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## Consumer acceptance of product innovations

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## Chapter 5 General Discussion

This dissertation focuses on product innovations—new goods and services. New goods and services are transforming industries, companies, and our lives (Kotler and Keller 2016). Over 250,000 new products launch every year around the world (NielsenIQ 2019; Wong 2010). However, most new products cannot survive in their first two years (NielsenIQ 2019). This disappointing fact has attracted much academic attention to factors determining new product success. Prior literature has revealed that product characteristics (e.g., technology and innovativeness) and firm strategy characteristics (e.g., marketing synergy) play a key role in the market success of new products (Evanschitzky et al. 2012; Henard and Szymanski 2001).

Although past research has contributed to the understanding of the influence of product characteristics and firm strategy characteristics on new product success, three gaps still remain. First, the technology integrated into new products develops over time due to firms' investment in new technology (Hoffman et al. 2022). New technologies alter consumer experiences (Hoffman et al. 2022; Hoffman and Novak 2018). For instance, AI, as an emerging technology, has started to replace or collaborate with human workers to create new service experiences for consumers in many service tasks (Huang and Rust 2018; Mende et al. 2019). However, consumers are not willing to accept AI for all tasks (Castelo, Bos, and Lehmann 2019). Therefore, more research is still needed on how task characteristics interplay with AI-human collaboration types to influence consumer acceptance of new services driven by AI.

Second, prior meta-analyses on the importance of product characteristics to new product success did not account for a relevant product attribute, that is, product typicality (Hekkert, Snelders, and Van Wieringen 2003; Veryzer Jr and Hutchinson 1998). Given that the effect of product typicality is not consistent in the literature (Celhay and Trinquecoste 2015), a

comprehensive meta-analytic review is needed to integrate and explain such competing effects.

Third, prior meta-analyses on the importance of firm strategy characteristics to new product success did not consider the most common branding strategy for new products—brand extensions. The topic of brand extension success has a long history of over 30 years, yielding numerous studies. However, no meta-analysis has been conducted to build a comprehensive framework to explain the determinants of brand extension success as well as the moderators.

In this vein, the central question of this dissertation is how to make the best of two product characteristics (i.e., AI integration and product typicality) and one firm strategy characteristic (i.e., brand extensions) to improve new product success. To address this question, we perform one empirical study and two meta-analyses. This final chapter reiterates and summarizes the major implications of the three studies and ends with directions for future research.

## **5.1 Main findings**

*Chapter 2.* Although AI is increasingly integrated into services to provide new experiences to consumers, the understanding of how to design a more acceptable AI-based service from the consumer perspective is still limited. In the second chapter, we conducted a series of studies and yielded two main findings. First, we found that required warmth (an indicator of emotion) negatively influences consumer acceptance of an AI server via decreasing task-AI fit. Second, we revealed that relative to AI working independently and AI supervised by a human, AI supporting a human positively influences consumer acceptance of AI service for tasks that require high warmth. Moreover, for tasks that require high warmth, consumers are equally reluctant to accept AI working independently and AI supervising a human.

*Chapter 3.* Although practitioners have acknowledged that each product category has a particular prototype in consumers' minds, firms often develop and launch new products that are atypical of the prototype. The co-existence between typical products and atypical products has aroused researchers' interest. However, prior studies yield competing effects of product typicality on new product success. In the third chapter, we performed a meta-analysis to accumulate and unravel contrasting previous empirical findings. This meta-analysis has three main findings. First, this meta-analysis found that product typicality generally has a positive effect on new product success. Second, we revealed the underlying process behind the effect of product typicality on new product success. Specifically, product typicality positively affects new product success partially by improving perceived product reliability and negatively impacts new product success partially through reducing perceived product excitement. Third, we found substantial cross-cultural variations in the effect of product typicality on reliability and excitement. Individualism indirectly moderates the product typicality-new product success relationship by mitigating (strengthening) the positive (negative) effect of product typicality on reliability (excitement). However, uncertainty avoidance moderates that association in the opposite way.

*Chapter 4.* Brand extensions are the most popular branding strategy for new products. However, most brand extensions failed to survive in the market. A large number of studies have contributed to the understanding of how to improve the success of brand extensions by examining various types of determinants. However, prior studies remarkably differ in terms of examined drivers, parent brands, brand extensions, and research contexts, yielding divergent findings. Therefore, the meta-analysis in the fourth chapter aims to address recent calls for empirical generalizations on brand extension success.

This meta-analysis brings in three relevant findings. First, we found that parent brand strength and brand extension fit are among the most influential drivers of brand extension

success. However, multiple other drivers related to the parent brand, the extension product, and consumers are also relevant and have substantial effects on brand extension success, such as parent brand extension history, parent brand concept (prestige vs. function oriented), and consumer innovativeness. Second, the meta-analysis summarized how frequently these drivers were examined in the literature. The summary of frequencies reveals that although some drivers have a strong effect on brand extension success, they are yet understudied such as parent brand extension history and marketing mix support for the extension product. Third, a comprehensive moderator analysis provides new insights into the roles parent brand strength and brand extension fit play in extension success. For instance, we investigate multiple rarely studied moderators, such as parent brand industry type or whether the extension product is hedonic or utilitarian, and empirically address the unsettled debate on the importance of different fit dimensions.

*Integration of main findings.* In order to address the central question of this dissertation and derive broader implications on consumer acceptance of product innovations, it is worth integrating the main findings from each project. In particular, prior literature has proposed a comprehensive framework to summarize the important determinants of new product success (Evanschitzky et al. 2012; Henard and Szymanski 2001). This framework identified multiple relevant product characteristics such as product price, product technological sophistication, and product innovativeness. Also, this framework revealed several important firm strategy characteristics including marketing synergy, technological synergy, order of entry, and so on.

Our findings suggest that this framework could be further updated in three main aspects. First, the importance of AI integration to consumer acceptance of new services shows that the single variable (i.e., product technological sophistication) in the existing framework is not enough to explain how technologies especially new techniques are exerting a transformative force on firms' offerings and consumer preference. In line with the recent call for more

research on developing theoretical paradigms of how marketers use new technologies to develop a competitive advantage (Hoffman et al. 2022), our work on AI integration indicates that the existing framework should be rethought and updated intermittently as technologies develop.

Second, although the concepts of atypicality, novelty, newness, originality, and uniqueness are sometimes used interchangeably in the literature (e.g., Mugge and Dahl 2013), our findings suggest not to do so. Specifically, prior meta-analyses show that the generalized effect of product innovativeness on new product success is not significant, where product innovativeness refers to perceived newness/originality/uniqueness/radicalness of the product (Evanschitzky et al. 2012; Henard and Szymanski 2001). This insignificant generalized effect of product innovativeness is not consistent with our finding that product typicality generally positively influences new product success. Therefore, this finding provides strong evidence for the argumentation that atypicality seems to be conceptually related to innovativeness but actually measures different phenomena (Gemser and Barczak 2020; Hekkert, Snelders, and Van Wieringen 2003; Kim and Petitjean 2021). Therefore, our results suggest that the existing framework in prior meta-analyses should be improved by adding product typicality into important product characteristics.

Third, the framework in prior meta-analyses has already realized the importance of marketing strategies by incorporating multiple marketing-related strategy characteristics such as marketing synergy and order of entry (Evanschitzky et al. 2012; Henard and Szymanski 2001). However, the important role of branding strategies in new product success is overlooked. More importantly, that framework did not consider the most common branding strategy for new products—brand extensions. Our findings show that extending existing brands for new products cannot ensure the success of new products. Actually, a broad set of factors determine the success of this branding strategy and the impacts of those determinants

also depend on the characteristics of products, brands, and research settings. Therefore, our work supplements the existing framework by explaining when and how firms can benefit more from extending existing brands for new products.

## **5.2 Managerial implications**

New product development is a systematic and complicated process. Prior literature has offered firms a comprehensive roadmap that encompasses multiple factors determining new product success (Evanschitzky et al. 2012; Henard and Szymanski 2001). Our work yields new insights for managers by identifying three additional important determinants, that is, two product characteristics (i.e., AI integration and product typicality) and one firm strategy characteristic (i.e., brand extensions). We introduce how to make the best of these new characteristics to improve new product success below.

Our findings regarding AI integration in Chapter 2 imply that not all the tasks are suitable for AI to serve consumers. For those requiring high warmth, firms should assign human employees to serve consumers. However, consumers accept AI employees which perform tasks that do not require high warmth. Moreover, if firms want to hire AI to conduct tasks requiring high warmth, they are suggested to offer collaboration where AI supports a human; specifically, putting the human clearly in a lead and AI in an assisting role. Finally, AI replacement should be considered at the task level rather than the job level because consumers have different attitudes toward AI-based service across tasks. In light of this, firms need to assess what the core tasks are in their offered service and the extent to which a task requires high warmth. With this assessment, firms can increase acceptance of AI service.

Our work regarding product typicality in Chapter 3 suggests that consumers favor typical products in general. Therefore, product designers should follow the basic prototype of product categories in consumers' minds. Furthermore, marketers should be mindful about their use of typicality to avoid unnecessary losses. If the target market emphasizes hedonic benefits,

typical products become less favorable to consumers, as typical products arouse less excitement than atypical ones. However, if the target market values utilitarian benefits, typical products become more popular to consumers, as typical products bring in more reliability to consumers. Finally, firms should change their marketing strategies for (a)typical products across cultures. Managers are suggested to position atypical products as exciting products to individualistic consumers but advertise the reliability of typical products to collectivistic consumers. In addition, we recommend underlying the reliability of typical products to high uncertainty avoidance markets and propagandizing the excitement of atypical products to low uncertainty avoidance markets.

Besides product characteristics, branding strategy characteristics also play a key role in new product success. Our findings in Chapter 4 offer managers valuable implications on using the most common branding strategy for new products, that is, brand extensions. First, the generalized effects of multiple drivers on brand extension success guide managers to focus on the most influential drivers (e.g., building and maintaining strong parent brands; strengthening the relationship between parent brands and consumers). If the budget is enough, managers could take further efforts to increase brand extension success such as focusing on parent brands with strong records of prior extensions, making stronger investments into marketing mix activities for extension products. Second, the comprehensive moderator analyses addressed the following five important questions: (1) *Which parent brand type should be used?* For example, managers of service (vs. FMCG) benefit more from a brand extension strategy, especially when they have a strong brand. (2) *What type of extension category should be considered?* For example, if managers want to leverage the effect of high brand extension fit, they should consider extending their brands into experience categories. (3) *Which naming strategy should be used for the extension product?* Using a direct brand name (i.e., the same name as the parent brand) for an extension product helps leverage the positive effect of high



brand extension fit and thus increases extension success. (4) *Which extension direction type should be considered?* For example, with a strong parent brand to extend, managers should favor line extensions over category extensions. (5) *Which type of brand extension fit should be emphasized and communicated to consumers?* Emphasizing that the brand extension and the parent brand are complements (i.e., can be consumed jointly) or communicating the transferability of a brand's manufacturing abilities in the original product category to the extension product fosters the positive effect of fit and thus increases extension success.

### **5.3 Future research directions**

In this dissertation, we extend prior research on consumer acceptance of product innovation by exploring the importance of two product characteristics (i.e., AI integration and product typicality) and one strategy characteristic (i.e., brand extensions) on new product success. Our work has identified opportunities for further research on the sub-topics (i.e., AI services, product typicality, and brand extensions) and the big topic—product innovations.

*AI services.* First, our studies on AI integration in services relied on survey data rather than observed real behaviors. To improve the external validity, field experiments are advised to replicate and extend our findings in Chapter 2. Second, unexpectedly, required competence was found to negatively influence consumer acceptance of an AI server for some tasks. This unanticipated finding suggests further research on the effect of required competence on consumer acceptance of AI-based service, especially given that most existing studies focused on the effect of emotion-related task characteristics on AI acceptance. Third, inconsistent with our expectation, there was no significant difference in consumer perceptions of AI working independently, and AI supervised by a human. This unexpected result leaves room for further empirical work on how the role of human employees in AI-human collaboration can be made sufficiently salient to consumers to foster acceptance of AI service.

*Product typicality.* First, the number of effect sizes for each relationship in our meta-analysis meets the minimum requirement for the empirical generalization, but future research could further improve the generalizability of our findings by updating our meta-analysis when more effect sizes are available. Second, the mediation analysis suggested that reliability and excitement only partially mediate the relationship between product typicality and new product success. Therefore, product typicality should influence new product success through other potential factors, which deserves future research. Third, the institutional theory argues that besides cultural dimensions, the characteristics of socioeconomic status and regulative systems also explain the cross-national variances in individuals' consumption beliefs and values and thus possibly influence consumer attitude towards product typicality. Therefore, further research could also investigate the moderating roles of other important cross-national characteristics in consumer responses to product typicality.

*Brand extensions.* First, based on the results of the frequency summary, we call for more studies on important but understudied drivers of brand extension success such as parent brand-consumer relationship, parent brand extension history, and consumer mood. Second, in the moderation analyses, we only considered the two most frequently examined and theoretically important drivers, that is, parent brand strength and brand extension fit. Further research could investigate whether and how characteristics of the parent brand, brand extension, and research context moderate the effects of other drivers. Third, further research is advised to more rigorously examine whether and how upward extensions (compared to downward extensions) influence the effect of parent brand strength on extension success because there were only two observations of upward extensions available for parent brand strength, leading to a potentially inaccurate estimate for this moderator.

*Product innovations.* First, prior research has built a comprehensive framework to integrate the important determinants of new product success (Evanschitzky et al. 2012; Henard and Szymanski 2001). However, our findings on three extra characteristics (i.e., AI integration, product typicality, and brand extensions) indicate that an update to the existing framework is needed, especially considering that over ten years have passed after the latest update. Second, besides product characteristics and firm strategy characteristics, the prior comprehensive framework also considers organizational characteristics such as organizational climate and organizational design (Evanschitzky et al. 2012; Henard and Szymanski 2001). In that framework, these different characteristics are parallel. However, our work on AI integration shows that the applications of new technologies are not only a matter of product design but also related to organizational changes due to AI replacement for human workers or AI-human collaboration. Therefore, further research could consider how different groups of characteristics interplay with each other to influence new product success. Third, our findings on product typicality provide strong evidence that it is necessary to differentiate between product typicality and product innovativeness. Further research could explore how to design new products in terms of product typicality and product innovativeness simultaneously. Finally, our work on brand extensions shows that the degree to which new products can benefit from extending existing brand names depends on product types. Given that we have realized that AI integration and product typicality are two important product characteristics, is it possible that the success of brand extensions would also rely on these two characteristics? This question is worth further research.

#### **5.4 Concluding remarks**

Firms have acknowledged the strategic importance of product innovation to their long-lasting growth and have been continuously investing heavily in new product development. However, so many new products launch in the market every year that

consumers are overwhelmed, leading to an upset success rate of new products. Against this backdrop, prior literature has proposed a systematic framework that encompasses multiple factors determining new product success. Our work contributes to this framework and the field of consumer acceptance of product innovations by identifying three extra important determinants, that is, two important product characteristics (i.e., AI integration into new service and product typicality) and one popular branding strategy (i.e., brand extensions) for new products. We conducted one empirical study and two meta-analyses to examine how to make the best of these product characteristics and brand extensions for new products. Our work yields a series of important theoretical and managerial implications for practitioners and calls for more research to deepen our understanding of product innovations. As Bill Gates said, “I believe innovation is the most powerful force for change in the world”. Innovation is the cornerstone of society's development and is a forever hot topic.