decisions made by a firm in response to an observed new product launch. It is implied that there are many different forms of competitive reactions ranging from speed and strength to marketing mix reactions. Empirical research suggests that new product launch decisions usually invoke competitive reactions based on strength and speed.

Competitive responsiveness, is basically, the measure of a firms’ capability to respond to a competitive action by its’ global competitor/s. It is important to note that competitive responses or reactions can be multi-dimensional in nature (Kuester,

Homburg, and Robertson 1999). Kuester, Homburg, and Robertson enumerate five such dimensions. These include an instrumental dimension, an intensity dimension (or aggressiveness), a breadth dimension, a speed dimension, and a domain dimension (1999, p.91). This thesis looks at two of these dimensions in particular: 1) Speed of Response and 2) Aggressiveness of Response.

### Speed of Response

Speed of reaction is essentially the time it takes a competitor to react to a particular competitive signal that is sent by another firm within the global market. For example, once a NPPA has been issued, a signal receiver or competitor will respond with varying degrees of speed, some might react immediately while others take longer to respond. Kuester, Homburg, and Robertson (1999) define speed of reaction as the time lag between competitive threat and response.

Though marketing has given due importance to the study of speed in new product development and market pioneering (Gatignon and Robertson 1993; Urban et al. 1986), extant literature has paid less attention to speed of reaction to competitive market signals. However, recently marketers have started to pay attention to the area, for example Bowman and Gatignon (1995) look at what are the determinants of response time when a new product is introduced. Further, Gatignon, Robertson, and Fein (1997) look at speed of reaction to NPPA through a defensive strategy perspective.

Speed of reaction to a NPPA is determined by a number of factors. These include innovativeness of the product (Gatignon, Robertson, and Fein 1997), perceived hostility (Robertson, Eliashberg, and Rymon 1995), rate of market growth (Bowman and Gatignon 1995), size and dominance of the incumbent firm, price sensitivity in the market, and the number of competitors (cf. Bowman and Gatignon 1995; Ghemawat 1991; Kuester, Homburg, and Robertson 1999). I would argue that speed of response is also likely to be a function of the global nature of the industry or market in which the firm competes. This thesis focuses on perceived hostility because it is the one factor that is a function on the NPPA itself. All the others are properties of the product, the firm, the industry, or the market (including customers).

#### Aggressiveness of Response

Global competitive responses also differ in their aggressiveness. Based on various factors like perceived signal credibility or hostility, a competitive reaction may be aggressive in varying degrees. An aggressive response is one that tries to elicit a sense of threat within the original signal sender.

Hostile actions, almost always, elicit some kind of competitive response from incumbent firms (Robertson, Eliashberg, and Rymon 1995), while at the same time they also increase the propensity for stronger reactions (Heil and Walters 1993). Robertson, Eliashberg, and Rymon try to measure different dimensions of reaction to NPPA signals by incumbent firms, and in doing so they look in depth at reaction aggressiveness and

argue that both signal hostility and signal credibility play an important role in the aggressiveness of the response.

Hultink and Langerak define signal hostility as the extent to which the approach used by the sender to introduce the new product is perceived as hostile. ‘Hostile signals are expected to result in strong reactions because the livelihood of receiving competitors is threatened.’ (2002, p. 203).

### Summary

NPPA are a prominent facet of competition in global markets. Studies have suggested a positive relationship between a hostile signal and speed of reaction and magnitude (Heil & Robertson 1991). Studies have also suggested that the level of aggression and speed of reaction are closely linked to the intended harm in the NPPA signal, whether or not the incumbent suffers any harm. Non – hostile signals such as cooperative signals have been found to illicit positive reactions rather than hostile reactions. Based on the literature review, the perceived magnitude of a signal, whether in terms of hostility or credibility, may be perceived in a more volatile fashion in infant industries as opposed to mature industries where competition and competitive rules maybe established over a period of time. This suggests that the impact of NPPA, regardless of perceived credibility and/or perceived hostility is more likely to occur during the early phases of an industry’s life cycle.



Kuester, Homburg, and Robertson (1999), in their study combined the consequence and hostility signals to form the 'threat signal' and found perceived threat to be a significant predictor of speed of reaction. One of the areas that this thesis concentrates on, is the difference in speed of reaction at various levels of perceived hostility.

## Hypotheses

This section looks at the hypotheses that this thesis aims to test. Hypotheses are offered with respect to perceived speed of reaction and strength of reaction.

### Signal Credibility

Signal Credibility determines whether or not an incumbent in a global market is likely to react to a NPPA signal (Chen & Miller 1994). A minimum requirement for a signal to inspire a reaction is that the signal be credible. The credibility of a signal is two dimensional in the sense that it depends on the sender's reputation and the irreversibility of the signal. Rao, Qu, and Ruekert (1999) argue that credibility is achieved when the signal sender will suffer a monetary penalty for sending false signals. It can be hypothesized that credible signals will induce faster reactions. In their study of hostile and aggressive NPA signals, Robertson et al. (1995) did not make any inferences as to whether or not a credible signal may be perceived as hostile or whether it might, on its own, induce an aggressive reaction. In this stream of literature, reputation is formed based on the consistency of past actions and fulfillment of prior signals. In this regard,

reputation can be seen as having a positive relationship with incumbent reactions to NPA signals. Irreversibility of commitment, the second dimension of credibility, rates the unlikelihood of signal not being fulfilled. Research has shown that high irreversibility increases the propensity to respond to a NPA signal (Chen and MacMillan 1992).

Rao, Qu, & Ruekert (1999) explore the consequences of a brand alliance on credibility. They argue that co-brands have the desirable consequence of enhancing quality perceptions when quality is not *a priori* observable. So, a positive outcome for a brand occurs when the brand ally credibly communicates a level of quality that the focal brand is unable to communicate by itself. Rao, Qu, and Ruekert show that when the brand ally provides a credible signal and quality information is unobservable, the brand ally's vulnerability to punishment is used by consumers to infer the quality of the focal brand's product. This suggests that the ally's vulnerability to loss of future sales serves as a credible signal of unobservable quality. These results justify the use of a globally known and reputable ally manipulation as mechanism for increasing the perceived credibility of an NPPA.

Therefore, in this thesis I manipulate the credibility of an NPPA signal through a strategic alliance with another firm, which is widely perceived as highly reputable in the global market. The presence of an alliance in the signal is expected to increase the credibility of the NPPA. Based on the findings of Chen and Miller (1994), a credible NPPA signal should affect the strength of reaction and speed of reaction by incumbent firms (or signal receivers). Thus, the hypotheses are:

*H<sub>1A</sub> – The presence of a well-known, reputable ally in an NPPA  
will lead to a stronger response by the signal receiver.*

*H<sub>1B</sub> – The presence of a well-known, reputable ally in an NPPA  
will lead to a speedier response by the signal receiver.*

### Signal Hostility

It has been suggested that signal hostility has a positive relationship with speed and strength (magnitude) of reaction (Jervis 1976; Heil and Robertson 1991). Empirical tests have measured the relationship between hostile signals and magnitude of competitive reactions (Heil and Walters 1993; Mansfield 1990), concluding that the more hostile an NPPA signal, the stronger the competitive reaction will be. Studies have also found that the greater the perceived threat, that is the more a competitor's signal seems to attack a firm's existing position, the shorter or quicker the response time (Chen, Smith, and Grimm 1992; MacMillan, McCaffery, and Van Wijk 1985). However, extant research has failed to test the effect of announced product launch lead-time on perceived hostility. I argue that an NPPA announcing the launch of a new product in one month would be more threatening for incumbent firms in the global market than if the announced launch is scheduled to occur in a year's time.

Robertson et al. (1995), state the existence and relevance of patents within an industry may constitute a potentially interesting variable affecting the likelihood of competitive reactions to NPA signals. In marketing, patents are generally considered

barriers to entry (Porter 1980). Robertson et al. (1995) contend that in situations where patent protection is involved, competition will be characterized by a higher level of sensitivity to NPA signals. Robertson et al. expect that in these industries reactions to NPA signals will be more likely and aggressive at the same time. Robertson et al. state that “when threatened by a competitor in an industry characterized by high patent protection, we hypothesize that the incumbent will protect the revenue base for the existing technology by reacting aggressively... (1995, p. 5).”

The above implies the status of a patent application and the immediacy of the product launch can be used to manipulate signal hostility. Information about patents within NPPA can provide valuable information to incumbent firms in the global market about the approximate launch period for the new product. If the wording of an NPPA suggests that a patent application has not yet been filed, it would suggest that there is considerable time before product launch since obtaining patent acceptance would take a considerable amount of time. On the other hand if the NPPA suggests that a patent has already been filed, this would suggest that the product launch is imminent. Though, an NPPA might already contain information about launch dates for the product, including additional information about the status of a patent application provides credibility to the launch date and can be hypothesized to heighten the perceived hostility of the signal.

Accordingly, I use patent timelines to provide credence for stated product launch timelines. Because shorter lead-times to the introduction of a new product will lead to higher perceived hostility, such a signal should increase the strength and speed of

reaction by incumbent firms. On the other hand, if an NPPA is issued a year before the actual product launch, it would be perceived as less hostile to incumbents, thereby resulting in a lower strength and speed of response. Based on these arguments, this thesis will test the following hypotheses:

*H<sub>2A</sub> – An NPPA with a shorter lead-time will be associated with a stronger response by the signal receiver.*

*H<sub>2B</sub> – An NPPA with a shorter lead-time will be associated with an increased speed of response by the signal receiver.*

#### Interaction of Credibility and Hostility

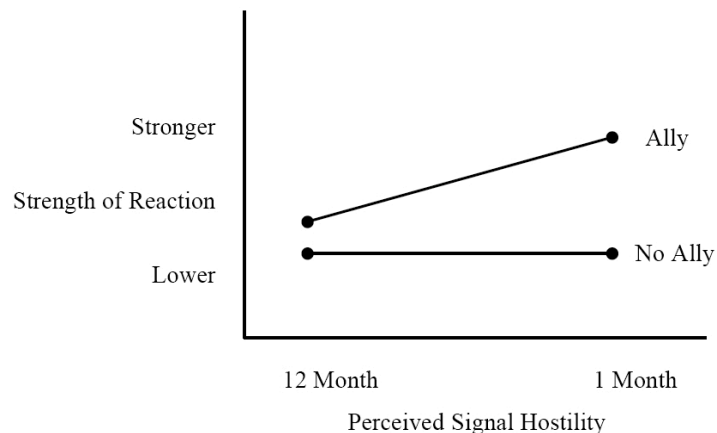
I have argued earlier in this thesis that signal credibility is a minimum requirement for a competitor to respond to an NPPA within a global business environment. Chen and Miller (1994) have made the same suggestion. This is based on the premise that engaging in a competitive reaction involves certain costs, including time and financial resources. Unless the initial NPPA signal is credible, the incumbent firm would essentially be wasting time and money in formulating and implementing a response. Thus, it is important for incumbent firms in global markets to first assess the credibility of a signal prior to engaging in competitive reactions. Previous studies have failed to test the interaction of signal credibility and signal hostility as predictors of signal receiver response. This is a principal contribution of this thesis.

Since signal credibility is a precursor to all other messages within the NPPA signal, this thesis argues when perceived signal credibility is low the immediacy of product introduction or lead-time mentioned in the NPPA is irrelevant. Essentially, the signal is not believable. Based on this argument, we should see a low level of response likelihood on both speed of response and strength of response when a received signal is judged to be non-credible. In contrast, this thesis will test whether the immediacy of entry, as operationalized by short lead-times and patent application status, will affect anticipated response strength and speed when the presence of an ally increases signal credibility. The following hypotheses are presented:

***H<sub>3A</sub> – An NPPA with shorter lead-time will lead to an increased strength of reaction when an ally is present, but will have no effect when there is no ally.***

FIGURE A

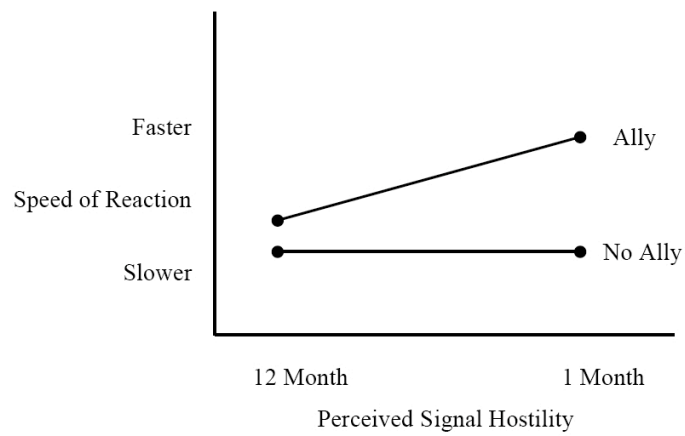
PREDICTED INTERACTION OF STRENGTH OF REACTION



*H<sub>3B</sub> – An NPPA with shorter lead-time will lead to an increased speed of reaction when an ally is present, but will have no effect when there is no ally.*

FIGURE B

PREDICTED INTERACTION OF SPEED OF REACTION



## CHAPTER III

### METHODOLOGY

The focus of the chapter is the methodology employed in this research. My discussion focuses on the experimental design employed in this research which serves as its backbone. This includes the manipulations I use in my research and the stimuli that I administer on the respondents. I further go onto talk about the procedures used in data collection, focusing on the sample, the instrument administered, the data collection technique, and the measures I used within the instrument.

#### Experimental Design

The empirical tests performed in this thesis are based on  $2 \times 2$  factorial design. One of the factors is the presence or absence of an ally for the new product. The other is the time to product launch and patent status. Figure C on the next page describes the factorial design that this thesis incorporates.



FIGURE C

2×2 FACTORIAL DESIGN

Perceived Signal Credibility	Ally	High Credibility Low Hostility	High Credibility High Hostility
	No Ally	Low Credibility Low Hostility	Low Credibility High Hostility
		12 Months	1 Months
Perceived Signal Hostility			

Manipulations

In designing the manipulation involving the alliance, it became clear that using a well-known firm as the signal sender would present a confound. To eliminate this concern a hypothetical firm with a fictional name was created to serve in the role of the signal sending firm. The hypothetical firm was named Max, Inc., which was described as introducing a new earphone/headphone product in the consumer electronic industry – an important global market. This previously unknown firm should have difficulty sending credible signals (Rao, Qu, and Ruekert 1999). Credibility was manipulated by providing a well-known and respected firm that operates in compatible product-categories. Apple Inc., a major global competitor in the computer and electronics industries, was chosen as the ally. This firm’s international success with its I-pod product provides respondents

with a well-known global competitor with a complementary product as the signal sender (i.e. headphones that can be used with products such as I-pod). Since the signal sender within this experiment is a hypothetical firm (Max Inc.), any firm that is widely recognized would provide credibility to its NPPA signal. One of the major reasons for providing a reputable ally is that signaling by an unknown firm lacks credibility since the unknown firm could send a false signal with no cost (Robertson et al. 1995). However, care was taken to make sure that the real world ally (Apple Inc.) did not have any major factors that would undermine its reputation or negatively influence its intended effect on perceived credibility. In half the tests an ally was provided, while for the other half there was no ally mentioned in the NPPA.

The second manipulation was the time to product launch and patent status. Two separate intervals were chosen to indicate the expected time of launch. In one scenario, the product launch would happen one month after the NPPA signal was sent. The other scenario had the product being launched one year after the NPPA signal is sent. The time intervals were chosen based on the work of Kohli (1999) and Keenan (2002) who present evidence that the average lead-time in NPPA is between four and six months. Based on this evidence I replaced an earlier plan to use a three month interval for the short lead-time condition with the shorter one month interval. The purpose was to increase the difference in response time available to respondents from nine months to an entire year. Along with the time interval was a short description about the status of a patent application related to the product. In the short lead-time to launch condition, the scenario stated that the patent application had been filed prior to the release of the NPPA.

Whereas in the long lead-time to launch condition, the scenario simply stated that a patent application will be submitted soon. As mentioned in the previous chapter, the status of the patent is intended to provide extra credibility to the launch timelines. Additionally, these manipulations reflect the reality of day to day business within a globally competitive market.

### Stimuli

Data collected by Robertson, Eliashberg, and Rymon (1995) show that an overwhelming majority of NPPA signals were detected by the incumbent firms (i.e. signal receiving firms) in trade journals and press announcements. Accordingly, the NPPA signal scenario was operationalized in the form of a press release. To increase the realism of the stimuli, it was based on several actual NPPAs extracted from the popular press. The press release announces the new product based on a new technology that has been developed by Max. Small descriptions about both the product and the technology are provided, along with information on options and accessories available for the product.

Four versions of the press release were created, each of which operationalizes one of four cells in the 2×2 factorial design. For the ally manipulation, the phrase “along with its alliance partner Apple, Inc.” was inserted in the first line of the press release. For the lead-time manipulation, the third to last sentence in the press release was modified from “Max Inc. has already filed a patent application for the technology and the product will be available in 12 months” to “Max Inc. has as initial patent application for the technology that will be submitted soon and the product will be available in 1 month.”

Apart from these relatively slight manipulations, the wordings are exactly the same among all four press releases. All four press releases are provided in Appendix A. In a deliberate move, no pricing information was provided; the press release states that pricing information will be provided at the time of product introduction. This was done to remove the possible effect of price on perceived hostility and perceived credibility.

As stated above, the stimuli were based on actual press releases found in trade journals. I pre-tested it along with the instrument. The pre-test involved four marketing managers at local businesses in Stillwater, Oklahoma. These managers unanimously agreed that the press release was realistic and believable. No changes or modifications were suggested to the stimuli based on the pre-test.

## Procedures

### Sample

The sampling frame consisted of MBA students at the Stillwater and Tulsa campuses of Oklahoma State University. MBA students were chosen as opposed to other graduate students because of their ability and training to interpret various cues that might be important to making business decisions. This frame was also relevant due to the international dimension of the MBA student body. Since the sample would have to play the role of a manager within the incumbent or signal receiving firm and make managerial decisions provided further impetus towards the use of MBA students.

Specific MBA classes were selected to administer the instrument. No particular procedures were adopted in selecting the classes since it was up to instructor approval whether or not the survey could be administered. No remuneration or privileges were provided for taking part in the experiment. Ultimately, the sample size was calculated at 120 MBA students based on enrollment figures for the four class sections that were involved in the experiment. In total, 100 completed and useable surveys were obtained.

Respondents were randomly assigned to one of the four scenarios. This was achieved by randomly collating the instruments prior to distribution.

### Instrument

The instrument was in a questionnaire format (Appendix B). Though there were four separate scenarios, the items were identical across conditions. The instrument was pre-tested with four marketing managers at local firms. Though changes were not suggested to the stimuli, certain changes were recommended to the questionnaire. Based on these suggestions, identified questions were made clearer and less ambiguous.

Each questionnaire came with a cover page that contained the instructions and one of the four press releases. The instructions required the MBA students to envision themselves as the marketing manager of an imaginary firm (Pacific Corp.). Pacific Corp. is described as being an incumbent in the same industry as the signal sending firm (Max Inc.). Upon reading the NPPA press release, the students are asked to answer questions based on their role as the marketing manager of Pacific Corp.

In total the instrument contained 36 questions. Of these 22 were related to the measurement of the constructs being studied. The remaining 14 questions were split between manipulation checks and demographic questions. Most respondents took 15 minutes to complete the process, from reading the NPPA press release to answering all the questions. The instrument was in English – appropriate since even the foreign nationals in the MBA program are expected to be facile with the language. If the study were replicated in other countries, the instrument would require translation, back translation, and additional pre-testing to ensure metric equivalence.

### Data Collection

The data collection was conducted within the classroom setting. The questionnaires attached with the cover page containing the NPPA press release and instructions were randomly distributed to the class. Prior to the distribution of the instrument, as per Institutional Review Board (IRB) guidelines, an informed consent script was provided to the respondents (The IRB approval is in Appendix D). This was followed by a quick review of the simple instructions that the subjects had to follow. Once the subjects were finished they were asked to return the questionnaires. At all times I was present in the room while data was being collected, to answer any questions or concerns. However, no concerns were brought up and no clarification was necessary.

## Measures

I assessed all constructs as multi-item measures. I scored each item on a seven-point Likert scales ranging from “strongly disagree” (1) to “strongly agree” (7). The scales were from Hultink and Langerak (2002). However, these scales had all been developed by previous research in the field.

Two constructs, hostility and perceived consequences to the incumbent, were measured using four-item scales. Incumbent perceptions of signaling firm commitment was measured using a three-item scale. The items were originally from Heil and Walter (1993) and Robertson et al. (1995). Incumbent reaction scales were borrowed from work by Bowman and Gatignon (1995), Gatignon et al. (1989), and Heil and Walters (1993). These included a four-item scale for speed of reaction and a three-item scale to measure strength of reaction. A three-item scale measure perceived product advantage was based on the work of Green et al. (1995) and Hultink et al. (1997). A two-item scale was used to measure perceived aggressiveness of the entrant firm, this was based on the work of Chen et al. (1992) and Clark and Montgomery (1998).

Along with these seven constructs, manipulation checks were included in the instrument. This was done in an effort to verify that the manipulations had the intended effect. Some potential covariates were also measured. A four-item scale measured respondent’s familiarity with Max Inc., Pacific Corp., Apple Inc., and Sony Inc. These functioned in two ways. First, they allowed me to assess the whether respondents were more familiar with Apple Inc. and Sony Inc. relative to the familiarity with either of the

hypothetical firms: Max Inc. or Pacific Corp. Additionally, it is possible that respondent's judgments regarding response to the NPPA are in part a function of their familiarity with Apple. Thus, familiarity with Apple may help reduce the experimental error making significant effects easier to detect. Manipulation checks were also placed to assess the respondent's recollection of the presence or absence of an ally, the lead time to introduction, and the product category involved. Once again this permitted verification that the subtle manipulations used were having their intended effects.



## CHAPTER IV

### FINDINGS

This chapter reports the results of statistic analysis of the collected data. I first assessed the qualities of the sample by analyzing demographic variables. I then analyzed the measures with respect to reliability and unidimensionality. I report coefficient alpha and corrected item-total correlations for each measure is discussed. I used exploratory factor analysis (EFA) to assess unidimensionality and those results are also reported herein. Next, I analyzed the manipulation checks to assess the efficacy of the credibility (ally) and hostility (lead-time to introduction) manipulations. After examining correlations among the dependent variables and potential covariates, I identified the variable consequence of the NPPA on firm's sales as a suitable covariate due to its correlation with the dependent variables. I then moved to testing the hypotheses using analysis of covariance (ANCOVA). I conclude the chapter by summarizing the results of the hypothesis testing.

#### Demographic Analysis

Demographics indicate that the sample is relative young, with nearly 80% of the sample falling between the ages of 21 and 30. The sample is 63% male which is typical of both MBA programs and gender percentages in the workforce. Foreign citizens

represented 20% of the sample, most of them being either Indian or Chinese citizens. Given the nature of an MBA sample, the amount of depth of work history is a key variable with respect to this study. An initial analysis of the respondents suggests that approximately 37% of the sample had managerial work experience of more than one year. Meanwhile, 51.4% of the sample had worked for at least three employers and at least 40% of the respondents had worked at the supervisor level or higher. The highest level of income earned indicated that only 21% of the sample had earned an annual income of \$50,000 or higher while more than 50% had never earned more than \$25,000. Thus, this sample is relative young and with a generally low level of actual work experience. A detailed breakdown of the demographics is provided in Table X in Appendix C.

### Psychometric Analysis

Reliabilities were analyzed for each of the seven multi-item scales used. Based on Voss, Stem and Fotopolous (2000) scales were considered reliable based on the observed level of alpha given the distribution of the responses, the history of the scale in prior published literature, and response patterns in the data. The three hostility items exhibited an initial Cronbach's alpha ( $\alpha$ ) of 77%. The item-total correlations for the hostility construct were all above the .50 level, however hostility three was weakly correlated with the other two items and analysis indicated that dropping the item would increase  $\alpha$  to .79. I performed an exploratory principal component factor analysis (EFA) (with no rotation) using the standard Eigen value greater than 1 rule. The items for hostility loaded on one factor with 68% of the total variance explained. However, since

hostility three had a low communality, and given the results from the  $\alpha$  analysis, I chose to rerun the EFA forcing a two-factor solution. This showed that hostility three was loading on a second factor. I reran the EFA with only hostility one and two, and explained variance increased to 82%. I concluded that dropping the third item would be the best choice. Table I shows the original EFA output and reliability.

TABLE I  
EFA AND RELIABILITY FOR HOSTILITY

Scale	Factor Loading	Item-Total Correlation
Perceived Hostility		
Host 1	0.825	0.594
Host 2	0.899	0.726
Host 3	0.754	0.504
Eigen Value	2.058	
% of Variance	68.595	
Cronbach's Alpha	0.770	

Regarding the incumbents perception of the entrant's commitment to the new product, the three-items produced an  $\alpha$  of .90 with strong item-total correlations; indicating adequate reliability. The scale loaded cleanly on one factor that explained 83% of the variance (see Table II). I next analyzed speed of reaction. This three-item scale exhibited an  $\alpha$  of 85%. Item-total correlations were sizeable. The items loaded cleanly onto a one-factor solution with a total explained variance of 78% (see Table III).

TABLE II  
EFA AND RELIABILITY FOR PERCEIVED COMMITMENT

Scale	Factor Loading	Item-Total Correlation
<b>Perceived Commitment</b>		
Comm 1	0.919	0.816
Comm 2	0.905	0.789
Comm 3	0.925	0.826
Eigen Value	2.519	
% of Variance	83.978	
Cronbach's Alpha	0.903	

TABLE III  
EFA AND RELIABILITY FOR SPEED OF RESPONSE

Scale	Factor Loading	Item-Total Correlation
<b>Speed of Response</b>		
Spd 1	0.837	0.656
Spd 2	0.936	0.833
Spd 3	0.875	0.704
Eigen Value	2.342	
% of Variance	78.080	
Cronbach's Alpha	0.854	

I observed a problem with the four-item strength of reaction scale. Poor reliability was exhibited in an  $\alpha$  of .40 while item-total correlations for the four items ranged from .09 to .43. The EFA resulted in a two-factor solution, with an explained total variance no higher than 39% (see Table IV). Based on an analysis of the individual items correlations with the speed of response variable, I chose to use the first item as a single-item measure of response aggressiveness. More discussion on how I handled this construct is presented later.

TABLE IV  
EFA AND RELIABILITY FOR STRENGTH OF RESPONSE

Scale	Factor Loading	Item-Total Correlation
<b>Strength of Response *Two Factor Solution</b>		
Str 1	0.752 / -0.155	0.334
Str 2	0.381 / 0.783	0.092
Str 3	0.808 / 0.158	0.429
Str 4	0.451 / -0.687	0.103
Eigen Value	1.566 / 1.133	
% of Variance	39.159 / 28.335	
Cronbach's Alpha	0.401	

Regarding the respondents' perception of the consequences of the new product on the incumbent firm, which was measured using a four-item scale, an  $\alpha$  of .89 with all item-total correlations above .75 indicated a reliable scale. The items loaded on a single factor with 76% of the total variance explained indicating acceptable unidimensionality

(see Table V). Moving to the 2-item scale for perceived aggressiveness of the NPPA, the scale was judged reliable with an  $\alpha$  of .77 and item-total correlations greater than .62. The items loaded on to one factor with total variance explained of 81% (see Table VI). Finally product advantage was measured using three items, which was judged to be reliable with an  $\alpha$  of .87. Inter-item correlations all greater than .50. These items also loaded cleanly onto a one-factor solution with 79% of the total variance explained (see Table VII).

TABLE V  
EFA AND RELIABILITY FOR PERCEIVED CONSEQUENCES

Scale	Factor Loading	Item-Total Correlation
<b>Perceived Consequence</b>		
Cons 1	0.885	0.790
Cons 2	0.874	0.774
Cons 3	0.860	0.745
Cons 4	0.881	0.780
Eigen Value	3.062	
% of Variance	76.546	
Cronbach's Alpha	0.897	

TABLE VI  
EFA AND RELIABILITY FOR PERCEIVED AGGRESSIVENESS

Scale	Factor Loading	Item-Total Correlation
Perceived Aggressiveness		
Agr 1	0.902	0.628
Agr 2	0.902	0.628
Eigen Value	1.628	
% of Variance	81.423	
Cronbach's Alpha	0.772	

TABLE VII  
EFA AND RELIABILITY FOR PERCEIVED PRODUCT ADVANTAGE

Scale	Factor Loading	Item-Total Correlation
Perceived Product Advantage		
Padv 1	0.899	0.767
Padv 2	0.889	0.747
Padv 3	0.887	0.745
Eigen Value	2.385	
% of Variance	79.493	
Cronbach's Alpha	0.871	

## Manipulation Checks

Cross tabs were used to assess the effect of the manipulations on the respondent's recall for the presence of the ally and the lead-time to introduction. Participants were asked to indicate the number of firms listed in the press release. A  $\chi^2$  test was performed and the results suggest that there is a significant association between the alliance manipulation and the manipulation check ( $\chi^2 = 20.33$ ,  $df = 3$ , and  $p = 0.000$ ). Of those respondents in the alliance condition, 37 of the 51 subjects indicated that two firms appeared in the press release. In contrast of those in the no ally condition, just 14 of 49 subjects indicated that there were two firms (they should have chosen just one). I also checked to see if this manipulation had an effect on the lead-time to introduction manipulation check. A chi-square test was performed, the results showed that there was no effect on the timeline manipulation check ( $\chi^2 = 0.60$ ,  $df = 3$ , and  $p = 0.90$ ).

Participants in the research were also asked to respond to an item regarding the timeline to product introduction. This was the manipulation check for the lead time manipulation in the stimuli. Of those in the 12 month condition, 43 of 54 subjects reported correctly on the item. When the condition stated 1 month, 27 of 46 reported correctly on the manipulation check. However a common error was found, 11 subjects mistakenly indicated 3 months. A chi-square test provided statistical testimony that the manipulation was successful ( $\chi^2 = 48.36$ ,  $df = 3$ , and  $p = 0.000$ ). It is important to note that the timeline manipulation did not have any effect on the credibility (ally) manipulation check. A chi-square test revealed the lack of association with the indicated number of allies ( $\chi^2 = 3.87$ ,  $df = 3$ , and  $p = 0.28$ ).



## Hypothesis Testing

An analysis of covariance (ANCOVA) was performed on each of the two dependent variables: speed of response and strength of response. This included the use of a covariate, consequence on sales, and the manipulated factors, credibility (ally) and hostility (time). The model included an interaction between ally and time.

I tested for mean differences on the variables under study by nationality. Finding none, I conducted all analysis on the entire MBA sample.

Regarding speed of response, the effects the hostility and credibility manipulations was not statistically significant. The interaction term (ally×time) also had no effect on the speed of reaction, neither did the covariate – consequence of sales. Table VIII presented on the next page provides the relevant statistics.

TABLE VIII  
ANCOVA RESULTS FOR SPEED OF RESPONSE

Dependent Variable Source	Speed of Response			
	<i>df</i>	Mean Square	<i>F</i> -Value	<i>p</i>
Treatment	4	0.696	0.538	0.708
Ally	1	0.005	0.004	0.953
Time	1	1.095	0.846	0.360
Ally X Time	1	0.386	0.299	0.586
Covariate				
Consequence on Sales	1	1.694	1.310	0.215
Error	95	1.293		

With respect to the strength of response variable, there was a significant main effect of the hostility manipulation. However, the main effect of the credibility manipulation did not have a significant effect nor did the interaction term (Table XI). Nevertheless, since I proposed a complex effect between hostility and strength of response, I analyzed planned contrasts (Brown and Melamed 1990). In doing so, I found that strength of response was significantly lower when there was no ally and lead-time to introduction was 1 month. These findings contradict my conceptual reasoning. As indicated in Figure D, response aggressiveness was lower when the signal was *not credible* and the *timeline was short*. I was able to observe the treatment effects on aggressiveness of response only after accounting for the covariate measuring the respondent's concern that the NPPA would affect the firm's sales. This implies mediation and provides support to the idea that aggressiveness of response is related to the perceived hostility of the NPPA signal. In the case at hand, anticipated negative

consequences on sales are an indicator of the signals hostility (see the discussion on page 23 above) . Complete statistical results are in Table XI.

FIGURE D  
INTERACTION EFFECT

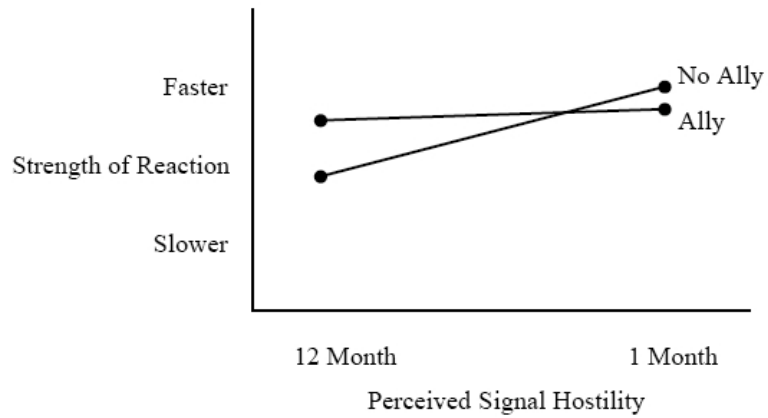


TABLE IX  
ANCOVA RESULTS FOR STRENGTH OF RESPONSE

Dependent Variable	Strength of Response			
	Source	<i>df</i>	Mean Square	<i>F</i> -Value
Treatment	4	2.034	1.836	0.128
Ally	1	0.176	0.159	0.691
Time	1	4.664	4.211	0.043
Ally X Time	1	1.206	1.089	0.299
Covariate				
Consequence on Sales	1	3.862	3.324	0.071
Error	95	1.108		

## Summary

Based on the statistical analysis of the data, none of the proposed hypotheses received support. Recall that  $H_{1A}$  and  $H_{1B}$  argued that signal credibility would increase both the aggressiveness of response and the speed of response. In this study, credibility did not affect either response measure. Similarly,  $H_{2A}$  and  $H_{2B}$  suggested that shorter lead-times to introduction would affect both speed and strength of response. There was no significant effect on speed while the effect on strength was in the opposite direction of the hypotheses. I also reasoned in  $H_{3A}$  and  $H_{3B}$  that there would be an interaction effect such that response would only occur when the signal was credible. There was no effect on the speed measure. The interaction term on the strength dependent variable was non-significant, however, planned contrasts indicated that lead-time to introduction had an effect on strength of response when there was no ally. Further, the strength of response was lower in the shorter lead-time condition than in the longer lead-time condition. Thus, the empirical evidence substantially refutes my hypotheses.

## CHAPTER V

### CONCLUSION

This chapter aims to summarize the results of this thesis, discuss its limitations, and provide recommendations for future research on the subject.

#### Discussion of Results

My goal in this thesis was to advance the marketing literature by looking into the dynamic relationships between NPPA signals and competitive reactions within a globally competitive consumer electronics industry. My hypotheses were designed to test the relationships between an incumbent's level of perceived hostility and perceived credibility, within an NPPA signal, with the speed and strength with which they respond to the signal itself.

I found that the empirical results generally do not support the hypotheses offered in this thesis. In particular, there was no effect of the manipulations on speed of response. Since  $H_{1B}$ ,  $H_{2B}$ , and  $H_{3B}$  were related to speed of response, this discounted my ability to test those specific hypotheses leaving me unable to reach conclusions for any of them. My data does not support the propositions that the presence of an ally will lead to a speedier response, the shorter the lead-time to product introduction will lead to a

faster response, and the presence of a shorter lead-time will lead to a fast response only in the presence of an ally.

As mentioned earlier,  $H_{1A}$  and  $H_{1B}$  dealt with signal credibility and strength and speed of response. However, from the data that was collected, credibility did not have any effect on either strength or speed of response. This further refutes any support for  $H_{1B}$ , while lending no support to the proposition  $H_{1A}$  that the presence of a globally reputable ally (which increases signal credibility) leads to a stronger reaction.

I was able to observe an effect of aggressiveness of response after accounting for a covariate measuring the respondent's concern that the new product introduction within the NPPA would affect the firm's sales. This suggested possible mediation, that hostility effects strength of response through a concern for sales, and supports the suggestion that strength or aggressiveness of response is related to the perceived hostility of the NPPA. Nevertheless,  $H_{2A}$  and  $H_{2B}$  suggested that shorter lead-times to introduction would affect both speed and strength of response. From my analysis, I found no significant effect on speed while the effect on strength was in the opposite direction of the hypotheses, thereby refuting both hypotheses.

For  $H_{3A}$  and  $H_{3B}$  I reasoned that there would be an interaction effect such that response, either faster or stronger, would only occur when the signal was credible. This was based on the argument that if a signal is not credible, its perceived hostility carried no meaning to the incumbent. From the analysis I found there was no effect on the speed

measure, meaning that regardless of the presence of an ally there was no effect on speed of response. This provided no support for H<sub>3B</sub>. This was once again probably due to the fact that my manipulations had no effect on perceived credibility. H<sub>3A</sub> argues for the interaction of perceived credibility between perceived hostility and strength of response. What I found was that the interaction term on the strength dependent variable was non-significant, but planned contrasts indicated that lead-time to introduction had an effect on strength of response when there was no ally present. The analysis showed that response aggressiveness was lower when the signal was *not credible* and the *timeline was short*. Thus, the empirical evidence refutes H<sub>3A</sub> as well. Once again the fact that I couldn't measure perceived credibility played a role in refuting this and other hypotheses offered in the thesis.

### Limitations

Over the course of conducting this research and analyzing the data, it has become apparent that there are many limitations to this research. Even though my hypotheses were offered based on logical conclusions from extant research, I was not able to offer support on any one of them. There were problems with the items used to measure certain constructs and flaws in the data collection. Below I offer a discussion about the fundamental problems with the research.

One could argue that the conceptualizations of the various constructs in the research are incorrect. However, based on the extant literature in the field of marketing and other related fields, the conceptualizations of the dependent and independent

variables seem to be reasonable if not an accurate representation of the constructs. One of the major problems with this thesis is related to the constructs of perceived hostility and credibility, regardless I do not find evidence that this is due to problems with conceptualization of the constructs.

When interpreting the results of the research, certain problems or shortcomings must be taken into consideration. These include the sample size and sample selection, the measures for the items, the manipulations in the stimuli, lack of more pre-testing and other problems with data collection.

### Sample

Though I was expecting to have 120 respondents to my data collection exercise, I was only able to retrieve 100 useable questionnaires. This reduced my sample size to 25 per cell. In order to gain the adequate power and effect size, it is recommended for a 2×2 factorial design to have 30 units per cell. One of the major problems upon analyzing the data was lack of effect size, this issue may have been partially abated if I had more respondents in each cell. Nevertheless there is no such guarantee that I would have attained adequate power and effect sizes. Another probable problem is my choice of sample. I used MBA students because it was it convenient given my timeframe and economical given the costs. Using real world managers would have taken more time at a greater cost and the effect on the research hypotheses is uncertain.



## Measures

Another problem with my research was the items it used to measure the various constructs. Though it was borrowed from extant literature in related areas, many problems with reliability and unidimensionality were encountered. For example there were major issues with the four item measure of strength of response. Probably, the use of better scales to measure the constructs would have a more positive out come for the hypotheses presented in this thesis. In my opinion this was a major limitation of the research that was discovered post data collection.

## Stimuli

The manipulations in the stimuli proved to be another shortcoming in the research. Manipulations for credibility and hostility did not have the projected impact on the data. The major problem was encountered with the manipulation for credibility, as perceived credibility had no significant effect on either speed or strength of response. This was probably because Max Inc. was viewed as having significant credibility in and of itself having pioneered the new product on its own, and viewing Apple Inc. as only a brand ally not related to the actual new product development. This would imply that Apple Inc. did not have the effect intended, which was to provide credibility to a firm that was unknown and would probably have been perceived as having no credibility. Another issue could have been the fact that Apple Inc. probably did not suggest any extra credibility within the NPPA to the respondents. A third issue with the manipulations was the timeline to product introduction used to manipulate the perceived hostility. Though

the two related manipulations of one month and one year to introductions were used to increase significance, no particular procedures were chosen to determine the time intervals, however the earlier launch date of one month had replaced an earlier plan to use a three month interval. It is quite possible that the one month time interval signified a lack of time to respond, thereby having a negative impact on speed and strength of response, opposite to what was suggested. On a side note, it is possible that the respondents did not know in what forms a response could have taken place, whether it could have been a simple marketing mix response or a more complicated new produce response.

#### Pre-test

Many of the limitations mentioned thus far could have been avoided to a certain extent if a more in depth pre-testing was performed prior to data collection. Though a pre-test was done, it was conducted with just four marketing managers in the Stillwater area. In conducting the pre-test, none of the measures were scrutinized in depth, and the manipulations were not checked for relevance and significant effects. The scope of the pre-test which was conducted was limited; it was mainly geared towards rectifying any confusing or ambiguous aspects of the instrument.

However, care was taken to make sure that the real world ally (Apple Inc.) did not have any major factors that would undermine its reputation or negatively influence its intended effect on perceived credibility

## Data Collection

Another shortcoming of this research was the data collection procedure. The instruments were handed out randomly to the respondents in a classroom setting. This method has no faults in and of itself, however there are more controlled methods of collecting experimental data like in an experimental lab setting. Since I did not use the latter method, I cannot ensure to what extent the respondents read and/or understood the stimuli attached to the instruments. In a worst case scenario, the respondents probably did not read the stimuli completely thus explaining the results of the data analysis. However, I have no way of explaining how seriously the respondents answered the instrument, or what effect if any data collection procedures had on my results.

Ultimately, there could be other limitations that I have not mentioned here since they could either not be observed or explained. Regardless, the many weaknesses mentioned here have, in my opinion, tremendously influenced the results of the research. Below I discuss directions for future research, which take into account the limitations of this thesis and recommend further suggestions to improve the likelihood of positive results.

## Future Research

There are many fertile avenues for further research in this specific area of NPPA. However, I plan to first discuss recommendations to this particular study that are offered to solve the limitations of this study.

There are various improvements that could be introduced to this particular study which could vastly improve the results of the study. For one, it is imperative that future research try to obtain a sample size that exceeds 30 respondents per cell. This would go a long way in ensuring the sample size required to attain an adequate amount of power and effect size within the data. Secondly, the sample should ideally consist of real world managers rather than MBA students. Though MBA students are adequate, real world managers possess experience and industry knowledge that could make a difference in the data collected.

A lot of the problems encountered in the data analysis portion of this thesis lead to problems with the items used to measure the constructs. I strongly recommend using better measures in order to make the data collection more successful. Even though I pulled the items from extant research, they did not seem to work. I would recommend adopting Gerbing and Anderson's (1988) procedures for developing better scales in an effort to collect accurate and useful data. On a related note, further research needs to discuss the appropriateness of the manipulations used in the stimuli. For example the timelines involved should be modified to provide an accurate reflection of real world new product introduction lead-times. This should take into account that the short lead-time not be so short that it is perceived as having no time to respond. In essence, better manipulation of perceived hostility and perceived credibility is strongly suggested.

Among my final recommendations, a more in depth pre-test is strongly advocated. A pre-test involves not just checking for questionnaire wording and sequence, but also for

appropriateness and significance of manipulations, reliability, unidimensionality, and clarity of the instrument. Ultimately, this research should have ideally been conducted in an experimental laboratory setting, where the stimuli would have been read aloud to the respondents. This would ensure that the stimuli was clearly understood, and perhaps increase the effect of the manipulations.

An important area for further research would be to extend this study in a manner that truly focuses on the global markets. This would begin by obtaining global samples, controlling country of origin effects, and examining the differences between the regional and global character of signal senders. This would require adjustments to the stimuli, in attaining metric equivalence in other languages, and controlling culture specifically in respect to time.

Other interesting areas of future research include looking at the causal relationships between the constructs mentioned in this research. It became clear to me that the causal relationships suggested in extant literature, though based on logical deductions, might not hold. There could be a host of moderator and mediator variables that play important roles in the reaction to NPPA signals. Another fruitful area of research lays in an extensive scale development study. Scales for perceived hostility, perceived credibility, strength of response, and speed of response etc. seem to hold little validity in extant research. A rigorous scale development exercise based on Gerbing and Anderson (1988) would be useful to the field of marketing. Last but not least, future research should be conducted in a manner that provides results that can have managerial

implications. Vast areas remain to be explored, however without significant implications to real world managers and businesses, research loses its significance.

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## APPENDIX A

### Stimuli – No Ally – 12 Months

*For the purposes of this study we would like you to put yourself in the position of Marketing Manager of Pacific Corp. Your firm is a well-established company in the Audio Accessories industry, and your main source of business comes from manufacturing and selling headphones for use with personal audio players (e.g. MP3 players etc.).*

*Max Inc. is a relatively new entrant to your industry but has proved to be a worthy competitor over the last 12 months. In the past, competition in the industry has been dynamic and often characterized by advertising, new product innovation and alliances with firms in the broader Audio Video industry (e.g. Sony, Toshiba, Apple etc.).*

*Pacific Corp has obtained a copy of a press release issued by Max Inc., shown below. Please read the copy of the press release and answer the questions that follow based on your role as the Marketing Manager of Pacific Corp.*

**NEW PRODUCT PRE-ANNOUNCEMENT**

***For Immediate Release***

November 2006

Max Inc. today announced a new line of in-ear headphones designed for personal music players. Featuring a super-light in-the-ear design for a snug, comfortable fit inside the ear, the new headphones enhance your on-the-go listening and incorporate "NoNoise" technology. To further improve your comfort, they also include super-small 9 mm drivers and soft silicone earbuds. Two sizes of earbuds are also included. The upcoming line of in-ear headphones will be available in a wide variety colors and will include a versatile carrying case that minimizes cord tangles.

The new headphones are the first line of products in its category to include 'NoNoise' technology that was recently pioneered by Max Inc. 'NoNoise' technology brings advanced noise reduction technology from regular headphones to in-ear headphones. Max Inc. has an initial patent application for the technology that will be submitted soon and the product will be available in 12 months. The upcoming line of in-ear headphones will be available in a wide variety colors and will include a versatile carrying case. Pricing information will be provided when the product is introduced.

## Stimuli – No Ally – 1 Month

*For the purposes of this study we would like you to put yourself in the position of Marketing Manager of Pacific Corp. Your firm is a well-established company in the Audio Accessories industry, and your main source of business comes from manufacturing and selling headphones for use with personal audio players (e.g. MP3 players etc.).*

*Max Inc. is a relatively new entrant to your industry but has proved to be a worthy competitor over the last 12 months. In the past, competition in the industry has been dynamic and often characterized by advertising, new product innovation and alliances with firms in the broader Audio Video industry (e.g. Sony, Toshiba, Apple etc.).*

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The new headphones are the first line of products in its category to include 'NoNoise' technology that was recently pioneered by Max Inc. 'NoNoise' technology brings advanced noise reduction technology from regular headphones to in-ear headphones. Max Inc. has already filed a patent application for the technology and the product will be available in 1 month. The upcoming line of in-ear headphones will be available in a wide variety colors and will include a versatile carrying case. Pricing information will be provided when the product is introduced.

## Stimuli – Ally – 12 Months

*For the purposes of this study we would like you to put yourself in the position of Marketing Manager of Pacific Corp. Your firm is a well-established company in the Audio Accessories industry, and your main source of business comes from manufacturing and selling headphones for use with personal audio players (e.g. MP3 players etc.).*

*Max Inc. is a relatively new entrant to your industry but has proved to be a worthy competitor over the last 12 months. In the past, competition in the industry has been dynamic and often characterized by advertising, new product innovation and alliances with firms in the broader Audio Video industry (e.g. Sony, Toshiba, Apple etc.).*

*Pacific Corp has obtained a copy of a press release issued by Max Inc., shown below. Please read the copy of the press release and answer the questions that follow based on your role as the Marketing Manager of Pacific Corp.*

### **NEW PRODUCT PRE-ANNOUNCEMENT**

#### ***For Immediate Release***

November 2006

Max Inc. along with its alliance partner Apple Inc. today announced a new line of in-ear headphones designed for personal music players. Featuring a super-light in-the-ear design for a snug, comfortable fit inside the ear, the new headphones enhance your on-the-go listening and incorporate "NoNoise" technology. To further improve your comfort, they also include super-small 9 mm drivers and soft silicone earbuds. Two sizes of earbuds are also included. The upcoming line of in-ear headphones will be available in a wide variety colors and will include a versatile carrying case that minimizes cord tangles.

The new headphones are the first line of products in its category to include 'NoNoise' technology that was recently pioneered by Max Inc. 'NoNoise' technology brings advanced noise reduction technology from regular headphones to in-ear headphones. Max Inc. has an initial patent application for the technology that will be submitted soon and the product will be available in 12 months. The upcoming line of in-ear headphones will be available in a wide variety colors and will include a versatile carrying case. Pricing information will be provided when the product is introduced.

## Stimuli – Ally – 1Month

*For the purposes of this study we would like you to put yourself in the position of Marketing Manager of Pacific Corp. Your firm is a well-established company in the Audio Accessories industry, and your main source of business comes from manufacturing and selling headphones for use with personal audio players (e.g. MP3 players etc.).*

*Max Inc. is a relatively new entrant to your industry but has proved to be a worthy competitor over the last 12 months. In the past, competition in the industry has been dynamic and often characterized by advertising, new product innovation and alliances with firms in the broader Audio Video industry (e.g. Sony, Toshiba, Apple etc.).*

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### **NEW PRODUCT PRE-ANNOUNCEMENT**

#### ***For Immediate Release***

November 2006

Max Inc. along with its alliance partner Apple Inc. today announced a new line of in-ear headphones designed for personal music players. Featuring a super-light in-the-ear design for a snug, comfortable fit inside the ear, the new headphones enhance your on-the-go listening and incorporate "NoNoise" technology. To further improve your comfort, they also include super-small 9 mm drivers and soft silicone earbuds. Two sizes of earbuds are also included. The upcoming line of in-ear headphones will be available in a wide variety colors and will include a versatile carrying case that minimizes cord tangles.

The new headphones are the first line of products in its category to include 'NoNoise' technology that was recently pioneered by Max Inc. 'NoNoise' technology brings advanced noise reduction technology from regular headphones to in-ear headphones. Max Inc. has already filed a patent application for the technology and the product will be available in 1 month. The upcoming line of in-ear headphones will be available in a wide variety colors and will include a versatile carrying case. Pricing information will be provided when the product is introduced.

## APPENDIX B

### Instrument

It should take you about 10 minutes to answer the following questions.

This is not a test. There are no right or wrong answers.

To protect your privacy, the responses you make are kept completely anonymous.

The risks of participating in this study are no greater than those in everyday life. If at any time during the survey, you feel the need to stop, please return the survey.

#### Please answer all questions

Please follow the instructions below:

1. Answer the questions based on your role as the Marketing Manager of Pacific Corp.
2. Answer the questions based on what you have read in Max Inc.'s new product pre-announcement.

We thank you for your time.

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**Place a circle around the appropriate answer choice.**

► In your view, do you believe the new product pre-announcement by Max Inc. is...

an attempt to gain success at the expense of competing firms.

Strongly Disagree							Strongly Agree
1	2	3	4	5	6	7	

an attempt to gain sales at your firm's expense.

Strongly Disagree							Strongly Agree
1	2	3	4	5	6	7	

a hostile action towards your firm, Pacific Corp.

Strongly Disagree							Strongly Agree
1	2	3	4	5	6	7	



► In your view, Max Inc. most likely...

considers the new product as one of their key activities.

Strongly Disagree							Strongly Agree
1	2	3	4	5	6	7	

has invested a lot of time and energy in the new product's development.

Strongly Disagree							Strongly Agree
1	2	3	4	5	6	7	

sees the new product as an important source of future cash flows.

Strongly Disagree							Strongly Agree
1	2	3	4	5	6	7	

► As Marketing Manager, your reaction to the new product pre-announcement by Max Inc. would be...

established in a short time.

Strongly Disagree							Strongly Agree
1	2	3	4	5	6	7	

in place quickly.

Strongly Disagree							Strongly Agree
1	2	3	4	5	6	7	

a swift reaction.

Strongly Disagree							Strongly Agree
1	2	3	4	5	6	7	

► As Marketing Manager, your reaction to the new product pre-announcement by Max Inc. would be...

powerful.	Strongly						Strongly
	Disagree						Agree
	1	2	3	4	5	6	7

offensive.	Strongly						Strongly
	Disagree						Agree
	1	2	3	4	5	6	7

aggressive.	Strongly						Strongly
	Disagree						Agree
	1	2	3	4	5	6	7

slow.	Strongly						Strongly
	Disagree						Agree
	1	2	3	4	5	6	7

► In view of this new product pre-announcement, Max Inc....

can be viewed as an aggressive competitor.	Strongly						Strongly
	Disagree						Agree
	1	2	3	4	5	6	7

has exhibited aggressive marketing behavior.	Strongly						Strongly
	Disagree						Agree
	1	2	3	4	5	6	7

► If you fail to react to Max Inc. new product pre-announcement, Pacific Corp may experience...

loss of considerable market share.	Strongly Disagree						Strongly Agree
	1	2	3	4	5	6	7

loss of potential sales.	Strongly Disagree						Strongly Agree
	1	2	3	4	5	6	7

poor performance in terms of units sold.	Strongly Disagree						Strongly Agree
	1	2	3	4	5	6	7

lost returns and profits.	Strongly Disagree						Strongly Agree
	1	2	3	4	5	6	7

► In your view, Max Inc.'s new product...

provides unique advantages to customers.	Strongly Disagree						Strongly Agree
	1	2	3	4	5	6	7

may be seen as a superior product in the eyes of the customer.	Strongly Disagree						Strongly Agree
	1	2	3	4	5	6	7

could potentially provide better results than existing products.	Strongly Disagree						Strongly Agree
	1	2	3	4	5	6	7

Please answer the following questions without looking back at any of the previous pages.

► Please rate your familiarity with each of the following firms...

Pacific Corp.

Not at all Familiar							Very Familiar
1	2	3	4	5	6	7	

Apple Inc.

Not at all Familiar							Very Familiar
1	2	3	4	5	6	7	

Sony, Inc.

Not at all Familiar							Very Familiar
1	2	3	4	5	6	7	

Max Inc.

Not at all Familiar							Very Familiar Agree
1	2	3	4	5	6	7	

► How many firms are co-operating to introduce the new product?

- |                            |                            |
|----------------------------|----------------------------|
| <input type="checkbox"/> 0 | <input type="checkbox"/> 2 |
| <input type="checkbox"/> 1 | <input type="checkbox"/> 3 |

► To the best of your recollection, what product was mentioned in the press release?

- |  |   |
|--|---|
| <input type="checkbox"/> mp3 player      | <input type="checkbox"/> headphones             |
| <input type="checkbox"/> stereo speakers | <input type="checkbox"/> high definition stereo |

► What is the timeline mentioned in the press release for release of the new product?

- |                                   |                                    |
|-----------------------------------|------------------------------------|
| <input type="checkbox"/> 1 month  | <input type="checkbox"/> 12 months |
| <input type="checkbox"/> 3 months | <input type="checkbox"/> 18 months |

Mark your answer by placing an X or answer in the space provided.

Years of work experience in managerial positions:

- |  |                                     |
|--|-------------------------------------|
| <input type="checkbox"/> 0 – less than 1 | <input type="checkbox"/> 4 – 7      |
| <input type="checkbox"/> 1 – 3           | <input type="checkbox"/> 8 or more. |

Number of employers you have personally worked for: \_\_\_\_\_

The highest position you have held was (is):

- |  |   |
|--|---|
| <input type="checkbox"/> rank and file     | <input type="checkbox"/> top management |
| <input type="checkbox"/> supervisor        | <input type="checkbox"/> executive      |
| <input type="checkbox"/> middle management | <input type="checkbox"/> owner          |

The highest yearly income you have received:

- |  |   |
|--|---|
| <input type="checkbox"/> Under \$5,000       | <input type="checkbox"/> \$35,000 - \$49,999  |
| <input type="checkbox"/> \$5,000 - \$9,999   | <input type="checkbox"/> \$50,000 - \$74,999  |
| <input type="checkbox"/> \$10,000 - \$14,999 | <input type="checkbox"/> \$75,000 - \$100,000 |
| <input type="checkbox"/> \$15,000 - \$24,999 | <input type="checkbox"/> Above \$100,000      |
| <input type="checkbox"/> \$25,000 - \$34,999 |   |

Your age range in years:

- |                                   |                                   |
|-----------------------------------|-----------------------------------|
| <input type="checkbox"/> Under 21 | <input type="checkbox"/> 31 – 35  |
| <input type="checkbox"/> 21 – 25  | <input type="checkbox"/> 36 – 40  |
| <input type="checkbox"/> 26 – 30  | <input type="checkbox"/> Above 41 |

Your gender:

- Female       Male

Are you a U.S. citizen:

- Yes       No

If No, please specify nationality \_\_\_\_\_

## Appendix C

TABLE X  
DEMOGRAPHIC INFORMATION

Characteristics	Frequency	Percentage
<b>Years of Managerial Experience (N=100)</b>		
Less than 1 year	63	63%
1 to 3 years	22	22%
4 to 7 years	14	14%
More than 8 years	1	1%
<b>Highest Level of Employment (N=100)</b>		
Rank and File	40	40%
Supervisor	18	18%
Middle Management	28	28%
Top Management	2	2%
Executive	8	8%
Owner	4	4%
<b>Highest Yearly Income (N=99)</b>		
Under \$5,000	22	22.2%
\$5,000 to \$10,000	9	9.1%
\$10,000 to \$15,000	15	15.2%
\$15,000 to \$25,000	11	11.1%
\$25,000 to \$35,000	13	13.1%
\$35,000 to \$50,000	11	11.1%
\$50,000 to \$75,000	12	12.1%
\$75,000 to \$100,000	3	3.0%
Over \$100,000	3	3.0%

Continued on next page.

Characteristics	Frequency	Percentage
Age	(N=100)	
Under 21	2	2%
21 - 25	37	37%
26 - 30	49	49%
31 - 35	3	3%
36 - 40	8	8%
Over 40	1	1%
Gender	(N=100)	
Female	37	37%
Male	63	63%

## Appendix D

### Institutional Review Board Approval

#### Oklahoma State University Institutional Review Board


Date: Friday, November 03, 2006  
IRB Application No BU0647  
Proposal Title: Competitive Response to New Product Pre-Announcements

Reviewed and Exempt  
Processed as:

**Status Recommended by Reviewer(s): Approved Protocol Expires: 11/2/2007**

Principal  
Investigator(s)

Mayoor Mohan  
204 Wes Watkins Center  
Stillwater, OK 74078

  
Kevin E. Voss  
211 Business  
Stillwater, OK 74078

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The IRB application referenced above has been approved. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in section 45 CFR 46.

The final versions of any printed recruitment, consent and assent documents bearing the IRB approval stamp are attached to this letter. These are the versions that must be used during the study.

As Principal Investigator, it is your responsibility to do the following:

1. Conduct this study exactly as it has been approved. Any modifications to the research protocol must be submitted with the appropriate signatures for IRB approval.
2. Submit a request for continuation if the study extends beyond the approval period of one calendar year. This continuation must receive IRB review and approval before the research can continue.
3. Report any adverse events to the IRB Chair promptly. Adverse events are those which are unanticipated and impact the subjects during the course of this research; and
4. Notify the IRB office in writing when your research project is complete.

Please note that approved protocols are subject to monitoring by the IRB and that the IRB office has the authority to inspect research records associated with this protocol at any time. If you have questions about the IRB procedures or need any assistance from the Board, please contact Beth McTernan in 219 Cordell North (phone: 405-744-5700, beth.mcternan@okstate.edu).

Sincerely,



Sue C. Jacobs, Chair  
Institutional Review Board



## VITA

Mayoor Mohan

Candidate for the Degree of

Master of Science

Thesis: NEW PRODUCT PRE-ANNOUNCEMENTS: INCUMBENT REACTIONS  
TO COMPETITIVE SIGNALS

Major Field: International Studies

Biographical:

Personal Data: Born in Abu Dhabi, United Arab Emirates, on December 29 1982, and citizen of India. The son of Koyambron Paniyan Mohanan and Vanaja Mohanan, and the brother of Madhur Mohan.

Education: Graduated from Our Own English High School, Dubai, United Arab Emirates in April 2000; received Bachelor of Science degree in Marketing from Oklahoma State University, Stillwater, Oklahoma in May 2004. Completed the requirements for Master of Science degree with a major in International Studies and focus on International business and Economic Relations at Oklahoma State University in May 2007.

Experience: Employed by Oklahoma State University, Department of International Education and Outreach as a graduate assistant and graduate teaching assistant; Oklahoma State University, Department of International Education and Outreach, January 2006 to May 2007.

Professional Memberships: American Marketing Association.

Name: Mayoor Mohan

Date of Degree: May, 2007

Institution: Oklahoma State University

Location: Stillwater, Oklahoma

Title of Study: NEW PRODUCT PRE-ANNOUNCEMENTS: INCUMBENT  
REACTIONS TO COMPETITIVE SIGNALS

Pages in Study: 80

Candidate for the Degree of Master of Science

Major Field: International Studies

Scope and Method of Study: The purpose of this study was to examine assess the effect of perceived hostility and perceived credibility in new product pre-announcement on strength and speed of response by incumbent competitive firms. Participants in the study were 100 MBA students at Oklahoma State University. Each respondent completed a survey questionnaire. Analysis of covariance and planned comparison F-Tests were used to test 6 hypotheses. Total scores on the items in the instrument were used in tests of the hypotheses

Findings and Conclusions: Based on the statistical analysis of the data, none of the proposed hypotheses received support. Hypothesis<sub>1A</sub> and Hypothesis<sub>1B</sub> argued that signal credibility would increase both the aggressiveness of response and the speed of response. In this study, credibility did not affect either response measure. Similarly, Hypothesis<sub>2A</sub> and Hypothesis<sub>2B</sub> suggested that shorter lead-times to introduction would affect both speed and strength of response. There was no significant effect on speed while the effect on strength was in the opposite direction of the hypotheses. I also reasoned in Hypothesis<sub>3A</sub> and Hypothesis<sub>3B</sub> that there would be an interaction effect such that response would only occur when the signal was credible. There was no effect on the speed measure. The interaction term on the strength dependent variable was non-significant, however, planned contrasts indicated that lead-time to introduction had an effect on strength of response when there was no ally. Further, the strength of response was lower in the shorter lead-time condition than in the longer lead-time condition. Thus, the empirical evidence substantially refutes my hypotheses.

ADVISER'S APPROVAL: Dr. Kevin E. Voss

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