

**THE ROLE OF PRODUCT COMPLEXITY, CATEGORY KNOWLEDGE AND
TYPE ON LEARNING: IMPLICATIONS FOR LATE ENTRANTS**

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ABSTRACT

THE ROLE OF PRODUCT COMPLEXITY, CATEGORY KNOWLEDGE AND TYPE ON LEARNING: IMPLICATIONS FOR LATE ENTRANTS

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Although it involves considerable financial risks, being the first on the market provides companies with a competitive edge (Carpenter and Nakamoto, 1989, 1990). Two studies were conducted to investigate boundary conditions for the pioneering advantage and explore factors that influence consumers' learning of brand associations about the first and late entrant. The two studies examined the impact of product complexity, product category knowledge, product type (i.e., hedonic and utilitarian) and consumers' valuation of variety and quality on consumers' allocation of attention and purchase behavior for pioneers and late entrants. The results showed that product complexity influenced consumers' allocation of attention and purchase behavior. Consumers of complex products had a higher purchase intention for the second entrant on the market. Furthermore, for complex products consumers allocated more attention to alignable differences, whereas for simple products consumers allocated more attention to nonalignable differences. Product category knowledge had a main effect on consumers' allocation of attention, purchase intentions, preference and choice. An interaction between product type (i.e., hedonic and utilitarian) and product category knowledge was observed. Pioneering brands benefited the most when consumers perceived the product category as being high in variety and were disadvantaged in product categories perceived as high in quality. Conclusions and managerial implications are presented as well as directions for future research.

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1. Introduction

Late entrants attempt to differentiate themselves from pioneers by emphasizing on attributes that are common, but also by adding attributes that are unique. For example, a late entrant - Sony PlayStation 3 - used attributes that are comparable (i.e., standard hard drive, Bluetooth Wireless Controller) but also non-comparable (i.e., 1080p high definition playback from prerecorded Blue-ray movies, web browser) to the first entrant - Microsoft Xbox 360. This strategy has been more successful in some cases than in others. For example, despite RIM's effort to differentiate the Blackberry phone using both alignable and nonalignable attributes, Apple has still maintained a strategic advantage with the iPhone 4.

Studies on the first entrant advantage from a consumer behavior perspective showed that first entrants on the market have an advantage over late entrants (Carpenter and Nakamoto, 1989, 1990). Consumers remember to a greater extent attributes of late entrants when these are comparable on certain characteristics to the attributes of the first entrant than when the attributes are not comparable on specific dimensions (Zhang and Markham, 1998). Contrary to these findings, Cuhna and Laran (2009) showed that unique attributes are associated with late entrants whereas common attributes are associated with early entrants.

The literature on consumers' perception of early and late entrants is scarce and lacks external validity since most studies have investigated these phenomena using a limited number of product categories. Furthermore, few studies have evaluated conditions when late entrants are advantaged. The purpose of the research is to investigate

consumers' preference of first and late entrants on the market depending on a products category complexity, knowledge of the product category and product type. Two studies will be carried out to analyze these effects.

In the first part of this thesis, a review of the literature on the pioneering advantage is presented, followed by strategies recommended to late entrants in order to overcome the pioneering advantage. The first and late entrant advantage is analyzed from the consumer behavior standpoint showing conditions in which late entrants are advantaged. In the second part of this thesis, two studies are presented. In the first study the impact of product complexity on consumers' allocation of attention to the first and late entrant is analyzed. The second study investigates the influence of product type on consumers' allocation of attention for first and late entrants. The moderating impact of consumers' perceptions of the variety and quality of the product category on the influence of order of entry on purchase intentions, preference, attitude and choice is examined. Further, the moderating impact of consumers' valuation of variety and quality on the influence of product type on preference, purchase intentions and choice for the first and late entrant is explored. The results show that product complexity has a significant impact on how consumers learn the information about brands as well as its impact on the purchasing behavior. Consumers' perceptions of quality and variety for the product category have an impact on their purchase behavior for the first and late entrant. In addition, product type (i.e., hedonic or utilitarian) had an impact on consumers' learning of alignable and nonalignable attributes about the late entrant. The influence of product category knowledge is also evaluated. The findings suggest that novice and experts will know more about and prefer the late entrant. Furthermore, instances when knowledge has

a moderating effect are illustrated. The last part of the report discusses the findings of the two studies, the managerial implications, and provides directions for future research.

2. The Pioneering Advantage

Kerin, Varadarajan and Peterson (1992) present several ways in which a firm can achieve first-mover status. For example, the first firm to produce a new product, to use a new process or to enter a new market can claim this distinction (Lieberman and Montgomery, 1990, p. 33). Carpenter and Nakamoto (1989) argue that the pioneering advantage arises from the process by which consumers learn about brands and form their preferences. This process determines a preference structure that favors the pioneer, which then becomes the category prototype. Order of entry into a market and market share are believed to be causally related (Urban and Star, 1991 as cited in Kerin, Varadarajan and Peterson, 1992). On average, first movers have higher market share than late entrants.

2.1. Strategic Options for Pioneers

The pioneering advantage has been supported by numerous research papers. For example, Peterson (1982) posited that a first mover encounters less resistance among potential consumers, especially those considered early adopters and innovators of a product or brand, than do late entrants. Because early entrants are able to attract early adopters, late entrants need to appeal to potential customers that are less predisposed to purchasing new brands (Peterson, 1982, p. 35).

Kerin, Varadarajan, and Peterson (1992) discuss additional behavioral advantages that first movers have over late entrants. Because they are the first on the market, their

products receive high consumer awareness and a high degree of product trial. These lead to favorable use of the product and increased consumer experience which impacts repurchase behavior and minimizes perceived risk and information costs (Schmalensee, 1982 as cited in Kerin et al. 1992, p. 35).

Competitive advantage can be achieved by fit between environmental attractiveness and organizational skills and resource conditions. This has important implications for the competitive environment. First of all, the greater the degree of fit between the organizational skills and resources necessary to capitalize on an environmental opportunity and the skills and resources possessed by a firm, the greater the firm's sustainable advantage. The first entrant can maximize its competitive advantage by increasing the degree of fit between organizational skills and resources necessary to achieve sustainable competitive advantages through market pioneering (Kerin et al. 1992).

First entrants on the market do not always achieve dominance status. Specifically, Kerin et al. (1992) identify several moderators of economic factors that influence the competitive success of the pioneer, such as demand uncertainty and entry scale, advertising intensity, response time, and scope economies. Also, the cost and differentiation advantages that pioneers might have as a result of their investments in spatial preemption also depend on moderators such as the demand uncertainty and product characteristics. Moreover, the pioneering advantage is also influenced by moderators of technological factors such as characteristics of technological innovation. The efficiency of legal instruments of protection (patents and copyrights) and the nature of technology underlying the innovation are main factors that govern the firm's ability to

benefit from technological innovations. Finally, the first mover can gain numerous differentiation advantages from behavioral factors. These advantages are likely to be moderated by the nature of the good sold, market type, co-specialized assets owned or operated by intermediaries and end-users, and market evolution.

Although many studies have supported the first entrant advantage, an overall evaluation of research on the topic provides several insights. For example, VanderWerf and Mahon (1997) performed a meta-analytic study to determine whether the findings confirming the first mover advantage are sensitive to the methods used. Their analysis of 90 statistical tests showed that tests using market share as their measure of performance were significantly more likely to find a first-mover advantage than tests using other measures such as profitability or survival. Furthermore, they found that the first mover advantage appeared often in tests that sample from individually selected industries and those that include no measure of the entrant's competitive strength. However, they did not find evidence that the exclusion of non-surviving entrants from the sample affects a test's findings.

Additionally, Kerin et al. (1992) present biases in the literature confirming the pioneering advantage. First of all, the first mover is assumed to offer a high quality product, choose the correct positioning, and pursue the right competitive strategy. Furthermore, follower brands are assumed to attempt to be me-toos. Kerin et al. (1992) point out that these assumptions greatly restrict the generality of these insights and their applicability in the marketplace. The authors state that the behavioral view ignores the possibility that a later entrant has the organizational skills and capability to attract the first mover's customers and those newly entering the market by offering a product of

superior value. If the first mover does not choose the correct market position, its competitive advantage is threatened by later entrants (Hauser and Shugan, 1983). Hence, later entrants learn from the first mover's incorrect positioning and are able to better position their brands, better considering their customers' preferences.

2.2. Overcoming the First Entrant Advantage

The pioneering advantage has received a considerable amount of attention from researchers (Carpenter and Nakamoto, 1989, 1990; Cuhna and Laran, 2009; Kerin et al., 1992; Zhang and Markham, 1998, 2001). However, most firms do not achieve pioneer status. Although there is a large body of research dedicated to the pioneering advantage, few studies have investigated the optimal strategies that late entrants should use to achieve dominance and surpass first entrants.

Addressing the potential weaknesses of pioneer brands, Kerin et al. (1992) posit that being the first on the market does not guarantee cost and differentiation advantage over rivals. Hence, most times the first mover does not benefit from a dominant and enduring market share and high financial returns.

Late entrants have several strategic options that they can employ to outperform pioneering brands (Urban et al., 1986 as per Kerin et al., 1992). Late entrants benefit from having a strong product positioning and heavy promotion, which lead to an increase in market share (Kerin et al., 1992). Carpenter and Nakamoto (1990) also provide evidence that late entrants can outperform the early entered brand with heavy advertising and a high price. Late entrants have the opportunity to differentiate by emphasizing their distinctiveness from the pioneer (Carpenter and Nakamoto, 1989). Kerin et al. (1992)

suggest that late entrants can gain advantage from lower imitation costs, free-rider effects, scope economies and learning from the pioneer's mistakes (Lieberman and Montgomery, 1988). A first mover can be outperformed in terms of cost and differentiation advantages by a later entrant. For example, Xerox was surpassed by Japanese manufacturers through adept positioning, innovation and aggressive promotion of their models (Katayaman, 1989 as per Kerin et al., 1992). Additionally, Kerin et al. (1990) point out that late entrants have the opportunity to gain competitive advantage by influencing consumer preferences. Through cross-subsidization and predatory pricing dominant late followers can exercise market power not available to smaller pioneers.

A differentiated late entry strategy could prove to be successful as it involves consumers' preference asymmetry from the pioneering brand. Specifically, Carpenter and Nakamoto (1990) discuss the optimal positioning, advertising, and pricing strategies for a firm contemplating entry in a market dominated by a strong competitor. Based on behavioral research on consumer preference formation, the authors develop an individual-level model that encompasses different consumer responses to similar products offered by pioneers and late entrants. Their analysis is focused on a single late entrant competing in a two dimensional perceptual space against a dominant early entrant using advertising and price. They state that symmetric preference can contribute to the persistent competitive advantage of dominant brands. Hence, the implications of their findings are that a differentiated late entry strategy can be successful due to preference asymmetry, even if preferences would appear to dictate otherwise. Moreover, the authors suggest that me-too strategies bring a late entrant in a disadvantage in comparison with early entrants (Carpenter and Nakamoto, 1990).

Thus, in order to get competitive advantage, the late entrant must identify a superior position, and/or undercut on prices and spend more on its marketing mix (Shankar et al., 1998). In this way, it overcomes the disadvantage imposed by late entry by directing consumers' awareness toward the brand. The advantage of late entry is that it gains additional information about the market. However, waiting determines an increase in the cost of gaining trial and sustaining repeat purchases compared with early entrants. Hence, although a late entrant might achieve the same level of sales as the pioneer, the late entrant's cumulative profits might be smaller without the benefits of the monopoly period had by the pioneer. To overcome these shortcomings, a late entrant must redefine the game in a way that benefits it and disadvantages the pioneer. A late entrant must shift preference toward itself and hence become associated with the category it has reshaped through innovativeness (Shankar et al., 1998).

Shankar et al. (1998) explore the mechanisms which allow innovative late movers to outsell pioneers. The authors develop a brand-level model which decomposes brand sales into trials and repeat purchases. The model analyzes the effect of diffusion and marketing mix effects on brand trial and includes the differential impacts of innovative and non-innovative competitors' diffusion on these effects. Shankar et al. (1998) consider the differential impact of brands that differ by market entry strategy (i.e. pioneering, innovative late entry and non-innovative late entry) on diffusion and marketing mix parameters by analyzing 13 brands in two pharmaceutical product categories. The results showed that in comparison with early entrants and non-innovative late entrants, an innovative late entrant can achieve a sustainable advantage by having a higher market potential and a higher repeat purchase rate. Moreover, innovative late entrants have the

potential to grow faster than the pioneer, slowing the pioneer's diffusion, and reducing their marketing spending effectiveness. Innovative late entrants are advantaged asymmetrically since their diffusion can diminish the sales of other brands. However, their sales are not affected by competitors' diffusion. In contrast, non-innovative late entrants have lower repeat rates, face smaller potential markets, and have less marketing effectiveness compared with a pioneer (Shankar et al., 1998).

Furthermore, innovative late entrants can capitalize on the category awareness and buyer education that pioneers have created to appeal to a greater number of adopters if it offers greater value through superior positioning (Lieberman and Montgomery, 1988, as cited in Shankar et al. 1998). Rogers (1995) posits that late movers need to develop only brand awareness since pioneers already have established awareness for the product category. Once the category is established, the innovativeness of late entrants may provide relative advantage over other brands which in turn may lead to greater adoption (Shankar et al., 1998).

3. Consumer Learning and Preference Formation

Understanding the pioneering advantage has important implications for practitioners. Marketers need to better understand the ways in which consumers process the information about brands and the way they form preferences. Carpenter and Nakamoto (1989) conducted the first study on the pioneering advantage from a behavioral viewpoint and provided insights into how consumers learn brand information. They found that order of entry has an impact on consumer learning, with the first entrant being more preferred in comparison with late entrants. Furthermore, they showed that

pioneering brands have an influence on the way consumers process the information about the product category as a whole, thus determining how consumers form preferences for late entrant firms.

In their experiments, Carpenter and Nakamoto (1989) focused on an emerging market in which a pioneer enters first, followed by late entrants including copycats and differentiated brands. To test their hypotheses, they experimentally constructed an emerging market. Specifically, they designed six hypothetical computer software packages that were created to identify potential sources for financial aid for students. Two brands were used as market pioneers and were called “reference brands.” Each subject saw one of the brands as the pioneer and the other took the role of the distinctive follower. Subjects also saw other two brands that served as copycats and two other brands advertised at a lower price. They used a 2 (ideal point revelation: ambiguity versus non-ambiguous) \times 2 (entry order: early entrant versus late entrant) factorial design with 12 participants for each of the four combination. As dependent measures, participants were asked to specify the ideal characteristic of the product on the five dimensions used to describe the product. Moreover, after a one-hour delay, participants were asked to indicate their brand preference and to rate the similarity of the brands. Subjects allocated 100 points over the six brands to reflect their relative preference. This measure was used as a surrogate for market share.

The findings showed that the order of entry has a significant influence on the structure of consumer preferences for brands in the category. Hence, pioneers in a category had a superior position and a substantially higher share of buyers’ choices. Moreover, the results showed that the similarity between the differentiated late entrant

brand and its me-too competitor decreased the relative advantage of the pioneer. These findings suggest that the advantages of pioneers are limited to perceptual categories “relatively nearby”, depending on the concentration of brands in different areas. Dealing with a greater concentration of brands at a differentiated location, consumers tend to subcategorize those brands and the product space is segmented (Carpenter and Nakamoto, 1989).

One implication of this study is that a late entrant can gain advantage over a pioneer if it develops a sufficient level of distinctiveness. Late entrants having a greater prominence and greater concentration at a differentiated position increase their ability to compete with pioneers (Carpenter and Nakamoto, 1989).

In a second experiment, Carpenter and Nakamoto (1989) further test the impact of learning on preference structure. They used down quilts as the novel product class. Subjects were told that they have purchased a product from the category and it had a satisfactory performance. They were asked to explain why and state whether or not they would purchase from the category again. Moreover, subjects were shown eight hypothetical brand profiles, all different from brands already used and were asked to rank them. A 2×3 factorial design was used with the independent variables: pioneering brand (A vs. B) and type of late entrant (differentiated brand, me-too brand, and none). The four brands used in the experimental market were different in terms of four attributes. Also, eight unnamed brands were profiled in terms of the same four attributes for a conjoint analysis task. The results of the second experiment confirmed that the brand structure was significantly influenced by pioneering. Furthermore, the findings show that consumers became more price sensitive with regard to the pioneer as the second entrant became

more differentiated. Hence, more diverse competition produces more price competition. Price is least effective at stealing share from the pioneer for a me-too brand, and most effective for a differentiated brand.

Carpenter and Nakamoto (1989) provided insightful evidence as to how consumers learn about brands and form preferences. Consumers prefer the pioneering brand when choosing products. Thus, “the first entrant strongly biases category structure through prior exposure and successful outcomes” (Carpenter and Nakamoto 1989, p. 296). The pioneer brand becomes the prototype for the product category and influences preference for later entrants. This experiment also suggests that late entrants can challenge the pioneership status by applying a differentiated strategy. As a result, the first entrant is met with increased price sensitivity as the second entrant becomes highly differentiated. Finally, although Carpenter and Nakamoto’s (1989) results are informative, they might have been confounded as the authors did not take into account that the order in which the brands are considered might not reflect the actual order of entry in the market.

3.1. Further Behavioral Evidence for the Pioneering Advantage

Several studies have further investigated the pioneering advantage from a behavioral perspective. Evidence in favor of the pioneering advantage is presented as well as conditions under which the order-of-entry effect is enhanced or diminished (Kardes and Kalayanaram, 1992; Niedrich and Swain, 2008). Moreover, explanations for the first entrant advantage are presented by exploring consumer cognitions, affect and

attitudes (Alpert and Kamins, 1995) as well as by highlighting both the influence of company level and brand level associations in the formation of consumer preferences for first entrants (Niedrich and Swain, 2003). The influence of variables such as exposure sequence and product trial of consumer preference for pioneer brands are developed as well (Kamins, Alpert, and Elliott, 2000).

Kardes and Kalayanaram (1992) investigated the order of entry effect on consumer memory in two longitudinal studies. They analyzed the pioneering advantage by presenting brand information either sequentially or simultaneously. They found that in the sequential presentation of brand information, participants learned more about the pioneer than about late entrants. Consequently, judgments of the pioneer were more extreme and were held with greater confidence. Furthermore, the early entrant advantage increased over time, particularly when consumers were exposed repeatedly to the features offered by the pioneer. Their findings also showed that the order-of-entry effect on consumer memory and judgment is eliminated when the information about the set of brands is presented simultaneously as opposed to sequentially.

The order of entry influences how consumers learn about products even when the amount of information presented for each alternative is held constant (Kardes and Kalyanaram, 1992, p. 351). The features of the early entrant are weighted more heavily in judgment because they are novel and draw attention. In contrast, late entrants have few unique features but more features that are common with the first entrant. Hence, features that are common for pioneer and followers are weighted more heavily in judgments of the pioneer than in judgments of followers. Moreover, exposure to redundant features diminishes the search process. Because of that, consumers overlook unique features that

pertain to followers. Consumers learn more about the pioneer brand than about late entrants and consequently evaluations of the pioneering brand are more extreme and tend to be held with greater confidence (Kardes and Kalyanaram, 1992).

A superior follower does not overcome the pioneering advantage when the early entrant and late entrant share many similar features and when the information about a set of brands is encountered sequentially with relatively long lags in time between brands (Kardes and Kalyanaram, 1992). One implication of these findings is that in order for pioneers to maintain their advantage, they must emphasize a large number of attributes and benefits. Late entrants can gain advantage over pioneers when they provide more information about their product to consumers. High levels of advertising may increase the prominence of unique features of late entrants (Kardes and Kalyanaram, 1992).

Company level and brand level associations are involved in the formation of brand preferences in the pioneering advantage. Niedrich and Swain (2003) provide a framework to understand the pioneering advantage from the behavioral perspective. To eliminate potential confounds between the order in which the brands were experienced and their entry on the market (e.g., Carpenter and Nakamoto, 1989), Niedrich and Swain (2003) investigated the independent effects of the pioneer status and order of brand experience. They posit that the effects of pioneer status on brand preference are mediated by attitude toward the brand and company credibility, while the effects of experience order on brand preference are mediated by attitude toward the brand and attribute recall. The results of their experiments support the idea that the effect of pioneer status on brand preference is the result of both brand level and company level associations.

Kamins, Alpert, and Elliott (2000) investigate whether the three sources of pioneer brand advantage (i.e., exposure sequence, product trial, and pioneer status) have additive or non-additive effects on pioneer brand advantage. In the two studies, they use both an experimental design and a survey research approach. They found that exposure sequence and trial have a moderating effect on pioneership labeling in terms of sales expectations. Providing pioneering awareness positively affects sales expectations when a pioneer brand receives second exposure to consumers as opposed to first exposure. However, when both products have been tried, the trial experience overrides the benefit of the pioneer label cue. Another important result was that consumers are usually not aware of which brand is a pioneer in a given product class.

Hence, the best practice for a pioneering brand would be to emphasize its pioneer status when it has not achieved first exposure with a significant part of the market (Kamins et al., 2000). The results suggest that pioneers can win back some advantage in the case of second exposure when consumers have not extensively tried the product. Kamins et al. (2000) posit that it is generally advantageous to be a fast follower, strategy which helps a brand achieve first exposure. Knowledge of the pioneer status is important but only when the actual pioneer was exposed second and trial was absent. However, limitations of this study involve a short delay between exposure conditions which might have weakened the sequence effect. Furthermore, it is difficult to replicate the nature of the product trial in experimental or survey designs, as what is processed might vary significantly (Hoch and Deighton, 1989 as cited by Kamins et al., 2000, p. 229). Hence, the variations in the trial experience depending on the numerous factors such as expertise

or tolerance for ambiguity might impact the nature or the degree of the pioneering advantage.

Niedrich and Swain (2008) posit that the effects of entry-information and exposure-order depend on the type of brand attributes and the time between encoding and preference construction. In their study they showed that a brand is preferred when it is identified as first-in-market than when it is identified as a late entrant. Thus, when consumers are given knowledge on entry information, they make favorable inferences about first-in-market brands and companies, which in turn enhance brand preferences. However, Niedrich and Swain (2008) reveal cases in which entry-information does not affect brand preference. The nature of attribute comparisons and the time between attribute encoding and preference construction moderated the effect of entry-information. In other words, when attribute information was less accessible in memory or less diagnostic, entry-information had significant effects on brand preference. Conversely, when attribute information was both accessible and diagnostic, entry information did not influence preference for the brand. Hence, as consumers make decisions based on available attribute comparisons, they are less likely to be influenced by the first on the market effect.

Consistent with previous research (Kardes and Kalyanaram, 1992), Niedrich and Swain (2008) showed that exposure order causes a primacy effect on attribute recall and brand preference when the delay between attribute encoding and preference construction is relatively long. However, when there is relatively short delay between attribute encoding and preference construction, they show that exposure order causes a recency effect on attribute recall and brand preference. In this case, participants recalled more

attributes for the second encountered brand than for the first, despite viewing the first brand longer.

Alpert and Kamins (1995) investigate consumer cognitions, affect and reported behavior toward pioneer brands through a survey-based approach. They found that consumers have a positive attitude toward pioneer brands in general, which is partially explained by their favorable perceptions of the pioneer brands. Additionally, they have found a similarity between pioneer brand image and individual ideal self-image. This result suggests that this association or desire for consistency between the two may be another explanation for favorable attitude and positive purchase intentions toward pioneer brands.

In summary, research showed that order of entry impacts consumer preferences for brands. Generally, consumers have a positive attitude towards pioneer brands (Alpert and Kamins, 1995; Kamins et al., 2000) and learn more about the pioneer than about late entrants (Kardes and Kalayanaram, 1992). Furthermore, associations that consumers form about the brand and company credibility mediate the effects of pioneering status on brand preference. However, order of entry effects on consumer memory and judgments are eliminated when information about brands is presented simultaneously (Kardes and Kalayanaram, 1992). Also, consumers are not influenced by pioneering effects when it is possible to make attribute comparisons.

3.2. Similarity and Consumer Learning of Brand Associations

Although many studies have investigated the pioneering advantage, few have provided explanations on how consumers form brand associations. However, Zhang and

Markham (1998) provide an insightful view in analyzing this process. Their research on the pioneering advantage assumes that brand associations are learned based on a process of comparison with existing brands. Knowing how consumers form representations about brands helps marketers develop strategies to position their products depending on whether they are first or late entrants.

Learning about new brands depends on the way the attributes of the later entrant in the market compare with the attributes of the first entrant. Zhang and Markham (1998) study the effects of a late entrant on learning of brand associations. Their theory is based on the reminding-based brand learning view whereby new brands are learned through a process of comparison with existing brands. As the aspects of the new brand are revealed through comparison, they are incorporated in the representation of the new brand. Consequently, the representation of the new brand is influenced by its similarity with previous brands. This process involves the structural alignment of attributes of the brands involved in the comparison. Zhang and Markham (1998) suggest that there are two types of properties that differentiate them from each other: alignable differences (features that are comparable along the same dimension) and nonalignable differences (unique differences).

3.2.1. Structural Alignment Process

The structural alignment process explains consumers' perception of alignable and nonalignable differences between firms in the market. The structural alignment process assumes that the identical elements in the representation of a pair of items are the communalities of the objects. The model assumes that representations of objects contain

explicit relations among properties. For example, imagine two brands of microwave popcorn (objects), one of which is in a bag (a property) and the other which comes with a special microwave bowl (a different property; Zhang and Markham, 2001). The structural alignment view states that people notice the communality that both have types of containers to pop the popcorn, which leads the different types of containers to be placed in correspondence. Hence, a difference that arises from the way items are placed in correspondence is called an alignable difference. Alignable differences can occur in many ways, including cases in which aspects of each item are placed in correspondence with matching relation between the objects, as well as cases in which the corresponding elements occupy different points on the same dimension.

Alignable differences are contrasted with nonalignable differences, which are aspects of one item which does not have any corresponding element in the other. For example, one brand of popcorn might be known to contain citric acid. If the other brand does not have this characteristic, then there is an element in one brand that does not have a corresponding element in the other brand. In this case, the property “has citric acid” is a nonalignable difference (Zhang and Markham, 2001, p. 14).

The structural alignment model of similarity assumes that the comparison process determines the communalities and alignable differences of a pair of objects (Gentner and Markham, 1997; Markham and Gentner, 1993a, 1993b; as referenced by Zhang and Markham, 2001, p. 14). Nonalignable differences are not part of the output of comparison because they are not related to the communalities of the pair. Thus, the model predicts that alignable differences are given more attention than nonalignable differences in comparison tasks.

In three experiments, Zhang and Markham (1998) showed that attributes which distinguish late entrants from the first entrant are better remembered and listed more often in judgment formation protocols when the attributes are comparable along some common aspects (i.e., if they are alignable differences) than if they do not correspond to any attributes of the first entrant (i.e., they are nonalignable differences). Because consumers better remember alignable over nonalignable differences, the later entrant whose attributes are superior to the early entrant can come to be preferred over the first entrant when the attributes are alignable differences, but not when they are nonalignable differences.

Zhang and Markham (2001) identify that depending on consumers' involvement with the task consumers' preferences are systematically influenced by whether they focus more on alignable differences or nonalignable differences of the options. Their studies show that in a low motivation task, the preference judgment favors alignable differences over nonalignable differences. Conversely, consumers increase their use of nonalignable differences in preference formation when they have a high motivation to process information. Zhang and Markham (2001) suggest that a preference reversal occurs when the nonalignable differences of the target option are superior to both the alignable differences and the nonalignable differences of the reference option. However, the reversal does not occur the nonalignable differences of the target option are superior only to the nonalignable differences of the reference option. These results suggest that high involvement will produce a preference reversal when the target brand possesses unique attributes (i.e., innovative attributes) that surpass the alignable features of itself as well as of the competitor brand.

Zhang and Markham (2001) suggests that making people highly involved in the task can influence them to process in depth the information that is easily available in a comparison and hence focus on nonalignable differences. First, low involvement participants make preference judgments that focus mainly on alignable differences. This phenomenon kept participants from noticing options that were objectively superior when the superiority was suggested by the nonalignable difference in the better option. However, when participants were highly involved in the task, they were more motivated to process the information available to them and consequently would attend to nonalignable differences. In this case, as consumers recognize the superiority of options, the attractive nonalignable differences serve as cues to form preferences.

3.3. Consumer Learning of Brand Associations through the Allocation of Attention

A recent study performed by Cuhna and Laran (2009) proposes an asymmetric process in the sequential learning of brand associations. They posit that the order in which consumers learn about brands determines the strength of association between these brands and their attributes. The results of the four experiments showed that consumers associate more strongly the common attributes with the first entrant and the unique attributes with the late entrant. These findings suggest that the late entrant has an advantage when unique attributes offer superior value compared to when attributes are common to the early and late entrant.

Cuhna and Laran (2009) base their theory of asymmetric sequential learning on the highlighting effect. This is an associative learning phenomenon, which predicts that

the learning order of two stimuli, each featuring cues that are imperfect (i.e., common to the two stimuli) and perfect (i.e., unique to the two stimuli) predictors of an outcome, produces a pattern of association strength between cues and outcomes.

The associative learning theory has roots in Mackintosh's (1975) associative learning model of selective attention, which relies on the assumption that cues compete for limited attentional resources (Cuhna and Laran, 2009, p. 790). They modify Mackintosh's (1975) model to account for learning when a single cue (brand) predicts multiple outcomes (attributes).

The mechanism of strategic allocation of attention uses history of learning to decide how much attention to allocate to each stimulus. This mechanism has two important properties: 1) attention allocated to outcomes affects the updating of associations; 2) people tend to protect previously learned associations (Cuhna and Laran, 2009, p.790).

The first property implies that an association from a cue to an outcome increases faster (slower) as more (less) attention is allocated to a given outcome. Given the assumption that attention is a limited resource, if outcome C receives less attention, then outcome U receives more attention and vice versa. For example, let's assume that both outcomes support equivalent amounts of learning and are equally salient at the beginning of the learning process. Hence, they draw an equivalent amount of attention. However, if outcome C receives less attention than outcome U, then the common cue receives less attention than the unique cue and the strength of association between the cue and the outcome for the common attribute increases at a slower rate than the strength of association between the cue and the outcome for the unique attribute. In this case, the cue

becomes more strongly associated with the unique rather than common attribute. Alternatively, if outcome C receives more attention than outcome U, then the common cue receives more attention than the unique cue and the strength of association between the cue and the outcome for the common attribute increases at a faster rate than the strength of association between the cue and the outcome for the unique attribute. Therefore, the cue becomes more strongly associated with the common than with the unique outcome.

The second property suggests that when an outcome has been previously predicted by a different cue, consumers identify the conflict and protect prior learning by shifting attention away from that outcome and toward a novel outcome. Consumers use this strategy when they learn that an attribute that was predicted by a brand can also be predicted by another brand, thereby reducing error and accelerating new learning.

Cuhna and Laran (2009) apply the principles of associative learning to study the early entrant advantage. This effect can be illustrated in a consumer learning process. Suppose that a consumer who is shopping first learns that a wine from California, sealed with wood cork is produced by brand E (i.e., an early entrant brand). He then learns that a wine from California, aged in oak barrels is produced by brand L (i.e., a late entrant brand). In this learning structure, both brands of wine have a common attribute (C - California) and a unique attribute UE (wood cork), which is unique to brand E and UL (oak barrel) which is unique to brand L. The consumer learns about the brand sequentially. The test phase of the highlighting effect addresses the learned associations. Consumers are presented with the common attribute by itself (C: California) and with a combination of the unique attributes (UE UL: wood cork and oak barrel).

Cuhna and Laran (2009) study this formation of brand associations through five experiments. In the first experiment, they investigate the moderating effect of value of the common attribute on the early and late advantage. The design of the experiment was the value of the common attribute (larger versus smaller) by learning order (early versus late) mixed design. The value factor was manipulated between-subjects and the learning-order factor was manipulated within subjects. They used wine region with Brazil and Sudan as common attributes and type of cork as unique attributes and they measured the attribute values and likelihood-to-buy estimates. The experiment had two phases: the learning phase and the testing phase. The results showed that consumers will associate an attribute possessed by two brands with the brand they learned of earlier and more strongly associate a unique attribute with the brand they learned of later (p. 798). Consequently, when the value of the common attribute to the two brands is higher than the value of the unique attributes of each brand, participants prefer the early entrant brand. However, when the common attribute is inferior to the unique attribute, consumers prefer the late entrant brand.

In the second experiment, they investigated whether the direction-of-comparison effect can account for the results in the first experiment. They also examined the effects of individuals' need for cognition on the evaluation of the first and late entrant. The design of the experiment was a frequency of presentation (3:1 versus 2:2) \times NFC (low versus high) \times learning order (early versus late) mixed design. The frequency and the NFC factors were between subjects factors and the learning order factor was a within-subjects factor. The results showed that the findings in the first experiment cannot be explained by the direction-of-comparison effect or by the frequency of exposure to each

brand. Furthermore, the results showed that high NFC individuals are not as affected by market entry order effects as low NFC individuals. The effect results from the strength of associations between attributes and brands and is not determined by accessibility.

Chernev (2001) proposes that consumers evaluate common features in a way that supports their already established preferences. He shows that the impact of common features is moderated by their attractiveness and the strength of individuals' already established preferences. Chernev (2001) bases his three experiments on the confirmatory reasoning theory which states that consumers often evaluate common features in a confirmatory manner and that attractive common features are likely to be framed as additional reasons that are congruent with choosing the preferred alternative. The first experiment examines whether the strength of individuals' initial preferences moderates the impact of attractive and nonattractive common features on consumer preferences. It also tests whether for individuals with already established preferences, adding attractive common features would increase these preferences, whereas unattractive common features will have no enhancing influence. Chernev (1991) used a 2 (strength of preference) \times 3 (common features) mixed factorial design. Stimuli consisted of three sets of laptop computers described on two main attributes: display size and hard drive size. The results of the first experiment showed that adding attractive common features was associated with an increase in the relative attractiveness for the initially preferred brand, whereas adding unattractive common features had a directionally opposite effect.

When consumers performed a choice task, individuals' already established preferences were enhanced only by attractive features. This effect was more pronounced

for consumers with already established brand preferences compared to consumers who were indifferent to the options.

4. The Role of Prior Knowledge: Experts and Novices

Alba and Hutchinson (1987) review basic empirical results from the psychological literature to lay a useful foundation for research on consumer knowledge. They propose two fundamental distinctions. First, they distinguish between consumer expertise and product related information. Furthermore, they identify five dimensions of consumer expertise: cognitive effort, cognitive structure, analysis, elaboration, and memory. They posit that improvement on the first two dimensions have a positive effect on the later three.

Alba and Hutchinson (1987) propose several research hypotheses regarding the cognitive structures in novices and experts. They posit that the product categorization by novices is more influenced by perceptual attributes than it is for experts. Increased product familiarity determines an increased ability to categorize products at levels above and below the basic level. An increased ability to categorize below the basic level suggests that a finer discrimination can be made with increased reliability. The basic level itself becomes more specific as expertise increases (Douglas, 1978; Rosch et al., 1976; cf. Alba and Hutchinson, 1987). Hence there is a tendency for increased specificity that appears as a propensity to identify objects at the basic level. Because of that, experts are more able to avoid confusion about brands and to remember brand specific information.

Alba and Hutchinson (1987) also state that depending on whether the need is specific or general, experts and novices consider differently the set of alternatives they

are evaluating. When the need is specific, experts consider a more homogenous set of alternatives than novices, whereas when the need is general, experts consider a more heterogeneous set of alternatives than do novices (Alba and Hutchinson, 1987).

Furthermore, Alba and Hutchinson (1987) state that experts have a more veridical, more complex, and less stereotyped category structures than novices. Increased expertise results in a more complicated but more accurate category structure that represents both the expectations and the rule (Weber and Crocker, 1983; cf. Alba and Hutchinson, 1987). Additionally, novice consumers know more prototypical brands but relatively few atypical brands, whereas experts are aware of both types. Hence, the authors suggest that experts know more atypical brands than do novices.

Alba and Hutchinson (1987) also discuss the different approaches experts and novices use in analyzing information relevant to a particular task. They posit that experts are better equipped to understand the meaning of product information due to the fact that they have more highly developed conceptual structures. Furthermore, experts compared with novices invest less cognitive effort to achieve any particular level of comprehension (Britton, Westbrook and Holdredy, 1978; Johnson and Kieras, 1983; cf. Alba and Hutchinson 1987, p.418).

Brucks (1985) states that expert consumers might seek a greater amount of information about a particular product attribute because they are know of the existence of those attributes. Moreover, experts are better able to acquire information due to their increased ability to restrict processing to relevant and important information (cf. Johnson and Russo, 1984; Punj and Staelin, 1983; cf. Alba and Hutchinson, 1987, p.418).

Bettman and Sujan (1987) investigated the effects of framing on the evaluation of comparable and non-comparable alternatives by expert and novice consumers. They found that framing done by priming different decision criteria influences decision outcomes for both expert and novice consumers when the alternatives are non-comparable and influences evaluation outcomes for novices when the alternatives are comparable. Availability of a decision criterion also modifies consumers' cognitive responses for non-comparable sets to make these responses appear more like cognitive responses typical for comparable sets.

5. Product Complexity and Prior Knowledge / Allocation of Attention

Kamins et al. (2000) suggest that depending on the complexity of the product category, consumers might perceive differently first and late entrants on the market. Kerin et al. (1992) suggest that the first mover has greater differentiation advantage when products are technically complex, bulky and require complementary products and/or spare parts, or when a product category is created (rather than when a product form is introduced), and when the depth and breadth of the product line are large (p. 44).

Swaminathan (2003) investigates the moderating effects of product complexity on the impact of recommendation agents on consumer evaluation and choice. The researcher manipulated product complexity in two ways: by varying the number of attributes used to describe a category and by varying the number of alternatives present within a category. Results suggest that recommendation agents have a greater impact on reducing amount of

search when the number of attributes used to describe a product is fewer. Hence, the moderating role of product complexity was confirmed.

Bettman, Luce and Payne (1998) state that the complexity of a product in a product category is influenced by the consumers' decision making processes. As the complexity of the product increases, consumers are more likely to use simpler heuristics and selective information processing, often reducing decision effectiveness. The present research aims to incorporate the concepts of alignable and nonalignable differences in the model of learning brand associations proposed by Cuhna and Laran (2009). The following hypotheses will be tested:

H1: The complexity of the product category has a moderating effect on the influence of order of entry on consumer's preference and purchase intentions.

For simple products, the late entrant is preferred and has higher purchase intentions, whereas for complex products early entrants are preferred and have higher purchase intentions.

H2: Product complexity interacts with product prior knowledge, such that:

H2a: For complex products, experts allocate more attention to nonalignable differences since they already have expertise on the product category and it is easy to process the alignable differences. Thus, the unique nonalignable features will engage more consumers' attention and will be processed more intensively than the common/ alignable features. Consequently, expert consumers prefer the products of late entrants that highlight nonalignable differences.

H2b: Since novices have limited information about the complex product category, their attention is focused on the alignable differences, which help them acquire knowledge. Hence, novices prefer products of late competitors that highlight alignable differences.

H2c: For simple products, both novices and experts will allocate more attention to the alignable differences.

6. Hedonic and Utilitarian Products

Park and Moon (2003) state that the “hedonic value of a product is based on the products’ ability to provide feeling and hedonic pleasure rather than to solve a problem” (p.980). However, the utilitarian dimension refers to a product’s ability to solve a problem and satisfy consumers’ needs. In addition, Voss, Spangenberg and Grohmann (2003) state that the hedonic value of a product results from “the experience of using products” (p.310), whereas the utilitarian value comes from the functions performed by the product.

Research on consumers’ perspective on the early entrant advantage lacks external validity as most of the articles use the product category “popcorn” to demonstrate their hypotheses (Kardes and Kalyanaram, 1992 Niedrich and Swain, 2003, 2008, Zhang and Markham, 1998; 2001). Niedrich and Swait (2003) conducted two experiments; one used popcorn as the product category and the other used flat-free bicycle tires. They investigated the mediating effects that are involved in the pioneering advantage. They changed the product categories from one experiment to the other to vary the degree of product familiarity/knowledge, considering that consumers have more knowledge about

popcorn than about flat-free bicycle tires. The two experiments supported their mediating hypotheses, but found that the direct path in the test for mediation from pioneer status to preference only when they used the flat-free bicycle tires.

Considering flat-free bicycle tires are more utilitarian, while popcorn is more hedonic, there could be a different orientation of attention for the nonalignable or alignable differences across utilitarian and hedonic products underlying this result. Since functionality is an important cue triggered when analyzing a utilitarian product, consumers allocate more attention to alignable differences. However, hedonic products have a more emotional/ experiential connotation thereby potentially triggering a focus of attention on the nonalignable differences pertaining to the late entrant. This is tested in the following hypothesis.

H3: The type of product (i.e. hedonic or utilitarian) will have a moderating effect on the impact of order of entry on consumers' allocation of attention to alignable and nonalignable attributes. Specifically, since functionality is an important cue triggered when analyzing utilitarian products, consumers allocate more attention to the alignable difference. However, hedonic products have a more emotional/ experiential connotation thereby triggering a focus of attention on the nonalignable differences pertaining to the late entrant.

Bohlmann, Golder and Mitra (2002) studied the pioneering advantage in terms of consumers' valuations of quality and variety. Their model illustrated significant relationships between the magnitude of the pioneering advantage and disadvantage and consumers' valuations of product attributes. They also examine the extent of vintage

effects (i.e. any shift in technology that involves lower costs for late entrants resulting in an increase in product quality) necessary to overcome a pioneer's advantage. Their model was validated using data from 36 product categories and using measures of consumers' valuations of quality and variety for 12 of those 36 categories. The results showed that pioneers do better in product categories in which variety was more important, whereas late entrants outperform pioneers in categories where quality is more important. A limitation of Bohlmann, Golder and Mitra's (2002) study is that the model was tested on a small set of data (i.e., 12 product categories) which exhibit large failure rates for pioneers within those categories. Since these results offer an interesting perspective in terms of factors influencing the order of entry, it is pertinent to further study the impact of consumers' valuations of variety and quality on the pioneering advantage. Therefore, we investigate whether consumers' valuations interact with product type to have an impact on consumers' purchase intentions and choice for the first and late entrant on the market.

H5: Consumers' valuation of the product category will moderate the relationship between product type and consumers' purchase intentions and choice for the first and late entrant. Specifically, for hedonic products and in situations in which consumers place a higher value on quality, the second entrant receives a higher purchase likelihood ratings and choice. However, for utilitarian products and in situations in which consumers value more variety, the first entrant receives higher purchase intentions and choice.

7. Study 1 - Method

A panel consisting of 124 participants was used to test the hypotheses in study 1. Due to inconsistent response patterns, ten participants were excluded. A frequency analysis showed that 52.2% of the participants were female, 25.4% had some high school, 44.7% had some college degree, 16.7% had some undergraduate degree, and 10% had graduate and professional degrees. Regarding the age distribution, 5.3% were between 18 to 25 years old, 14.9% were 26 to 35 years old, 14% were between 36 to 45 years old, 29.8% were 46 to 55 years old, 23.7% were 56 to 65 years old and 10.5% were above 66. The design is a 2 (order of entry: first and second) \times 2 (product complexity: simple versus complex) \times 2 (product attribute: alignable and nonalignable) \times 2 (prior product category knowledge: expert and novice) mixed factorial design. The factors order of entry and product attribute are within-subjects, whereas the factors product complexity and prior product category knowledge are manipulated between subjects. The order of entry, product attributes and product complexity were manipulated, whereas prior product knowledge was measured. The order of entry and product attributes were within-subjects variables, whereas product complexity and prior product category knowledge were between-subjects variables.

Three pretests were conducted to select the stimuli which were used in the experiment. A total of 60 undergraduate and graduate students at a North American University participated in the pretests. To ensure that participants dedicated the required attention to completing the questionnaires for the pretests, they were given a 4\$ incentive for their participation. For the first pretests, participants rated a series of products (e.g.

printer, smartphone, backpack, running shoes, digital camera, and bicycle) in terms of their complexity (very simple/very complex, on 9-point scales). Demographic variables, such as age and sex were also measured. In total, 20 participants completed the first pretest questionnaire. The data was analyzed using ANOVA. Following the first pretest the smartphone was selected as the most complex product ($M = 6.85$) and running shoes were selected as the simple product ($M = 2.25$) with pair-wise comparisons showing that this difference is significant ($t(19) = 8.3$, $p < .001$; mean difference 4.6; $p < .001$; Wilks' Lambda $F(9,11) = 21.01$, $p < .001$).

A second and third pretest were conducted to evaluate the alignable and nonalignable attributes for the two products selected in the first pretest (e.g., for the smartphone: High resolution 480-by-360 pixel color display, 3.2 MP camera with 2X digital zoom, Built in messenger, Photo and video geotagging). The attributes were selected based on features described on online retail websites. In the second pretest, participants rated the alignable and nonalignable differences in terms of importance (not at all important/extremely important, on 9-point scales), while in the third experiment they rated the attributes in terms of their attractiveness (not attractive at all/extremely attractive, on 9-point scales). Demographic variables, such as age and sex were also measured. In total, 40 participants completed the last two pretest questionnaires. Three questionnaires were excluded because of missing data. Following the second pretest, three alignable and three nonalignable differences were selected for each brand in the two product categories. A repeated measures ANOVA was run to select the attributes that did not differ in terms of attractiveness and importance. The results showed that there were no significant differences in terms of attractiveness and importance for alignable and

nonalignable attributes for the following smartphone features: alignable Attractiveness: $F(9,9)=1.16$, $p=0.41$; Importance: $F(9,10)=2.17$, $p=.12$; and Smartphone non-alignable: Attractiveness: $F(9,8)= 2.78$, $p= .08$; Importance: $F(9,10)= 2.40$, $p=.09$. The analysis for eight alignable differences in the running shoes product category showed significant results for the importance ($F(9,10)=9.02$, $p<.01$) and attractiveness measures ($F(9,8)= 4.73$, $p<.05$). To eliminate the bias, the attribute having significant loadings at the within subjects contrasts were not included in the main experiment (i.e., “Special design which ensures minimal rub and decreases irritation” – importance: $F(1,18)= 7.43$, $p<.05$ and attractiveness: $F(1,16)=6.39$, $p<.05$). The results showed no significant differences for the nonalignable attributes in the running shoes product category (Importance: $F(9,10)= 1.66$, $p=.23$; Attractiveness: $F(9,10)=2.1$, $p=.13$; See Appendix 2).

The main experiment was carried out using an online panel. Participants were presented with two brands of products, either complex or simple. Following Cunha and Laran's (2009) guidelines, the survey had two phases: the learning phase and the testing phase. In the learning phase participants were presented with the two brands (Brand A and Brand B) in the product category described by three alignable differences and three nonalignable differences. The number of attributes was kept constant to ensure that there was no bias with regards to perceived complexity. After reading the description of the brands, participants evaluated the brands (e.g., negative/positive, unfavorable/favorable, bad/good) and purchase intentions for the brands if they were in the market for this product (not at all likely/very likely) on 7 point scales. The order of presentation for the brands during the learning phase was equivalent to the order of entry manipulation in the testing phase. Hence, the brand which was presented first in the learning phase was also

the pioneer in the testing phase. Finally, participants were asked to recall the attributes of the brand presented. The recall task used after consumers' read the information about the brand was used to measure the degree of learning and to understand which type of attributes (i.e. alignable versus nonalignable) consumers learn the easiest.

In the second part of the survey, Brand A and Brand B, along with the alignable and nonalignable attributes were presented again, being described as the first mover and the late entrant. The two brands were presented on the same page along with the measures of preference (low/high preference, on 7 point scales) and choice ("If you were in the market for a smartphone right now, which of the two brands would you choose?" with the answers: Brand A and Brand B). Participants indicated the reasons for choosing one brand over the other and evaluated the purchase intentions for the brands if they were in the market for this product (not at all likely/very likely). The two brands of smartphone and running shoes respectively were presented in counterbalanced order.

Perceived product complexity (very simple/very complex) and consumer knowledge of the product category were measured using 7-point Likert scales (anchored strongly disagree/strongly agree: I frequently use a product similar to the one I have just evaluated; If I had to purchase this product today, I would need to gather very little information in order to make a wise decision; I frequently buy a product similar to the one I have just evaluated; I feel very knowledgeable about this product). Demographic information regarding participants' age, gender, education, and income level were gathered. The duration of the experiment was approximately 15 minutes.

7.1. Results

A manipulation check for participants' perception of product complexity was performed. An analysis of variance ($F(1,113)=.03$, $p=.85$) showed that running shoes were not perceived more simple ($M=5.20$) than the smartphone ($M=5.15$). Hence the manipulation check was not effective. An analysis of the scale for product knowledge was performed for all four items using principal component analysis. The results showed that all four items loaded significantly on one factor (eigenvalue=2.75), explaining 68.81% of the total variance (loading item 1=.85, item 2=.71, item 3=.88, and item 4=.86). The reliability analysis showed a Cronbach's alpha of .84 suggesting that a summary scale could be created. A dummy variable was created using the median split, which was verified with an independent samples t-test. The results showed a significant difference between the low knowledge and high knowledge categories ($t(113)=-17.9$, $p<.001$).

Dependent variables. An attitude scale was created using the means of the three attitude items for brand A and brand B. To perform the attitude scale, a factor analysis using principal component analysis of the three items for Brand A showed that all three items (loadings item 1=.96, item 2=.96, and item 3=.93) had high loadings on one component (eigenvalue = 2.72) which explained 90.73% of the total variance in the data. The reliability analysis showed a Cronbach's Alpha equal to .95. These results confirmed that an attitude scale for Brand A could be created. A similar method was used to create an attitude scale for Brand B. Following a factor analysis using principal component analysis, one component (eigenvalue= 2.84) explained 94.97% of the total variance (loadings item 1 =.97, item 2=.98, item 3=.97). Cronbach's Alpha of .97 showed very

high reliability of the three items and an attitude scale for Brand B was created. The correlation analysis among the dependent variables showed significant correlations showed significant results between attitude toward Brand A and Brand B (Pearson's $r(114) = .63, p < .001$), attitude toward Brand B and Purchase Intention for Brand B (Pearson's $r(114) = .59, p < .001$), and attitude toward Brand B and choice (Pearson's $r(114) = .32, p < .001$).

Scoring. The recall protocols were scored as correct and incorrect. The correct recalls were divided into alignable and nonalignable difference and frequency was recorded. In the initial phase of the experiment, participants performed a recall task after being presented with the information about the brands. This was a task that was used to measure the degree of learning for the two brands. In the testing part of the experiment, participants were presented with the description of the two brands side by side and provided the reasons for their choice.

Analysis of results. A repeated measures ANOVA was used to analyze the effects of order of entry, product complexity and knowledge on purchase intention, preference, choice attitude, allocation of attention for alignable and nonalignable differences for the first and late entrant on the market and the alignable and nonalignable attributes mentioned after choice. The variables age, income, and education were included as covariates.

The results of the analysis of Hypothesis 1 showed that the hypothesis was not supported. The between subjects analysis showed a significant main effect of product complexity on purchase intentions ($F(1,104) = 5.5, p < .05$). Analysis of the means using an independent sample t test for the complex product showed a significantly higher purchase

intention for brand B when Brand A was first (M=5.00) compared with when Brand A was second (M=2.93; $t(51) = 4.58, p < .001$) and a significantly higher purchase intention for Brand A when Brand A was second (M=4.79) compared with when Brand A was first (M=3.12; $t(51) = -3.46, p < .01$; see Figure 1 for means). For the simple product, there was no effect of order of entry on final purchase intentions.

Figure 1: Final Purchase Intention Statistics

Figure 1a: Group Statistics

Order of entry for brand A		N	Mean	Std. Deviation	Std. Error Mean
Final Purchase Intention for Brand B	Brand A first	25	5.00	1.658	.332
	Brand A second	28	2.93	1.631	.308
Final purchase Intention for Brand A	Brand A first	25	3.12	1.740	.348
	Brand A second	28	4.79	1.750	.331

Figure 1b: Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference		95% Confidence Interval of the Difference
		Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower
Final Purchase Intention for Brand B	Equal variances assumed	.345	.559	4.579	51	.000	2.071	.452	1.163	2.980
	Equal variances not assumed			4.574	50.127	.000	2.071	.453	1.162	2.981
Final purchase Intention for Brand A	Equal variances assumed	.587	.447	-3.468	51	.001	-1.666	.480	-2.630	-.702
	Equal variances not assumed			-3.470	50.395	.001	-1.666	.480	-2.630	-.702

The repeated measures ANOVA showed no significant influence of product complexity on preference ($F(2,102)=1.48$, $p=.23$), attitude ($F(2,102)=.83$, $p=.43$) or choice ($F(1,103)=.29$, $p=.60$).

Hence, the results showed a main effect of product complexity on purchase intentions for first and late entrants on the market. Hypothesis 1 was not supported. For simple products, the effect was not observed. However, for complex products, consumers showed a higher purchase intention for the late entrant.

Hypothesis 2 predicted an interaction between product complexity and product category knowledge on the allocation of attention to alignable and nonalignable differences. Specifically, we assumed that expert consumers allocate more attention to the nonalignable differences of the complex product (i.e., they should recall more non-alignable differences). However, novice consumers should recall more alignable differences for the complex product as these help them acquire knowledge about the product category and are thus the focus of their attention. Additionally, for simple products, expert and novice consumers allocate more attention to alignable differences.

The analysis showed a main effect of product complexity on consumers' attention to alignable and nonalignable differences after making a choice ($F(2,104)=10.29$, $p<.001$). Descriptive statistics showed that for the complex product, compared with the simple product, participants mentioned overall more alignable attributes ($M=1.08$) than nonalignable attributes ($M=.29$) as reasons for making a decision. For the simple product, participants had a propensity to consider more nonalignable differences ($M=.42$) than alignable differences ($M=.34$). Simple within subjects contrasts showed a significant

difference between the frequency of alignable and nonalignable differences mentioned as reasons for making a choice ($F(1,105)=20.5, p<.001$). No interaction was found between product category knowledge and product complexity on consumers' attention to alignable and nonalignable attributes after choice ($F(1,103)=.60, p=.44$) or before choice ($F(1,103)=.02, p=.69$). Hence, Hypothesis 2 was not confirmed.

The repeated measures ANOVA showed a significant main effect of complexity on the attention consumers allocate to first and second entrants on the market. The analysis was done on the attributes consumers recalled from the learning part of the study. The between-subjects effects showed a significant effect of complexity on consumers' allocation of attention ($F(1,105)=6.5, p<.05$).

Figure 2: Alignable and Nonalignable Means for Brand A and Brand B

	Complexity of product category	Mean	Std. Deviation	N
Order of entry for brand A	complex product	1.5294	.50410	51
	simple product	1.4746	.50364	59
	Total	1.5000	.50229	110
Frequency of Alignable Attributes for Brand A	complex product	1.4902	.92461	51
	simple product	1.1017	.78113	59
	Total	1.2818	.86874	110
Frequency of Nonalignable Attributes for Brand A	complex product	.5098	.64413	51
	simple product	.5593	.59513	59
	Total	.5364	.61595	110
Frequency of Alignable Attributes for Brand B	complex product	1.7843	.92334	51
	simple product	1.4746	.95332	59
	Total	1.6182	.94802	110
Frequency of Nonalignable Attributes for Brand B	complex product	.9020	.80635	51
	simple product	.6102	.61636	59
	Total	.7455	.72234	110

Specifically, independent sample t tests showed that for complex products, consumers allocated more attention to alignable differences for Brand A ($t(51)=2.26$, $p<.05$) when Brand A ($M=1.76$) was first than when Brand A was second ($M=1.21$). This effect suggests that for complex products consumers tend to recall more features of the first entrant. However, for simple products consumers allocated significantly more attention to nonalignable attributes ($t(59)=2.32$, $p<.05$) for Brand A when Brand A was first ($M=.72$) than when Brand A was second ($M=.38$). For simple products, consumers recalled more nonalignable differences for the pioneer brand.

Figure 3: Alignable and Nonalignable Means for the Complex and Simple Products

Figure 3a: Complex product: Group Statistics

	Order of entry for brand A	N	Mean	Std. Deviation	Std. Error Mean
Frequency of Alignable Attributes for Brand B	Brand A first	25	1.9200	.95394	.19079
	Brand A second	28	1.6071	.87514	.16539
Frequency of Nonalignable Attributes for Brand B	Brand A first	25	1.0000	.81650	.16330
	Brand A second	28	.8929	.87514	.16539
Frequency of Alignable Attributes for Brand A	Brand A first	25	1.7600	.83066	.16613
	Brand A second	28	1.2143	.91721	.17334
Frequency of Nonalignable Attributes for Brand A	Brand A first	25	.4400	.58310	.11662
	Brand A second	28	.5357	.69293	.13095

Figure 4a: Simple product: Group Statistics

	Order of entry for brand A	N	Mean	Std. Deviation	Std. Error Mean
Frequency of Alignable Attributes for Brand B	Brand A first	32	1.4688	.91526	.16180
	Brand A second	29	1.4828	.98636	.18316
Frequency of Nonalignable Attributes for Brand B	Brand A first	32	.4688	.56707	.10025
	Brand A second	29	.7586	.63556	.11802
Frequency of Alignable Attributes for Brand A	Brand A first	32	1.1250	.75134	.13282
	Brand A second	29	1.0690	.79871	.14832
Frequency of Nonalignable Attributes for Brand A	Brand A first	32	.7188	.52267	.09240
	Brand A second	29	.3793	.62185	.11547

Figure 3b: Complex Product Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means							
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference		
		Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	
Frequency of Alignable Attributes for Brand B	Equal variances assumed	.000	.993	1.245	51	.219	.31286	.25124	-	.19153	.81725
	Equal variances not assumed			1.239	49.018	.221	.31286	.25249	-	.19454	.82026
Frequency of Nonalignable Attributes for Brand B	Equal variances assumed	.858	.359	.459	51	.648	.10714	.23335	-	.36133	.57561
	Equal variances not assumed			.461	50.891	.647	.10714	.23242	-	.35948	.57377
Frequency of Alignable Attributes for Brand A	Equal variances assumed	.312	.579	2.260	51	.028	.54571	.24147	.06095	1.03048	
	Equal variances not assumed			2.273	50.986	.027	.54571	.24009	.06370	1.02773	
Frequency of Nonalignable Attributes for Brand A	Equal variances assumed	.289	.593	-.540	51	.591	-.09571	.17709	-	.45124	.25981
	Equal variances not assumed			-.546	50.837	.588	-.09571	.17535	-	.44778	.25635

Figure 4b: Simple Product Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
		Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower
Frequency of Alignable Attributes for Brand B	Equal variances assumed	.311	.579	-.058	59	.954	-.01401	.24348	-.50121	.47319
	Equal variances not assumed			-.057	57.257	.954	-.01401	.24439	-.50334	.47533
Frequency of Nonalignable Attributes for Brand B	Equal variances assumed	.003	.953	-1.883	59	.065	-.28987	.15397	-.59797	.01823
	Equal variances not assumed			-1.872	56.441	.066	-.28987	.15485	-.60002	.02028
Frequency of Alignable Attributes for Brand A	Equal variances assumed	.506	.480	.282	59	.779	.05603	.19849	-.34114	.45321
	Equal variances not assumed			.281	57.510	.779	.05603	.19909	-.34257	.45464
Frequency of Nonalignable Attributes for Brand A	Equal variances assumed	1.002	.321	2.315	59	.024	.33944	.14662	.04605	.63283
	Equal variances not assumed			2.295	54.976	.026	.33944	.14789	.04306	.63582

The repeated measures ANOVA showed no interaction between product complexity and product category knowledge for first and late entrants on purchase

intention ($F(2,102)=.05$, $p=.95$), preference ($F(2,102)=.3$, $p=.74$), attitude ($F(2,102)=.03$, $p=.97$) and choice ($F(1,103)=.15$, $p=.9$).

Overall, consumers recalled more alignable attributes about the complex product (i.e., smartphone) when Brand A was the pioneer than when it was second on the market. However, consumers of simple products (i.e., running shoes) tended to recall more nonalignable attributes about the pioneer than about the second entrant. These results suggest that consumers tend to recall more information about pioneering brands both for simple and complex products. Depending on the complexity of the product consumers' attention is directed to alignable and nonalignable attributes.

7.2. Discussion

The results of study 1 support the findings in the strategy of entry literature from a consumer behavior perspective. The findings showed that product complexity has a significant impact on how consumers allocate attention to pioneers and late entrants. In regards to learning the attributes of the product, a significant effect of order of entry was observed. Consumers recalled more attributes about the pioneer in both simple and complex products, a finding that supports previous research on pioneering advantage (Carpenter and Nakamoto, 1989, 1990).

Study 1 analyzed consumers' decision making process at various stages. During the learning stage, consumers read the information about the two brands sequentially. At this point, they allocated more attention to the first brand on the market. During the testing stage, consumers had access to the information about the two brands and were provided with the information about order of entry. The findings showed that when

making a decision consumers value the alignable and nonalignable attributes differently depending on the complexity of the product category. Following the simultaneous presentation of the two brands, consumers of complex products had higher purchase intentions for the late entrant. When having to decide on buying a brand in a complex product category, consumers compare the two products on the alignable attributes and choose the second entrant probably because it is considered to be a better late entrant. Although the first on the market received the highest attention, ultimately consumers chose the second entrant. This finding provides an important differentiation advantage for late entrants producing complex products, as consumers might perceive their products as having an improved advantage compared with the pioneer.

In a simple product category, consumers allocate significantly more attention to the nonalignable differences of the pioneer and mentioned more nonalignable attributes as reasons for choosing the brand. Furthermore, for simple products an effect of product complexity was not observed on the purchase intentions for the first and late entrants.

Study 2 investigates the effect of product type (i.e., hedonic and utilitarian) on consumers' allocation of attention to alignable and nonalignable differences for first and late entrants. It further explores the role of consumers' valuation of variety and quality on the order of entry effects and possible interactions with product type.

8. Study 2 - Method

A panel of 211 participants was used to analyze the hypotheses. A frequency analysis showed that 50.9% were male and 6.4% were between 18 to 25 years old, 17.1% were 26 to 35 years old, 17.1% were between 36 to 45 years old, 21.4% were 46 to 55

years old, 26.1% were 56 to 65 years old and 11.1% were above 66. Regarding the education distribution, 18.4% had some high school, 37.6% had some college degree, 20.5% had some undergraduate degree, and 22.6% had graduate and professional degrees.

The design is a 2 (valuation: quality and variety) \times 2 (order of entry: first and second) \times 2 (product type: hedonic and utilitarian) \times 2 (product attribute: alignable and nonalignable) mixed factorial design. The factors order of entry and product attribute are manipulated within-subjects, whereas the factors product type and valuation are manipulated between-subjects.

Three pretests were conducted to select the stimuli to be used for the experiment. The procedure of selecting the product categories and attributes was similar to the procedure described in the first experiment, and the pretests for the two studies were carried out at the same time. To measure the hedonic and utilitarian dimension for each product category, the hedonic/ utilitarian scale of Voss, Spangenberg and Grohmann (2003) was used. The questionnaire included a variety of product categories (e.g., printer, smart phone, bicycle) that participants rated in terms of their hedonic (e.g., unenjoyable/enjoyable, not fun/fun, on 9-point scales) and utilitarian (e.g., ineffective/effective, useful/useless, on 9-point scales) nature. Demographic variables (age and sex) were also measured. The pretest took about 10 minutes.

The data was analyzed using repeated measures ANOVA. A frequency analysis showed that 85% of participants were between 18 to 25 years old. Following the first pretest, the digital camera was selected as the hedonic product ($M = 7.54$ for hedonic and $M = 6.73$ for utilitarian) and the backpack was selected as the utilitarian product ($M =$

8.01 for utilitarian and $M = 4.34$ for hedonic) with pair-wise comparisons showing that the digital camera is more hedonic than the backpack (mean difference=3.2; $t(19)=-2.63$, $p<.05$) and that the backpack is more utilitarian than the digital camera (mean difference 1.28; $t(19)=7.1$, $p<.001$).

A second and third pretest were conducted to evaluate the alignable and nonalignable attributes for the two products selected in the first pretest (e.g., for the digital camera: Lens: Optical zoom 4X, digital zoom 16X, Focus range: 2cm-50cm; 30cm-50 cm, focal length 5mm-20mm and autofocus system; Image Sensor Pixels: 14.5 MP; 8 preset scene modes; Technology which allows beginners to easily understand advanced settings; Connects easily with the HDTV for viewing movies in widescreen). Following the second and third pretest, three alignable and three nonalignable differences were selected for each brand in the two product categories. The frequency analysis showed that 94.7% of participants are between 18 to 25 years old. A repeated measures ANOVA was run to select the attributes that did not differ in terms of attractiveness and importance. The results showed that there were no significant differences in terms of attractiveness and importance for alignable and nonalignable attributes for the Digital Camera – (Alignable: Attractiveness: $F(9,9)=1.27$ $p=.56$; Importance: $F(11,8)=1.48$ $p=.29$; and Nonalignable: Attractiveness: $F(9,7)= 2.5$, $p= .12$; Importance: $F(9,10)= 1.79$, $p=.18$). The analysis for eight alignable differences in the backpack product category showed significant results for the attractiveness measures ($F(7,11)= 4.46$ $p<.01$), but nonsignificant for the importance ($F(7,12)=1.55$ $p=.22$). To eliminate the bias, the attribute having significant loadings in the within subjects contrasts analysis were not included in the main experiment (i.e. “Durable denier outer fabric”– importance:

$F(1,18)= 6.11, p<.05$ and attractiveness: $F(1,17)=15.1, p<.01$). The results showed no significant differences for the nonalignable attributes in the backpack product category for the attractiveness measure – $F(7,11)=2.36, p=.09$, but significant for importance – $F(7,12)= 3.8, p<.05$). The bias was eliminated by not including the attribute with the significantly different mean in the experiment (i.e. “Two-fleece-lined sunglass pocket” – $F(1,18)= 5.77 p<.05$; see Appendix 2).

The main experiment was carried out with an online panel. Participants were presented with two brands of products, either hedonic or utilitarian. Similar to the first experiment, the survey had two phases: the learning phase and the testing phase. In the learning phase participants were presented with the two brands (Brand A and Brand B) in the product category described by three alignable differences and three nonalignable differences. After reading the description of the brands, participants evaluated the brands (e.g., negative/positive, unfavorable/favorable, bad/good) and purchase intentions for the brands if they were in the market for this product (not at all likely/very likely) on 7 points scales. Participants were also asked to recall the attributes of the brand presented. The recall measure was used as a measure for studying learning for the alignable and nonalignable attributes depending on the order of entry. The first and second entrant brands were presented sequentially without being informed of the order of entry. In the second part of the survey, Brand A and Brand B, along with the alignable and nonalignable attributes were presented again, with the order of entry information and consumers’ valuation of quality and variety manipulation. The quality and variety manipulation was presented introduced at the beginning of the second part of the survey (“Assume that variety is a very important factor when purchasing this product category”,

“Assume that quality is a very important factor when purchasing this product category”). Brand A was described as the first mover whereas Brand B as the late entrant. The two brands were presented on the same page along with the measures of preference (low/high preference, on 7 point scales) and choice (“If you were in the market for a digital camera/backpack right now, which of the two brands would you choose?” with the answers: Brand A and Brand B). Participants indicated the reasons for choosing one brand over the other to observe consumers made the choice for one of the two brands and the type of attributes (i.e. alignable and nonalignable) that were important. Then, they evaluated the purchase intentions for the brands if they were in the market for this product (not at all likely/very likely). The two brands of digital camera and backpack, respectively, were presented in counterbalanced order.

Similar to Study 1, perceived product complexity (very simple/very complex) and consumer knowledge of the product category were measured using a 7-point Likert scale (anchored strongly disagree/strongly agree: I frequently use a product similar to the one I have just evaluated; If I had to purchase this product today, I would need to gather very little information in order to make a wise decision; I frequently buy a product similar to the one I have just evaluated; I feel very knowledgeable about this product). Additionally, consumers’ valuation of the product category was measured using a 7-point scale (To what extent is variety important for this product category; To what extent is quality important for this product category: Not at all important/ Very important). Demographic information regarding the participants’ age, gender, education, and income level were gathered. The duration of the study was approximately 15 minutes.

8.1. Results

A scale for product knowledge was performed using a factor analysis of all four items using principal component analysis. The results showed that three of the four items loaded significantly on one factor (eigenvalue=2.27), explaining 56.85% of the total variance (loading item 1=.82, item 2=.50, item 3=.83, and item 4=.81). The reliability analysis for the three items with loadings above .8 showed a Cronbach's Alpha of .79. A knowledge scale was created following the reliability analysis. Next, a dummy variable was created using the median split, which was verified using an independent samples t-test. The results showed a significant difference between the low knowledge and high knowledge categories ($t(209)=-21.55, p<0.001$).

Dependent variables. An attitude scale was created for the three attitude items for each brand. A factor analysis using principal component analysis of the three items for Brand A showed that all three items (loadings item 1=.98, item 2=.97, and item 3=.97) had high loadings on one component (eigenvalue = 2.83) which explained 94.16% of the total variance in the data. The reliability analysis showed a Cronbach's Alpha equal to .95. The analysis showed that an attitude toward Brand A scale could be created. A similar method was used to create an attitude scale for Brand B. Following a factor analysis using principal component analysis, one component (eigenvalue= 2.85) explained 94.97% of the total variance (loadings item 1=.97, item 2=.98, item 3=.97). Cronbach's Alpha of .97 showed very high reliability of the three items. The factor and reliability analyses showed that scales for attitude toward brand A and brand B could be created. The correlation analysis among the dependent variables showed significant correlations showed significant results between attitude toward Brand A and Brand B

(Pearson's $r(114) = .63, p < .001$), attitude toward Brand B and Purchase Intention for Brand B (Pearson's $r(114) = .59, p < .001$), and attitude toward Brand B and choice (Pearson's $r(114) = .32, p < .001$).

Scoring. The recall protocols were scored as correct and incorrect. The correct recalls were divided into alignable and nonalignable differences.

Data analysis. The third hypothesis predicted that consumers of hedonic products will focus attention on nonalignable differences, whereas consumers of utilitarian products will focus their attention on alignable differences. A repeated measures ANOVA showed a significant main effect of product type on consumers' allocation of attention to alignable and nonalignable differences ($F(1,202) = 32.9, p < .001$) for the between-subjects effects. The variables age, education and income were included as covariates. The estimated marginal means showed that consumers allocated more attention to the utilitarian product ($M = 1.68$) compared to the hedonic product ($M = 1.14$). The descriptive statistics revealed that overall consumers recalled more attention to alignable and nonalignable differences for Brand A and Brand B for the Backpack rather than the Digital Camera product category. Hence Hypothesis 4 was not confirmed, since consumers did not allocate more attention to nonalignable differences for the hedonic product and to alignable differences for the utilitarian product.

Independent sample t tests showed that for the hedonic product consumers recalled more alignable differences for Brand B ($t(101) = -2.02, p < .05$) when Brand A was second ($M = 1.6$) than when Brand A was first ($M = 1.22$). However, for the utilitarian product, consumers recalled more alignable differences for Brand B ($t(106) = 2.03, p < .05$) when Brand A was first ($M = 2.33$) than when Brand A was second ($M = 1.98$). Hence,

there was a tendency to recall more alignable differences for the second entrant when consumers were in the market for a hedonic product, whereas when they were in the market for the utilitarian product they were likely to recall more alignable differences for the first entrant.

Figure 4: Alignable and Nonalignable Attribute Means

Descriptive Statistics

	Product type	Mean	Std. Deviation	N
Frequency of alignable differences Brand A	digital camera	1.0400	.94195	100
	backpack	1.5981	.96015	107
	Total	1.3285	.98941	207
Frequency of nonalignable differences Brand A	digital camera	.8100	.76138	100
	backpack	1.4673	.95481	107
	Total	1.1498	.92526	207
Frequency of alignable differences Brand B	digital camera	1.4400	.92463	100
	backpack	2.1776	.92973	107
	Total	1.8213	.99608	207
Frequency of nonalignable differences Brand B	digital camera	.9700	.80973	100
	backpack	1.8505	3.19139	107
	Total	1.4251	2.39801	207

The tests of between-subjects effects revealed also a significant interaction between product type and product knowledge ($F(1,200)=9.16, p<.01$) on consumers allocation of attention to alignable and nonalignable attributes. For the hedonic product, an increase in knowledge resulted in an increase in attention from 1.05 to 1.22. However, for the utilitarian product, novices ($M=1.91$) recalled more features than expert consumers ($M=1.45$). Independent sample t tests showed that for the hedonic product, novice consumers recalled significantly less alignable differences than experts about Brand A ($t(101)=-2.24, p<.05$) and Brand B ($t(101)=-1.97, p=.05$). For the utilitarian product, novice consumers remembered more alignable differences than experts for

Brand A ($t(106)=2.15$, $p<.05$) and Brand B ($t=3.25$, $p<.01$) and more nonalignable attributes about Brand A ($t(106)=2.43$, $p<.05$). Hence, the interaction between product type and product category knowledge showed that for the hedonic product, novices were able to recall less information than experts, whereas for the utilitarian products novice consumers were able to recall more information than expert consumers, pattern observable for the alignable attributes. This finding suggests that companies providing hedonic products can effectively educate their consumers as they are learning the information more easily.

Independent sample t tests showed that for the hedonic product, novice consumers recalled significantly more alignable attributes ($t(43) = -2.92$, $p<.01$) about the second entrant ($M=1.54$) than about the first entrant ($M=.86$) on the market. Overall, consumers remembered more features about the late entrant than about the first entrant, irrespective of whether they were alignable or nonalignable.

Figure 5: Alignable and Nonalignable Means For Product Type by Product Category Knowledge Interaction

Product * Median Knowledge

Measure: attention

Product	Median Knowledge	Mean	Std. Error	95% Confidence Interval	
		Lower Bound	Upper Bound	Lower Bound	Upper Bound
Digital Camera	low	1.053	.101	.853	1.253
	high	1.224	.089	1.048	1.400
Backpack	low	1.907	.088	1.734	2.080
	high	1.454	.098	1.261	1.648

Product * Median Knowledge					
	Product type	Median Knowledge	Mean	Std. Deviation	N
Frequency of alignable differences Brand A	digital camera	low	.7955	.82348	44
		high	1.2321	.99070	56
		Total	1.0400	.94195	100
	backpack	low	1.7667	.88999	60
		high	1.3830	1.01195	47
		Total	1.5981	.96015	107
	Total	low	1.3558	.98452	104
		high	1.3010	.99838	103
		Total	1.3285	.98941	207
Frequency of nonalignable differences Brand A	digital camera	low	.8636	.79507	44
		high	.7679	.73833	56
		Total	.8100	.76138	100
	backpack	low	1.6500	.91735	60
		high	1.2340	.96036	47
		Total	1.4673	.95481	107
	Total	low	1.3173	.94781	104
		high	.9806	.87426	103
		Total	1.1498	.92526	207
Frequency of alignable differences Brand B	digital camera	low	1.2500	.83874	44
		high	1.5893	.96816	56
		Total	1.4400	.92463	100
	backpack	low	2.4167	.84956	60
		high	1.8723	.94678	47
		Total	2.1776	.92973	107
	Total	low	1.9231	1.02106	104
		high	1.7184	.96424	103
		Total	1.8213	.99608	207
Frequency of nonalignable differences Brand B	digital camera	low	.8636	.85156	44
		high	1.0536	.77271	56
		Total	.9700	.80973	100
	backpack	low	2.1667	4.15858	60
		high	1.4468	.99583	47
		Total	1.8505	3.19139	107
	Total	low	1.6154	3.25996	104
		high	1.2330	.89884	103
		Total	1.4251	2.39801	207

A repeated measures ANOVA showed no influence of product type on consumers allocation of attention after choice when presented with the two brand ($F(2,199)=.87$,

p=.43). The tests of between subjects effects showed a significant interaction between product type and product category knowledge ($F(1,200)=5.22, p<.05$). The means show a different pattern depending for the alignable and nonalignable differences for the hedonic and utilitarian products. For the digital camera, novice consumers mentioned less alignable attributes as reasons for choice than expert consumers ($t(101)=-2.76, p<.01$). Hence, the number of alignable and nonalignable mentioned increased with the increase in knowledge. However, for the backpack independent sample t tests did not show significant effects (i.e., novice consumers did not mention more alignable and nonalignable attributes compared to expert consumers).

Figure 6: Alignable and Nonalignable after Choice Means for Product Type by Product Category Knowledge

	Product type	Median Knowledge	Mean	Std. Deviation	N
Order of entry	digital camera	low	1.5455	.50369	44
		high	1.5357	.50324	56
		Total	1.5400	.50091	100
	backpack	low	1.5333	.50310	60
		high	1.4255	.49977	47
		Total	1.4860	.50216	107
	Total	low	1.5385	.50093	104
		high	1.4854	.50223	103
		Total	1.5121	.50107	207
Frequency of alignable differences final choice	digital camera	low	.2500	.57567	44
		high	.6250	.75227	56
		Total	.4600	.70238	100
	backpack	low	.4833	.62414	60
		high	.4255	.58028	47
		Total	.4579	.60314	107
	Total	low	.3846	.61230	104
		high	.5340	.68335	103
		Total	.4589	.65137	207
Frequency of nonalignable differences final choice	digital camera	low	.4773	.79207	44
		high	.6786	.95550	56
		Total	.5900	.88871	100
	backpack	low	.7667	.98060	60
		high	.6383	.84508	47
		Total	.7103	.92154	107
	Total	low	.6442	.91289	104
		high	.6602	.90265	103
		Total	.6522	.90564	207

Repeated measures ANOVA were used to analyze the influence of product type and product knowledge on consumers' preference ($F(2,199)=.15$, $p=.85$), purchase intentions ($F(2,199)=1.07$, $p=.35$), attitude ($F(2,199)=.21$, $p=.8$) and choice ($F(1,196)=1.56$, $p=.21$). The variables age, education and income were included as covariates.

The repeated measures ANOVA showed that knowledge had a significant impact on consumers' preferences ($F(2,199)=4.5$, $p<.05$). Overall, consumers with a higher knowledge of the product category had a higher preference for the late entrant. Furthermore, knowledge had a significant impact on consumers' purchase intentions for first and late entrants ($F(2,199)=8.4$, $p<.01$) and a significant impact of education ($F(2,199)=6.78$, $p<.01$). The means showed that experts had higher purchase intentions compared to novices. Knowledge was also found to have an impact on consumers' attitude toward the first and late entrant ($F(2,199)=5.81$, $p<.01$), expert consumers ($M=4.29$) having a more positive attitude than novice consumers ($M=4.04$). Knowledge did not have a significant influence on choice ($F(1,200)=3.2$, $p=.08$).

Independent sample t tests showed that novice consumers had a higher preference for Brand B ($t(103)=-1.95$, $p=.05$) when Brand A was second ($M=4.69$) than when Brand A was first ($M=4.14$). Furthermore, novice consumers had a more positive attitude toward Brand B ($t(103)=-2.51$, $p<.05$) when Brand A was second ($M=5.47$) than when Brand A was first ($M=4.95$). Expert consumers had a more positive attitude toward brand A ($t(103)=-2.01$, $p<.05$) when Brand A was second ($M=5.82$) than when Brand A was first ($M=5.46$). Hence, the tendency for novice consumers had higher preferences and a more positive attitude toward the second entrant on the market.

The effects of perceived quality and perceived variety on the impact of order of entry on purchase intentions, preference, attitude and choice were analyzed. A median split was performed for each of the items, perceived quality and perceived variety. The repeated measures ANOVA showed that for the between subjects effects perceived variety has a main effect on purchase intentions ($F(1,188)=10.05$, $p<.01$). Independent sample t tests showed that when perceived variety was high, consumers had higher purchase intentions for Brand A ($t(76)=2.12$, $p<.05$) when Brand A was first ($M=5.11$) than when Brand A was second ($M=4.25$). Hence, consumers had higher purchase intentions for the first entrant when perceived variety was high.

The repeated measures ANOVA also showed that perceived quality ($F(1,188)=7.78$, $p<.01$) and perceived variety ($F(1,188)=4.6$, $p<.05$) had a main effect on preference. Independent sample t tests showed that for in the high perceived variety condition, there was a marginally significant preference for Brand A ($t(76)=1.84$, $p=.06$) when Brand A was first ($M=5.34$) than when Brand A was second ($M=4.65$). Although not significant, independent sample t test showed that for the high perceived quality condition consumers had a tendency to prefer Brand B ($t(99)=-1.4$, $p=.16$) when Brand A was second ($M=5.19$) than when Brand A was first ($M=4.86$).

The analysis also showed that perceived quality ($F(1,188)=7.6$, $p<.01$) had a main effect on attitude. Independent sample t tests showed that in the high quality condition there was a significantly more positive attitude for Brand A ($t(99)=-1.9$, $p=.05$) when Brand A was second ($M=6$) than when Brand was first ($M=5.58$) and a marginally significant with a more positive attitude for Brand B ($t(99)=-1.77$, $p=.08$) when Brand A was second ($M=5.94$) than when Brand A was first ($M=5.54$).

The between subjects effects did not show a main effect of perceived variety ($F(1,188)=2.13, p=.14$) or quality ($F(1,188)=2.37, p=.12$) on the choice for the first or late entrant.

Hypothesis 5 assumed that consumers' valuation of the product category moderates the relationship between product type and consumers' purchase intentions and choice for the first and late entrant. Specifically, for hedonic products and in situations in which consumers place a higher value on quality, the second entrant will have a higher purchase and choice. However, for utilitarian products and in situations in which consumers value more variety, the first entrant will receive higher purchase intentions and choice. To test Hypothesis 5, a repeated measures ANOVA measuring the influence of product type and consumers' valuation of product category on consumers' purchase intentions, preference, attitude, choice and allocation of attention to alignable and nonalignable differences after choice. The analysis did not reveal any interaction between product type and the manipulation of variety versus quality on any of the dependent variables: purchase intention (Product*Variety_Quality: $F(2,195)=.8, p=.5$); preference (Product*Variety_Quality: $F(2,195)=.5, p=.6$); attitude (Product*Variety_Quality: $F(2,195)=.77, p=.46$); choice (Product*Variety_Quality: $F(1,196)=.06, p=.8$) and attention (Product*Variety_Quality: $F(1,196)=3.43, p=.06$). Hence, Hypothesis 5 was rejected.

However, an interaction between product category knowledge, product type and manipulation of variety and quality was found on choice ($F(1,196)=3.94, p<.05$). Independent sample t tests showed that novices had a higher choice for the second entrant

(M=1.54) compared with the first entrant (M=1.18) when quality was important and the product was utilitarian ($t(32.91)=-2.54, p<.05$).

Figure 7: Manipulation of Quality and Variety by Product Type by Knowledge on Choice

Manipulation Variety and Quality * Product type * Median Knowledge * Choice

Measure: choice

Manipulation Variety and Quality	Product type	Median Knowledge	factor1	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound	Lower Bound	Upper Bound
variety manipulation	digital camera	low	1	1.600(a)	.110	1.383	1.817
			choice	1.425(a)	.111	1.207	1.643
		high	1	1.467(a)	.096	1.278	1.657
	backpack	low	1	1.606(a)	.097	1.416	1.797
			choice	1.505(a)	.101	1.305	1.704
		high	1	1.430(a)	.101	1.230	1.630
quality manipulation	digital camera	low	1	1.464(a)	.093	1.282	1.647
			choice	1.527(a)	.093	1.343	1.710
		high	1	1.485(a)	.105	1.277	1.693
	backpack	low	1	1.575(a)	.106	1.366	1.784
			choice	1.637(a)	.096	1.447	1.827
		high	1	1.588(a)	.097	1.397	1.778
backpack	low	1	1.546(a)	.087	1.375	1.717	
		choice	1.400(a)	.087	1.228	1.572	
	high	1	1.334(a)	.122	1.093	1.575	
			choice	1.639(a)	.123	1.397	1.881

a Covariates appearing in the model are evaluated at the following values: Age = 3.8841, Education = 2.5700, Income = 4.7295.

8.2. Discussion

Study 2 showed an impact of product category knowledge on consumers' purchase intentions, preference and attitude toward the brand. Expert consumers had higher purchase intentions, preference and a more positive attitude toward the late entrant brand than novice consumers.

Study 2 also provided interesting results in terms of consumers' allocation of attention to alignable and nonalignable differences. Overall, consumers recalled more alignable and nonalignable differences about the utilitarian than about the hedonic product. An influence of product type on consumers' allocation of attention to alignable differences was observed. Consumers recalled more alignable differences about the second entrant for the hedonic product and more alignable differences about the first entrant for the utilitarian product. This result supports the findings in the literature which show that the learning about new brands is influenced by the way the attributes of late entrants compare with the attributes of the first entrants (Zhang and Markham, 1998). They found that the attributes that differentiate late entrants from first entrants are better remembered when they are comparable along some common attribute.

Bohlman, Golder and Mitra (2003) found that in product categories where consumers value more quality the second entrant is preferred whereas in product categories where variety is more important the pioneering brand is advantaged. The results also provided support for the study of Bohlman, Golder and Mitra (2003), showing that consumers had higher purchase intentions and preference for the first entrant when perceived variety was high. Furthermore, consumers had a more positive attitude for the second entrant when quality was important.

There was also an interaction between product type and product knowledge, showing that for the hedonic product novice consumers recalled less alignable differences than experts. However, for the utilitarian product, novice consumers recalled more alignable differences than experts. The interaction between product type and product category knowledge was replicated when consumers mentioned the reasons for choice

after being presented with the two brands. It showed that for the hedonic product novice consumers mentioned more attributes as reasons for choice than expert consumers. This pattern of results was reversed for the utilitarian product, showing that novice consumers mentioned more attributes than experts.

9. General Discussion

Kerin et al. (1992) identify factors that influence the first mover advantage. They argue that in order to be successful as a first entrant, a company must have certain competencies and capabilities, such as technological foresight, perceptive market research, skillful product and process development capabilities, and marketing acumen. They also posit that depending on the firm's unique strategic posture, they might benefit from early entry and other might benefit from following. The authors further posit that market positioning can provide opportunities for gaining positional advantage. They state that product-market contingencies, and the actions of the first mover and late entrants influence the actual competitive advantage. Companies must have the expertise, resources and creativity to exploit opportunities that might arise from market pioneering to achieve positional advantages, market share dominance, and abnormal returns.

The findings in the two studies suggest that companies should consider the characteristics of their products when designing their entry strategy. The two studies showed that product complexity and product type influence consumers' allocation of attention to first and late entrants on the market. Product complexity had a significant impact on purchase intentions: for the complex product, consumers had significantly higher purchase intentions for the second entrant on the market.

The first study showed that product complexity is a strong indicator of how consumers process the information about the first and late entrant on the market. Further, when making the purchase decision, consumers of complex product use alignable attributes as reasons for making a decision. In the learning process, consumers of complex products recall more features of the first entrant. However, consumers' purchase intentions for the first and second entrant did not differ for the simple product. During the learning phase consumers allocated more attention to the nonalignable differences of the pioneer. Also, after making a purchase decision, consumers tended to mention the nonalignable attributes as reasons for choice.

Prior knowledge about the product category does not have a moderating effect on how consumers learn brand associations and allocate attention. The results showed that for smartphone and running shoes, expert and novice consumers did not allocated more attention differently to alignable and nonalignable differences.

Study 2 revealed that knowledge about the product category has an impact on consumers' purchase intentions, preference, attitude and choice for the first and late entrant on the market. Overall, expert consumers had higher purchase intentions, preferences, and more positive attitudes. The results in Study 2 suggest that consumer product category knowledge had an impact on consumer learning and purchase intentions. Expert consumers had higher purchase intentions, preference and a more positive attitude. Previous studies suggest that expert consumers are not always able to avoid confusion about brands and to remember brand specific information (Alba and Hutchinson, 1987). The second study confirmed this assumption showing that novices and experts allocate attention differently depending on the product type (i.e. hedonic and

utilitarian). Expert consumers learning about the utilitarian product recalled less features than novice consumers. However, for the hedonic product, experts recalled more attributes than novice consumers.

Novice and expert consumers had a higher preference and attitude toward the second entrant on the market. The results of the second study also showed that consumers recalled more alignable than nonalignable differences of the utilitarian product. Furthermore, there was a tendency to recall more alignable differences about the second entrant when consumers were in the market for a hedonic product, whereas when they were in the market for a utilitarian product they were likely to recall more alignable differences about the first entrant. The results also showed an interaction between product type and product category knowledge on consumers' allocation of attention during both the learning and the testing phase. Novice consumers of the hedonic product recalled and mentioned less alignable and nonalignable attributes compared to expert consumers. However, novice consumers of the utilitarian product recalled and mentioned more alignable and nonalignable attributes than expert consumers.

Bohlman, Golder and Mitra (2003) showed that pioneers have an advantage in product categories where variety is more important, but are disadvantaged in product categories where quality is more important. To test their hypotheses, they used a game-theoretic model and used market share as a dependent variable. Study 2 examined the effects of perceived quality and variety on consumers' perceptions for the first and late entrants. The results showed that when consumers value more variety the first entrant has an advantage, whereas when consumers value more quality, the second entrant is advantaged. Hence, these results show that the findings of Bohlman, Golder and Mitra

(2003) regarding the pioneering advantage also appear in a consumer behavior experimental context.

Study 2 did not reveal an interaction between consumers' valuation of quality and variety and product type on allocation of attention, purchase intention, preference, attitude and choice. This result contradicts the findings in Bohlmann, Golder, and Mitra (2002) which posit that pioneers do better in product categories where variety is more important and worse in product categories where quality is more important.

These findings have conceptual implications for associative learning theory. Cuhna and Laran (2009) showed that people may allocate attention strategically throughout outcomes. Their research showed that people create strong associations between unique attributes and late entrants. Their results were not replicated across the two studies. The results of the first study show a strong association between unique attributes and the first entrant for simple products, as consumers recalled more nonalignable attributes about the pioneer.

Overall, the findings in the two studies provided support for the reminding based brand learning theory (Zhang and Markham, 2008). The new brands were learned by comparing them with existing brands. The comparison highlights the aspects of the new brand which will be incorporated into the new brand representation. Hence, the representation of the new brand will be more influenced by its similarity to previous brands. The results are in line with the findings in Zhang and Markham (1998) which show that consumers allocate more attention to alignable than to nonalignable differences for the late entrant. This effect could be seen especially in the second study, when the hedonic and utilitarian products were presented. Depending on whether the product was

hedonic or utilitarian, consumers recalled the alignable attributes for the first or late entrant.

The results of the first study supported the findings in the literature which state that consumers learn more about the pioneer than about the late entrant in the sequential presentation of information (Kardes and Kalayanaram, 1992). Consumers of the complex and simple product recalled more alignable and nonalignable attributes about the first entrant when they were exposed to the information sequentially. However, when the two brands were presented simultaneously and consumers made a choice between the two brands, they mentioned more attributes about the second entrant for the complex product as factors for influencing their decision.

10. Managerial Implications and Directions for Future

Research

Being the first on the market has important strategic implications. Studies have showed that pioneers enjoy higher market share and purchase intentions (Carpenter and Nakamoto, 1989, 1990; Kerin, Varadarajan, Peterson, 1992). However, most often, companies do not have the first entrant advantage, but instead are late entrants. The two studies have showed boundary conditions for the pioneering advantage and revealed factors that provide late entrants with an advantage over the pioneer.

In terms of the order of entry strategy, managers of products where variety is more important should enter first on the market. In order to establish consumers' valuation of the product category, companies should conduct market research studies to establish whether consumers perceive their products as being high in variety or high in

quality and adapt their entry on the market strategy accordingly. Study 2 showed that when consumers value variety, the first entrant had purchase intentions and preference. Further, companies having products where quality is more important are advantaged when they are second on the market. Consequently, pioneers should focus their advertising strategy on messages that prime variety, whereas follower brands should focus their advertising on messages that prime quality.

The findings of the two studies have managerial implications for the late entrant advantage. Knowing the factors that influence consumers' learning of brand associations can help practitioners better manage their entry on the market. Managers of complex products benefit by being second on the market since consumers had higher purchase intentions for the late entrant. The first study supported the findings in the literature regarding the advantage of the entry strategy of the improved late entrants (Zhang and Markham, 1998). Managers of complex products entering second must present themselves in comparison with the pioneer, highlighting comparable attributes.

During the learning stage, consumers of complex products tend to remember more alignable attributes about the pioneer. At this stage the pioneering brand has the advantage. However, there are examples in the market of complex products where first entrants have dominated the market shares in spite of the second entrant's endeavors to overcome them. As a first entrant selling complex products, Apple (e.g. iPhone, iPad) has maintained dominance of the market through strong branding efforts. Hence, the results of the first study are more likely implemented for products where competitors have equivalent brand equity. In this case consumers would not rely on the brand image and knowledge as important factors for making a decision.

After making a purchase decision, consumers were asked for the reasons for making that choice. Consumers considered more the alignable attributes, finding which is significant in designing an advertising strategy. This finding suggests that second entrants should direct their advertising efforts towards comparing themselves with the pioneer. Complex products benefit the most when having the advertising content focused on alignable features. This effect is probably due to a perception of increased quality for the second entrant. This strategy has been used by GM in their relaunch campaign in 2009 when their advertising campaign launched a series of videos in which they compared their cars with those of Toyota, hoping to appear as an improved late entrant.

On the other hand, marketers of simple products benefit from using nonalignable differences in their advertising campaign. During the learning task, consumers of simple products had a higher recall for the nonalignable attributes of the pioneer. However, no effect of the simple products was found on the purchase intention for first and late entrants. Future research should replicate the impact of product complexity on consumer's learning of information about the first and late entrant.

Although during the learning task, pioneering brands had an advantage, there are other factors that influence consumer's purchase intentions. Future research should explore the decision making mechanisms that lead consumers from attention to a brand to purchase.

Managers must consider that the type of product (i.e., hedonic or utilitarian) also has an impact on consumers' preference for first and late entrants on the market when alignable and nonalignable features are presented. Consumers did not remember better nonalignable differences for hedonic products. As past research has showed (Cuhna and

Laran, 2009), late entrants benefit from presenting nonalignable differences. However, for utilitarian products, companies benefit from presenting their products in terms of alignable differences. Having a benefit in mind, consumers appreciate the information which illustrates a comparison with other competitors.

Product category knowledge could be an important segmentation tool. Study 2 showed that the knowledge for the product category has a significant impact on consumers' allocation of attention to alignable and nonalignable attributes. Experts were able to recall more features than novice consumers. Further, there was an interaction between product type (i.e., hedonic versus utilitarian) and product category knowledge. For the hedonic product (i.e. digital camera), novice consumers recalled less alignable features than experts. However, for the utilitarian product (i.e. backpack) expert consumers recalled less alignable features compared to novice consumers. This finding suggests that marketers should approach different marketing strategies depending on the type of product. Managers of hedonic products should educate consumers about their products over a long period of time. As consumers are exposed to the information about the brand, their learning improves and they will be able to recall more. Hence, marketers should use advertising (e.g. television, radio, magazine) or public relations to build consumer knowledge. However, for the utilitarian product novice consumers were able to recall more attributes than experts. When they took the purchase decision, novice consumers mentioned more alignable and nonalignable attributes than experts. This finding suggests marketers of utilitarian products should focus their marketing activities towards engaging the consumer directly, in-store or online. In-store information, online

presentation of the product or training of the sales force should be some of the most effective strategies.

Future studies should evaluate the effect of product involvement on consumers' perceptions and purchase intentions for first and late entrants in the utilitarian and hedonic product categories. Park and Moon (2003) showed that the product type and product category knowledge type are moderators of the correlation between consumer product involvement and product knowledge. The researchers found that compared to the hedonic product, in the utilitarian product the correlation between product involvement and objective product knowledge (i.e. ability to process product attribute information) increases. However, in a hedonic product, the correlation between consumers' product involvement and subjective product knowledge (i.e., self-confidence regarding consumer decision making) increases (Park and Moon, 2003). Hence, product involvement might have a strong influence on the relationship between product knowledge and product type and how they allocate attention to first and late entrants. Experts of hedonic products might be more involved with that product category than experts of utilitarian products, and hence the difference in how they learn the information about the brands and how they process first and late entrants.

Future studies should further explore the interaction between product type (i.e. hedonic and utilitarian) and consumers' valuation for variety and quality on attention, purchase, preference and choice. A weakness of Study 2 might be that consumers did not perceive the manipulation of variety and quality. Future studies should use a manipulation for variety and quality which elaborates more on when consumers value more quality or variety. Another possibility would be to use products where quality

respectively where variety is more important. It is highly probable that the two factors interact since we found a marginally significant interaction between product type and consumers' valuation for quality and variety on choice. Future studies should also investigate the mediating effect of perceived variety and explore the influence of service complexity on consumers' allocation of attention to first and late entrants.

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12. Appendices

Results Pretest 2

Smartphone – Alignable attributes

Attributes: Brand A	Importance Rating	Attractiveness Rating
2.44 inch screen and an attached full QWERTY keyboard	5.63	6.16
3.2 MP camera with 2X digital zoom	5.47	6.55
High resolution 480-by-360 pixel color display	6.57	6.61
512 MB onboard memory and 2 GB media card included; expandable memory with support for microSD cards	5.10	6.22
Attributes: Brand B		
3.5 inch wide screen Multi-Touch display with Keyboard is on the screen	6.21	6.66
5MP camera with 5X digital zoom	5.21	6.94
960-by-640 pixel resolution at 326 ppi	5.31	7.11
Capacity 16GB or 32 GB flash drive	5.73	7.11

Wilk's Lambda for Attractiveness $F(9, 9)=1.16$ $p=.41$;

Wilk's Lambda for Importance $F(9, 10)=2.17$ $p=.12$

Smartphone - Nonalignable attributes

Attributes: Brand A	Importance Rating	Attractiveness Rating
Built in messenger	6.42	6.29
User selectable font size	4.68	6.11
Optical trackpad	4.68	5.88
Sleep mode	5.36	6.00
Attributes: Brand B		
Video calling	4.57	6.11
LED flash illuminates low light	5.68	6.76
Photo and video geotagging	5.10	5.52
Proximity sensor	4	5.64

Wilk's Lambda for Attractiveness $F(9, 8)=2.78, p=.08,$

Wilk's Lambda for Importance $F(9, 10)=2.4, p=.09$

Backpack - Alignable attributes

Attributes: Brand A	Importance Rating	Attractiveness Rating
Available in 3 color patterns	5	5.11
32 L capacity	4.73	5.11
Includes wire management options for carrying MP3 Players/ iPod/ CD	5.21	5.61
Polyester with polyurethane coating with cool mesh elevated back pods	4.57	5.11
Attributes: Brand B		
Available in 2 color patterns	4.21	4.38
34 L capacity	4.63	5.38
Audio port for use with MP3 Player	4.63	4.61
Durable denier outer fabric	5.57*	6.44**

Wilk's Lambda for Attractiveness $F(7,11)=4.46, p<.01$

Wilk's Lambda for Importance $F(7,12)=1.55, p=.22$

* $F(1,18)= 6.11 p<.05$

** $F(1,17)=15.11 p<.01$

Backpack - Nonalignable attributes

Attributes: Brand A	Importance Rating	Attractiveness Rating
Large number of adjustments on the straps	5.15	5.44
2 mesh water-bottle pockets	5.10	4.88
4 storage compartments	5.68	5.38
Two-fleece-lined sunglass pocket	3.68*	5.16
Attributes: Brand B		
Bottom expansion zipper for bigger load	5.05	5.77
Front compartment with deluxe organization and mesh zipper pocket	5.15	6.11
Can carry a big load	6.42	6.72**
Easy to hang hook/handle	5.89	5.88

Wilk's Lambda for Attractiveness $F(7,11)= 2.36 p=.09$

Wilk's Lambda for Importance $F(7,12)= 3.8 p<.05$

* $F(1,18)= 5.77 p<.05$

** $F(1,17)= 7.85 p<.05$

Digital Camera – Alignable attributes

Attributes: Brand A	Importance Rating	Attractiveness Rating
Lens: Optical zoom 4X, digital zoom 16X, Focus range: 2cm-50cm; 30cm-50 cm, focal length 5mm-20mm and autofocus system	6.10	6.72
LCD monitor with 2.8 Inch Purecolor LCD II with 230K pixels LCD monitor resolution and 5 Brightness Adjustment Steps	6.42	6.77
Image Sensor Pixels: 12 MP	6.26	6.94
20 preset scene modes	5.89	7
Attributes: Brand B		
Lens: Optical zoom 5X, digital zoom 10X, focus range – iAuto: 5cm-Infinity (W)/ 50cm – Infinity (T), Focus length: 4.25 mm-21.3mm, and autofocus system	5.31	7.38
LCD monitor with 3” Clear Photo LCD TFT LCD with 230K pixels LCD monitor resolution, and 3 Brightness Adjustment Steps	5.36*	7.33***
Image Sensor Pixels: 14.5 MP	5.52**	6.83
8 preset scene modes	5.78	7.11

Wilk’s Lambda for Attractiveness $F(9,9)= 1.27$ $p=.56$

Wilk’s Lambda for Importance $F(11,8)= 1.48$ $p=.29$

* $F(1,18)=5.86$, $p<.05$

** $F(1,18)=9.07$, $p<.01$

*** $F(1,17)=8$, $p<.01$

Digital Camera - Nonalignable attributes

Attributes: Brand A	Importance Ratings	Attractiveness Ratings
Technology which enables face detection and motion detection	5.63	7.12
Intelligently detects the proper settings for the camera based on 18 predefined shooting situations	5.84	7.06
Automatic optimization of image contrast and exposure without changing properly lit areas	6.10*	7.43
Automatically adjusts shutter speed, aperture, ISO and flash intensity for the perfect shot	7.10	7.62
Attributes: Brand B		
Technology which gives plenty of shooting flexibility for close-ups and landscape images	6.26**	7.62
Technology which allows beginners to easily understand advanced settings	7.31	7.87
Connects easily with the HDTV for viewing movies in widescreen	6.36	7.62
Exceptional Detail	5.73	7.37

Wilk's Lambda for Attractiveness $F(9,7) = 2.5$ $p = .12$

Wilk's Lambda for Importance $F(9,10) = 1.79$ $p = .18$

* $F(1,18) = 5.1$, $p < .05$

** $F(1,18) = 7.8$, $p < .05$

Running Shoes - Alignable Attributes

Attributes: Brand A	Importance Ratings	Attractiveness Ratings
Underfoot foam for lasting comfort	6.52	7.23
Reduces irritation through large pods of air	6.26	6.64
Removable antibacterial sock liner accommodates orthotics	5.26	5.88
Special design which ensures minimal rub and decreases irritation	7.52*	7**
Attributes: Brand B		
Blown rubber outsole reduces weight and improves forefoot cushioning	6.36	7.05
Protects your feet and absorbs shock through a low density cushioning unit	7.21	7.41
Dual layer sock liner for more comfort, material regeneration, air circulation and antimicrobial function	6.57	6.88
Outsole and midsole geometry that decouples the impact allowing for a softer ride	5.78	6.88

Wilk's Lambda for Importance $F(9,10) = 9.02$ $p < .01$

Wilk's Lambda for Attractiveness $F(9,8) = 4.7$, $p < .05$

* $F(1,18) = 7.43$, $p < .05$

** $F(1,16) = 6.39$, $p < .05$

Running Shoes - Nonalignable Attributes

Attributes: Brand A	Importance Rating	Attractiveness Ratings
Can help tighten and tone key leg muscles	6.94	6.05
Technology that provides ultimate comfort fit	7.61	7.15
Pockets of moving air promote micro-instability, helping to improve muscle tone in the glutes, calves and hamstrings	6.88	6.10
All seams are eliminated or sealed both inside and outside the upper	6.88	6.47
Attributes: Brand B		
Long lasting cell unit in heel for improved shock absorption	7.44	6.15
Second density on the medial side to stabilize the foot during the stance phase	7.38	5.12
Rubber outsole for lightweight cushioning	7.22	5.73
Extremely lightweight, breathable upper for built-in conditioning	7.88	6.15

Wilk's Lambda for Attractiveness $F(9,10)= 1.66, p=.23$

Wilk's Lambda for Importance $F(9,10)= 2.1, p=.13$