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The Effect of Product Likes on Consumer Behavior in Online Shopping

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THE EFFECT OF PRODUCT LIKES ON CONSUMER BEHAVIOR IN ONLINE SHOPPING

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DEDICATION

To my husband, Sudipta, whose unconditional love and support have encouraged me to pursue my interests. To my daughter, Veena, who has brought me joy and energy to keep thinking forward. To my parents, whose lifelong hard work and sacrifice have taught me to be humble, patient, determined, and practical. To my cousin, Evelyn, whose persistence, struggles, determination, and boldness have deeply inspired me to set aside any negative thoughts and focus on work.

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ABSTRACT

This research examines the impact of likes in the context of online shopping websites. Likes are popular metrics in digital and social media marketing. Previous research has investigated the roles of likes on consumer behavior and product sales in the context of social media websites such as Facebook, Instagram. However, little has been known about another type of likes, product likes, which are used on online shopping as an information cue for consumer's purchase decisions. We propose four studies to understand the impact of product likes in the context of online shopping websites where transactions occur. We expect that the studies would confirm our hypotheses that consumers are more likely to purchase products when the number of product likes is higher, and that this relationship is mediated by of perception of product popularity and quality. In addition, we hypothesize that this effect only sustains when products receive positive ratings, and that it could disappear when products receive negative ratings.

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CHAPTER 1

INTRODUCTION

The like button (also known as ‘love’, ‘favorite’) has become very popular since it was first created in 2005 (Pullen, 2011) and was introduced on Facebook in 2009 (Kincaid, 2009). As more websites have incorporated the like button into their interfaces, it is common that consumers come across likes on a plethora of internet applications, from social networking services (e.g., Facebook, Twitter, Instagram), internet forums (e.g., Reddit, Quora), to online shopping websites (e.g., Overstock, Sephora, Zappos). Research has shown that liking judgments are generated faster than disliking judgments (Herr and Page, 2004) and that consumers derive inherent pleasure from evaluating different options and expressing likes and dislikes (He et al., 2019). Hence, the thumbs-up or heart-shaped button next to a product or services’ description has become a useful tool for consumers to express their opinions over the internet. Likes allow consumers to “signal [their] validation and approval with a single click, without having to type anything” (Moffat, 2019).

Observing how consumers enjoy and derive benefits from the like button on social media websites, many online shopping websites have incorporated the feature on their platforms. According to description on WooCommerce, an open-source ecommerce solution built for small and large merchants on WordPress, the liking function could help consumers keep track of products they like for future purchase and help store owners increase sales and return customers. (WooCommerce, n.d.). Further, product likes are

fundamentally different from product reviews and ratings. Product reviews and ratings have been shown to influence consumers' decision making when evaluating products. They are typically created after consumers purchase products and require consumers more efforts to create than product likes. In addition, product likes convey only positive information through the aspect of volume (number of product likes) compared to product reviews and ratings, which could indicate positive, negative, or neutral information through aspect of volume (number of reviews) and valence (number of star ratings). Furthermore, although product reviews and ratings are commonly used in online shopping, it is not easy or even possible to collect such information for certain products that are produced in limited quantity (e.g., luxury and jewelry products, auction products), or products that are sold by non-institutional/private sellers, or products that possess non-standard condition (i.e., previously owned products) due to limited number of purchase transactions. On such online shopping websites, product like becomes a suitable option that helps consumers share and gain more information about products and helps sellers understand their customers.

Beyond the benefit of helping consumers endorse something publicly online, the usage of likes could influence consumer behavior in various ways. The simple act of clicking on like button could have signaled changes in consumers' thoughts and actions toward brands and products (John et al., 2017; Mochon et al., 2017). Even among the consumers who do not engage in expressing their opinions over the internet, the display of number of likes could subconsciously affect their information processing and decisions (Naylor et al., 2012; Phua and Ahn, 2016; Sherman et al., 2016; Ding et al., 2017; John et al., 2017; Borah and Xiao, 2018; Sherman et al., 2018). In addition, consumers' attitudes

toward brands and products could be influenced indirectly or directly depending on where the like button is used. When likes are used on non-commercial websites (i.e., social media such as Facebook, Instagram), they help form consumers' perception of brand fans (de Vries et al., 2012; Naylor et al., 2012). They are also found to influence young consumers' opinions toward photos subconsciously regardless of whether the subjects in the photos are of risk-taking or non-risky categories (Sherman, 2016). When likes are used on commercial websites (i.e., online shopping, crowdfunding, donating websites), they could help provide consumers with more information about products, over and above information such as product description, prices, reviews, and ratings. In this research, to differentiate the likes used on social media websites from the likes used on online shopping websites, we would refer to the former as social media likes and the later as product likes.

The focus of this research is on the latter, the effect of product likes on consumers' inferences and purchase intentions when shopping on ecommerce websites. This is practically relevant because online shopping websites are where actual transactions occur. Many websites already use the product like button either as a sole alternative to or as an extra tool in addition to product ratings and reviews (see Appendix A, B, and C). We argue that product likes could have an influence on consumers' purchase intentions and that consumers will prefer products with higher number of product likes. Furthermore, we propose that the relationship could be mediated by perceived popularity and perceived quality. We are also interested in understanding the role of review valence in moderating the effect of product likes on consumer behavior as reviews and ratings are commonly used on online shopping websites.

The current research expects to make three contributions to the consumer research literature. First, we contribute to the literature of digital and social media marketing and consumer behavior by examining the effect of product likes, an emerging metric, on consumers' purchase intentions. Although the questions of how likes affect consumers and product sales have been studied by researchers (Beukeboom et al., 2015, Ding et al., 2017, Naylor et al., 2012, Mochon et al., 2017, John et al., 2017), there are still many aspects of the metrics that have not yet been studied. Specifically, in the current research, we investigate the impact of product likes (i.e., likes in the context of individual products listed on online shopping websites) on consumer behavior. Although research has addressed impact of social media likes on consumers' purchase intentions, research is still limited about product likes used on online shopping websites, where companies directly sell products to consumers. In addition, as product likes could be utilized to help consumers share and obtain more information about certain types of products whose reviews and ratings are not easy or possible to be collected, our research brings insights to how website features affect consumer experience. Secondly, we add to the literature of popularity information and consumer choice by showing that consumers' decisions could be impacted by whether and how many other consumers hold favorable opinions toward products. As product likes could be a proxy for popularity information, our research shows how consumers' decision could be influenced when they browse and shop for products online. Lastly, we add to the literature of product reviews by examining the interactions between reviews and likes and their effects on consumers' decisions.

The rest of the paper is organized as follows. First, we review the literature on the effect of likes on purchase likelihood and develop hypotheses regarding why product

likes influence consumers' perception of a product's popularity and quality. We then describe our proposed studies and expected results. Finally, we conclude the paper by discussing the paper's potential theoretical contributions and managerial implications.

CHAPTER 2

LITERATURE REVIEW

2.1 THE EFFECTS OF LIKES

The reason why likes attract research attention is because they quantify the information of the consumers who have favorable opinions about the products, which could affect other consumers' opinions and purchase intentions. While previous research has documented different findings about the effects of likes on consumer behavior and product sales in the context of social media platforms such as Facebook and Instagram, there is still a shortage of study on likes in the online shopping context. For a comprehensive summary of research on the impact of likes on consumers and sales, see Table 2.1.

There are several fundamental differences between product likes and social media likes. First, their main purposes are different from each other. Although social media websites have been increasingly expanded to include aspect of online shopping, their main goal remains as to help people connect and communicate with each other over the internet, which might not be directly connected with commercial purposes. On the contrary, online shopping's main goal is to facilitate selling activities for sellers and shopping activities for consumers. Thus, we argue that the purpose of social media likes is mainly to increase the effectiveness of communication, while the purpose of product likes is to enhance the information about products for commercial purposes. Secondly, how consumers refer to their previous product likes versus social media likes also differs

from each other. After clicking ‘like’ on a product, consumers could refer to their liking activities by reviewing a ‘wishlist’, which contains all the products previously liked by consumers. This wishlist is a website function that help consumers keep track of their favorite items for future purchase. Thus, when seeing a product page containing product likes, consumers are aware that the product is in consideration sets of other consumers. Hence, high number of product likes indicate the product is in high demand. Social media likes could also be reviewed by consumers in activity history rather than wishlist. High number of social media likes indicate that other people generally hold favorable opinion about something. These social media likes might not cater a strong message that other consumers are also seriously considering purchasing it. Lastly, product likes are created at product level, while social media likes are often created at a brand level. This substantially shows how differently product likes impact consumers’ purchase intention from how social media likes do. Viewing a brand receiving many social media likes could lead consumers to have favorable opinion about the brand, but not necessarily favorable opinion about a specific product to purchase. It is common that consumers buy a product from brand B even when favoring brand A more in general. This is where social media likes could not explain consumers’ decisions to purchase at product level. On one hand, researchers agree that there is a positive relationship between the information of social media likes on consumers’ brand evaluation, perception of credibility, purchase intention, purchase expenditures, and product sales. Goh et al. (2013) demonstrate that engagement in social media brand communities has a positive effect on consumer purchase expenditures and that user-generated content (UGC) has stronger effect on consumer behavior than marketer-generated content (MGC). Sherman

and colleagues explore adolescents' responses to photos with social media likes on Instagram and find that adolescents are more likely to click the like button on photos with higher likes than lower likes (Sherman et al., 2016, Sherman et al., 2018). More interestingly, they observe more activities in the neural regions that are associated with reward processing, social cognition, imitation, and attention. The effect is also shown to hold for both neutral photos and photos of risky behaviors. These results demonstrate that social media likes could have a significant perpetuating effect of others' opinions on consumers regardless of content category. Beukeboom et al. (2015) find that consumers' brand evaluations and purchase intentions are enhanced by Facebook likes due to consumers' perception of conversational human voice or interactivity with brands. Borah et al. (2018) investigate the effect of Facebook likes on consumers' perception of health-related information and show that the social endorsement moderates that relationship between gain-framing message and source type on credibility perceptions. In the context of cinema, there exists a positive association between the prerelease Facebook likes and movie revenues (Ding et al., 2017). They argue that because this social metric is easier for practitioners to manage than a post-consumption metric such as reviews, social media likes prove to be effective tools for companies to increase their box office sales.

However, other researchers raise concerns about certain conditions in which the effect of social media likes could turn insignificant or even negative toward brands. Naylor et al. (2012) study how observing the demographic characteristics (age and gender) of other brand supporters through Facebook likes could affect consumers' brand opinions, willingness to interact with brands on social media, and purchase intentions. They point out that the effect is significant but is not always favorable for brands.

Through seeing a few representative photos of brand fans via Facebook likes, target consumers perceive other supporters homogeneously different from themselves, the effect would be detrimental for brands. Additionally, Mochon et al. (2017) find that acquired Facebook likes influence offline consumer behavior only when used as a platform for firm-initiated promotional communications, and not when used as a platform for social interactions. Specifically, the effect of Facebook likes is significant only during the period when consumers interact with boosted posts on Facebook pages. When consumers interact organically with firms' Facebook pages, there is no significant effect of acquired Facebook likes on consumer behavior. More severely, John et al. (2017), however, conclude that Facebook likes have no positive effect on consumer behavior. They show that consumers' attitudes toward brands are formed due to prior fondness of the brands rather than due to simple Facebook like clicks. Examining the second-order effect of Facebook likes on friends of the consumers who clicked like buttons, they find that these social media likes decreased consumers' friends' likelihood to buy the brand.

Given most research indicates that observing social media likes are associated with some changes in consumer behavior and product sales, we argue that product likes could also be an information cue and consumers indeed take in consideration the number of product likes in their decision-making process. Furthermore, they adjust their behavior based on the inference made from observing the number of likes that those products receive. Since consumers associate likes with the perception that other consumers hold favorable opinions about products, the number of likes products receive could act as a measurement of social endorsement, indicating the products' popularity among consumers. Thus, products with higher number of likes would be perceived to be more

popular, which we suggest leading to higher purchase intention. We elaborate more on how perceived popularity influence consumers' opinions about product quality and purchase intentions in the next section.

2.2 POPULARITY INFORMATION AND PERCEIVED QUALITY

The effect of social influence on consumers' decision making has been long studied in the literature (Wood and Hayes, 2012). Deutsch and Gerard (1955) pointed out two types of social influence: informational and normative influence. When motivated by informational social influence, consumers allow themselves to be influenced by others to attain accuracy such as product quality. When motivated by normative social influence, consumers direct their goals toward keeping positive relations with other consumers and let this dictate how they are influenced by others' opinions. Deutsch and Gerard (1955) also suggested that normative motives guide judgments largely in public settings whereas informational motives are heightened in private settings. In the online shopping context, the identity of the people who clicked like on the product is unknown to consumers, rather than be fully or partially revealed as on Facebook or other social networking websites. Thus, we expect that online shopping resembles a private setting rather a public setting (i.e., browsing on a social networking website or shopping at retail stores). Consequently, we argue that when shopping online, consumers are more likely to be guided by informational social influence and be driven to understand product quality to make their purchase decisions.

In economics and marketing, a large literature about observational learning has shown that consumers observe peers' choices and use the popularity information to infer product quality (Banerjee, 1992; Bikhchandani, Hanson & Putler, 1996; Hirshleifer, &

Welch, 1998; Cai, Chen and Fang, 2009; Zhang, 2010; Tucker and Zhang, 2011; Powell et al., 2017). Consumers tend to use observational learning frequently in many settings, from dining at restaurants, downloading apps, buying books, visiting an online wedding vendor website to even deciding whether to accept a kidney offer in organ transplant situations. Cai, Chen and Fang (2009) show that demand for the top 5 dishes is found to be stronger when dishes' popularity rankings are highlighted, and that this effect is intensified among infrequent customers who do not have much knowledge of dishes' quality. Powell et al. (2017) find that rather than carefully evaluating product quality using advanced method, consumers "favor more-reviewed items because they view a product's popularity as an important social cue to its quality." Furthermore, although consumers might rely on popularity information to select certain options, the inclusion of popularity information could also lead to consumers' avoidance of certain products with information indicating low popularity. Zhang (2010) finds evidence of patients' inference of negative quality and higher likelihood to refuse to accept kidney offer when observing the kidney refused by patients earlier in the queue. Since number of product likes could be a proxy for popularity information, we hypothesize that observing a product with higher number of product likes could lead consumers to infer the product with higher quality and thus have higher purchase intention, compared to a similar product with lower number of product likes.

H1: The higher number of likes a product has, the higher the purchase intention consumers have toward the product (Figure 2.1).

H2 (Serial mediation with 2 mediators): The higher number of likes a product has, the higher purchase intention consumers have toward the product. This relation is

mediated by perception that products with higher number of likes are more popular, and that more popular products have better quality (Figure 2.2).

2.3 REVIEWS AND RATINGS

Consumers have been relying on different information and cues to evaluate different product options. The purpose is to understand more about product quality and reduce the risks associated with choosing low-quality products. Product reviews and ratings, written by other consumers, provide products' information perceived to be more credible than the information provided by companies and thus have been trusted by consumers during the evaluation and decision process (Goh et al., 2013). Although reviews (number of reviews) and ratings (number of stars) convey similar information and are often displayed next to product likes, there are a few substantial differences. First, reviews and ratings are typically post-purchase metrics. They provide more informative and functional information about the products (i.e., reviews: quality, side effects, effectiveness; ratings: positive, negative, or neutral experience) since they are created to record customers' opinions and are supposed to be created only after customers have the products. Product likes, however, are not necessarily to be created post purchase. They provide more affective and emotional information about the products (i.e., other consumers' preference of product) and can be created before or after people purchase the products. Second, ratings demonstrate valence (positive, neutral, or negative) and reviews demonstrate volume (number of reviews). Although number of reviews is not capped, ratings are bounded between 1 and 5 stars, with 5 stars as the highest possible rating that a product can receive. In addition, higher number of reviews could have different meanings: the products are viewed positively and receive lots of

reviews (compliments), or the products are viewed negatively and receive lots of reviews (complaints), or the products have just been on the market for long time or have been popular (more neutral compared to the two previous scenarios). Differently, product likes include only the aspect of volume (number of likes). The higher number of likes means the product is highly demanded by consumers and does not carry any negative meaning like in reviews.

At the product level, there has been consensus in the literature that consumers rely on product reviews and ratings to make their decisions (Berger et al., 2010; Berger and Schwartz, 2011; Dai et al., 2018; De Langhe et al., 2016; Zhu and Zhang, 2010). Researchers also demonstrate their concerns when using either only number of reviews or only average ratings in the evaluation process could lead to consumers' biases toward products and divergence from products' objective quality (De Langhe et al., 2015, Powell et al., 2017). In addition, even when consumers consider both average ratings and number of reviews, researchers reveal that average ratings are generally a more diagnostic cue of product quality than number of reviews (Watson et al., 2018). Grewal and Stephen (2019) contend that the negative valence in review could moderate consumers' usage of heuristic cues (i.e., device used to write reviews) in their decision-making process. When shown together with product reviews and ratings, product likes are accumulated over the time and continue to increase. At the same time, product ratings continue to fluctuate to reflect incoming consumers' post-purchase opinions about the products as ratings could be positive, negative, or neutral. Consequently, it is possible that a product has high number of product likes when product ratings decrease. This combination of information is perplexing to new consumers when they process both information to evaluate different

options. Based on the wealth of literature about consumers' valuation of negative more than positive information and ratings (Basuroy, Chatterjee, and Ravid, 2003; Chen and Lurie, 2013; Chevalier and Mayzlin, 2006), we hypothesize that consumers will be less likely to use number of product likes (i.e., put less weight in number of product likes) when evaluating products if the products receive negative average ratings. In another word, we expect that the effect of number of product likes on purchase intention will be more likely to sustain contingent on how positive the product's average rating is.

H3: The effect of number of likes on purchase intentions is contingent on how positive the product's average rating is (Figure 2.3).

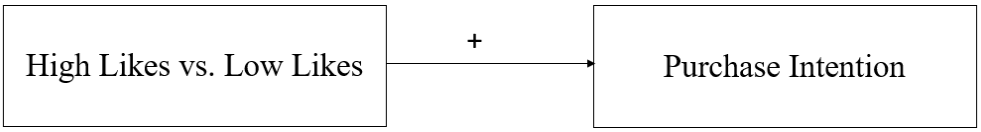

Figure 2.1: Main hypothesis

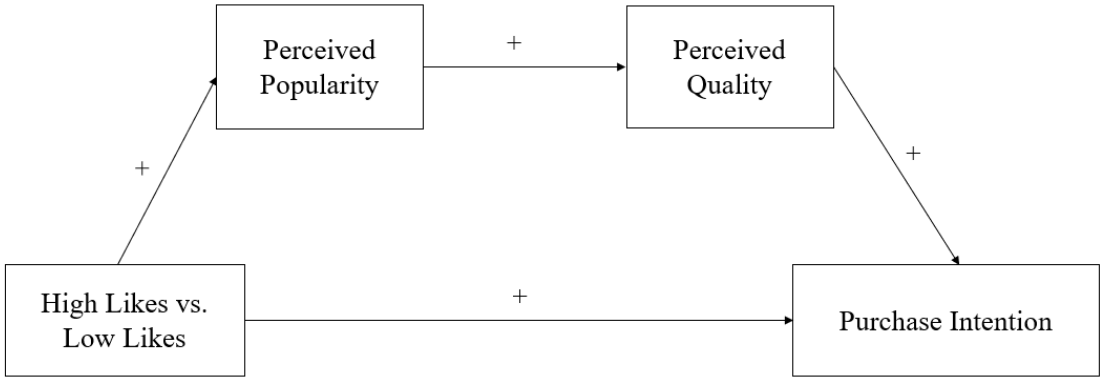

Figure 2.2: Serial mediation with 2 mediators

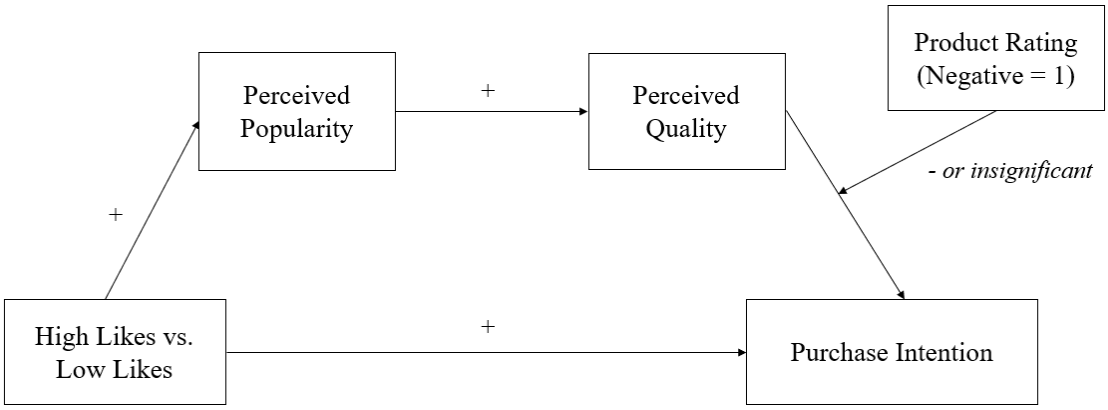

Figure 2.3: Serial mediation with moderator

Table 2.1: Summary of research about effect of likes on consumer behavior and sales

Authors	Context of Likes		Effect of Likes on		IV	DV	Key Likes Findings		
	Social Media	Online Shopping	Who Clicks Likes	Who Views Likes			Positive	Negative	Mixed or Null
Naylor, R. W., Lamberton, C. P., & West, P. M. (2012)	✓			✓	Similarities/Differences in Demographic characteristics between a Brand's Supporters and Target Consumers	Brand evaluations & Purchase intentions	✓	✓	✓
Goh, K. Y., Heng, C. S., & Lin, Z. (2013)	✓				Community content from consumers and marketers	Purchase expenditures	✓		
Beukeboom, C. J., Kerkhof, P., & de Vries, M. (2015)	✓		✓		Facebook Page Likes	Brand evaluations & Purchase intentions	✓		
Phua and Ahn (2016)	✓			✓	Facebook Page likes	Brand attitude, Brand trust, Purchase intention	✓		
Sherman et al. (2016)	✓			✓	Popularity (Many likes vs. few likes)	Likelihood to like photo & Neural responses	✓		

Ding et al (2017)	✓			✓	Number of prerelease likes	Box office sales	✓		
Mochon, D., Johnson, K., Schwartz, J., & Ariely, D. (2017)	✓		✓		Facebook Page Likes x Time Period	Incentive-based wellness point activity			✓
John, L. K., Emrich, O., Gupta, S., & Norton, M. I. (2017)	✓		✓	✓ (second-order: through FB friends)	Facebook Brand Likes; Inclusion of Traditional Marketing Activities - Advertisements	Brand attitudes & Purchasing propensity & Coupon redemption	✓	✓	✓
Borah, P., & Xiao, X. (2018)	✓			✓	Message frame, Source type, High/Low likes	Credibility perception of health information	✓		
Sherman et al. (2018)	✓			✓	Many/few likes	Activities in multiple brain regions	✓	✓	✓
De Vries (2019)	✓			✓	Likes-to-Followers ratio	Profile evaluation, Likelihood to follow account, Likelihood to recommend following account		✓	
Current Study		✓		✓	2 (High Likes/Low Likes) x 2 (Low/High Ratings)	Purchase intention			

CHAPTER 3

PROPOSED STUDIES

Four studies are proposed to investigate the hypotheses. Study 1 and 2 will be conducted to test the main effect of the effect of product likes on purchase intention with study 1 in the domain of beauty/personal care products and study 2 in the domain of home improvement. Study 3 will test the serial mediation model to examine whether perceived popularity and perceived quality mediate the effect of product likes on purchase intention. Study 4 provides understanding of whether the effect is moderated by a product's positive/negative rating. Each study is described in detail in the following sections.

3.1 STUDY 1

This study will test the effect of product likes on purchase intention. Participants will be provided with either a single product page of a product with either of two conditions: low number of product likes or high number of product likes. They will be asked to indicate their likelihood to purchase the product.

Participants, Procedure, and Stimuli

This study will involve undergraduate student sample. The study will have a two-cell between-subjects study design and students are randomly assigned to either of the two conditions. Respondents will be presented with a product listing page, which has a common layout as a product page they see when shopping online. Using the same layout from product pages on a leading beauty shopping website, we maintain the display of the

love button placed next to product ratings and reviews. Specifically, the manipulation of product likes would be done by providing the subjects with the information of the same product (a neutral-label lip balm) with either of the following versions: low number of product likes or high number of product likes.

Upon being presented with either of the two experimental conditions, respondents would be first asked to indicate their purchase intention toward the product on a multi-item 7-point scales from Dodds, Monroe, and Grewal (1991) (Appendix D). Lastly, participants were asked standard attention check questions and demographic questions.

3.2 STUDY 2

This study will test the effect of product likes on purchase intention with home decoration products. We seek to replicate the same results as in study 1 with a different product and when the product likes information is displayed away from the product reviews and ratings. Since the position of the like/love button is away from product reviews and ratings, study 2 could help us understand whether consumers consider product likes information rather than merely product reviews and ratings when evaluating a product. If product likes information is not substantially considered by consumers, the results of the two experimental conditions (low vs. high likes) would be highly similar, indicating that consumers only use reviews and ratings to make decisions. The difference between the two conditions, otherwise, would demonstrate that product likes information is not frivolous and that it influences consumers when considering products.

Participants, Procedure, and Stimuli

This study will involve US-based participants recruited from Amazon's Mechanical Turk. This study follows the same design as in study 1. Using the same

layout from product pages on a leading home furniture and decoration shopping website, we maintain the display of the love button placed on upper right of a product's photo, away from product ratings and reviews. Participants will also be provided with either a single product page of a lamp product with either of two conditions: low number of likes or high number of likes. Upon being presented with either of the two experimental conditions, respondents would be first asked to indicate their purchase intention toward the product using similar multi-item 7-point scales as in study 1. Lastly, participants were asked standard attention check questions and demographic questions.

3.3 STUDY 3

Study 3 will test the serial mediation model with the perceived popularity and perceived quality mediating the effect of product likes on purchase intention. In this study, we measure both perceived product popularity and quality to evaluate the validity of our proposed sequential process model (product likes ->perceived popularity -> perceived quality -> purchase intention).

Participants, Procedure, and Stimuli

This study involves having US-based participants recruited from Amazon's Mechanical Turk. The study follows a two-cell between-subject design as in study 1 and 2. We conduct this study with a stand mixer, a kitchen product that is commonly used by people of different ages and genders. Immediately following being displayed with a product page, participants will be asked to provide their intention to purchase the product using the same scale as in previous studies. However, rather than ending the study like in study 1 and 2, we measure respondents' perception of product popularity and quality right after. The scale used to measure perceived quality is adapted from Goedegebure,

van Herpen, and van Trijp (2020) (Appendix E), and the scale used to measure perceived quality is adapted from Dodds, Monroe, and Grewal (1991) (Appendix F). Lastly, participants were asked standard attention check questions and demographic questions.

3.4 STUDY 4

This study will be conducted to test whether the effect of product likes on purchase intention is moderated by a product's rating valence. We hypothesize that the effect of product likes on purchase intention will only sustain depending on how positive product's rating is.

Participants, Procedure, and Stimuli

This study involves having US-based participants recruited from Amazon's Mechanical Turk. The study follows a 2 (low number of likes/high number of likes) x2 (positive/negative rating) between-subject design. In the negative rating condition, a book is rated 2.5 stars while in the positive rating condition, a book is rated 4.5 stars. We conduct this study with a book product, which is commonly used by people of different ages and genders. More importantly, books generally require more effort to evaluate quality as their attributes are relatively qualitative, vary among different people, and are not as clearly shown as other products. Immediately following being displayed with a product page, participants will be asked for their purchase intention, perception of product popularity, and quality right after using similar scales as in previous studies. Lastly, participants were asked standard attention check questions and demographic questions.

CHAPTER 4

CONCLUSIONS AND DISCUSSION

The proposed research will examine whether number of product likes influence consumers' inference and purchase intentions when shopping on ecommerce websites. Following previous research on the effect of likes in social media on consumers' brand evaluation and product sales, the current research explores how product likes could influence consumers' perception of product popularity and product quality, both of which are relevant in determining consumers' purchase intention. We expect that the four studies would confirm our hypotheses that consumers are more likely to purchase products when the number of product likes is higher because of higher perception of product popularity and quality and that this effect will not sustain when products receive negative ratings.

The current research expects to make three contributions to the consumer research literature. First, our research will contribute to the literature of digital and social media marketing and consumer behavior by examining the effect of product likes, an emerging metric, on consumers' purchase intention. Specifically, in the current research, we investigate the role of likes in the context of individual products listed on online shopping websites on consumer behavior. Previous research has examined influences of social

media likes on consumer behavior and product sales but has not investigated how product likes yet. In addition, as product likes could be utilized to help consumer share and obtain more information about certain types of products whose reviews and ratings are not easy or possible to be collected, our research brings insights to how website features affect consumer experience. Secondly, we add to the literature of popularity information and observational learning by showing that consumers' decisions could be subjected to whether and how many other consumers hold favorable opinions toward products. Although product reviews, ratings, and product likes could be used to provide consumers with more information about other consumers' opinions about products, they are different in the purposes they are created, how they are collected from consumers, the information consumers infer about products, and possibly the types of products they could be used to provide consumers more information about. The phenomenon is not the same as product review and ratings and thus needs further investigation. Lastly, our research adds to the literature of product reviews by examining the interactions between product reviews and product likes and their effects on consumers' decisions.

This research will help provide insights on the industry practice of offering online information features for consumers to express their opinions about products, which would be informative for other consumers in decision making. As product reviews and ratings have been very commonly used in online shopping websites, product likes are an emerging metrics that could be generated with so much less efforts from consumers. A thorough understanding of how this metric could affect consumers' purchase decisions would be helpful for companies to increase sales from investing in beneficial features on their websites. In addition, for businesses in certain product categories, products are not

offered in large quantities (e.g., luxury and jewelries products, auction products, products sold by individual: non-institutional/private sellers) or standard condition (i.e., previously owned). Thus, product reviews and ratings might not be appropriate or easy to be collected. Product likes could be used as an alternative for reviews and ratings since they could aid consumers in their decision making.

To increase the external validity of the research, in the future avenues, researchers could extend our study to using data of product likes collected from real online shopping websites outside the experimental lab setting. In addition, as the literature on likes are still nascent, there could be more nuances in how the social engagement metrics influence consumers. For example, the effect of number of product likes on purchase intention could vary on whether products are of high-involvement or low-involvement category. We might expect the effect is heightened in the situation consumers need to make purchase decisions for others and is lessened in the situation consumers need to make purchase decisions for themselves. The urgency that consumers need to make purchase decision could also be found to affect consumers' tendency to use popularity heuristics in making purchase decisions. We hope our research could raise more research interests among academic researchers in understanding emerging metrics on online shopping.

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APPENDIX A

EXAMPLES OF ONLINE SHOPPING WEBSITES WITH PRODUCT LIKES ONLY

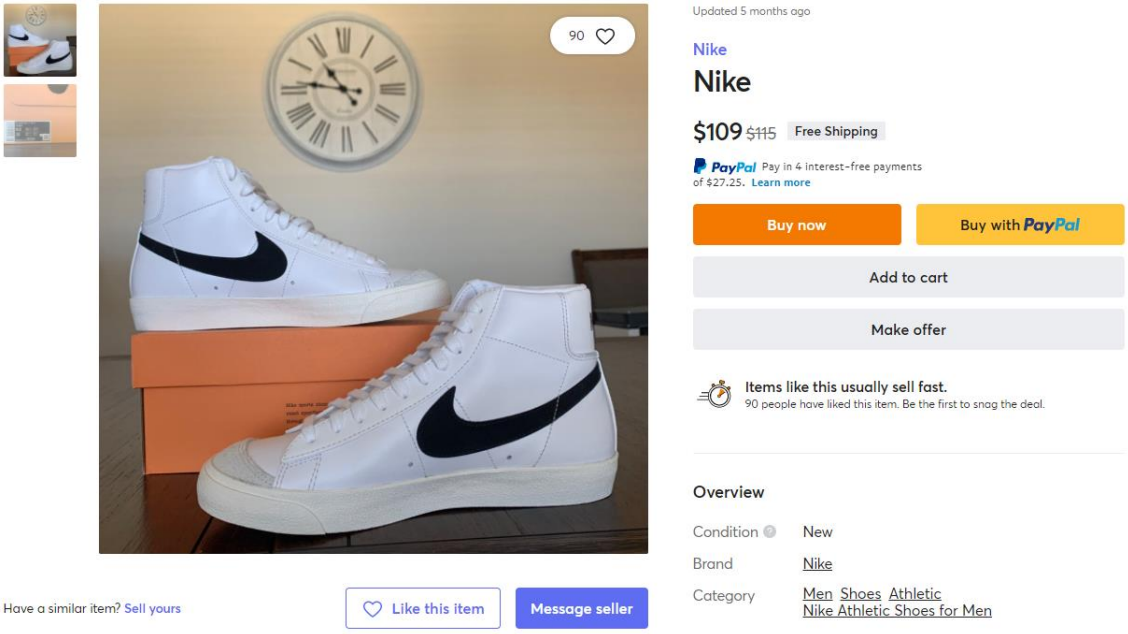


Figure A.1: An online marketplace with product likes (Mercari.com)

APPENDIX B

EXAMPLES OF ONLINE SHOPPING WEBSITES WITH PRODUCT LIKES AND REVIEWS/RATINGS

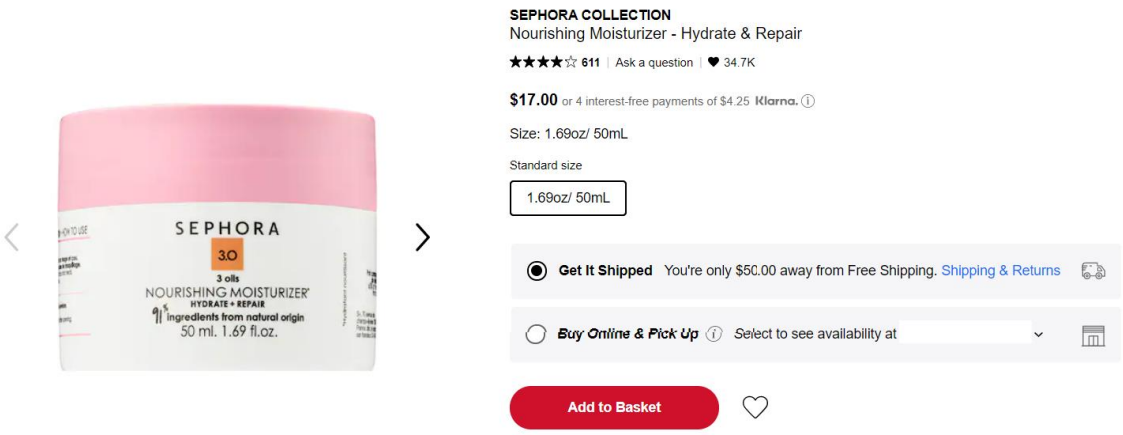
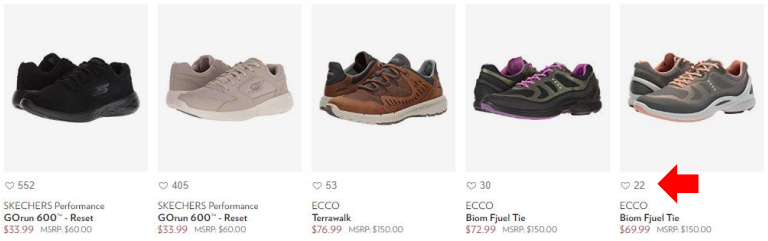
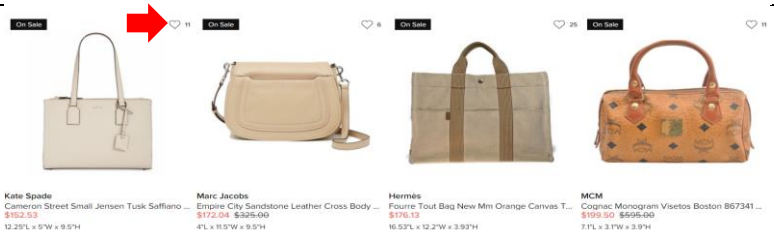
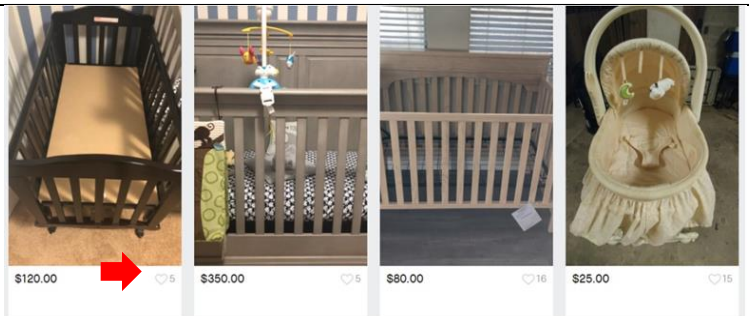
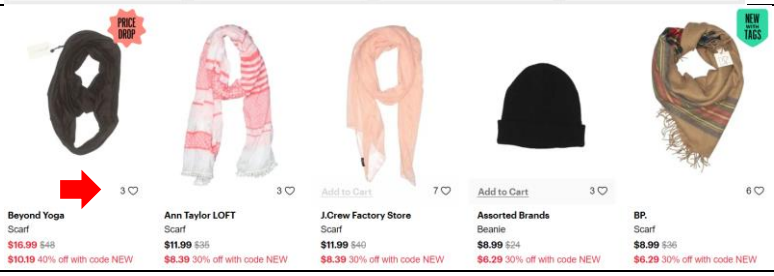


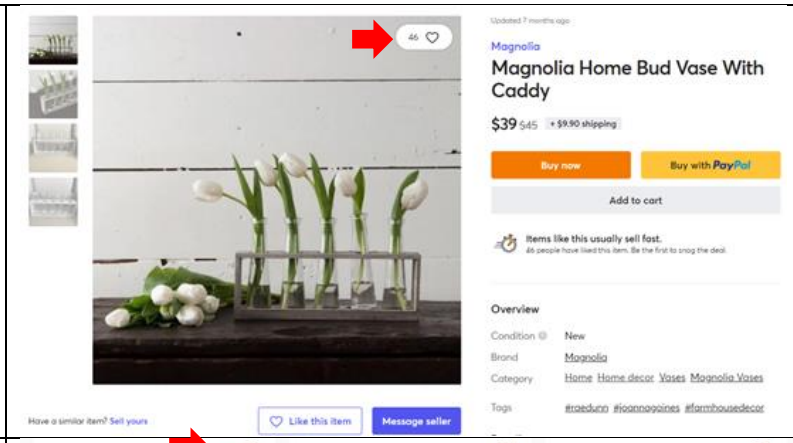
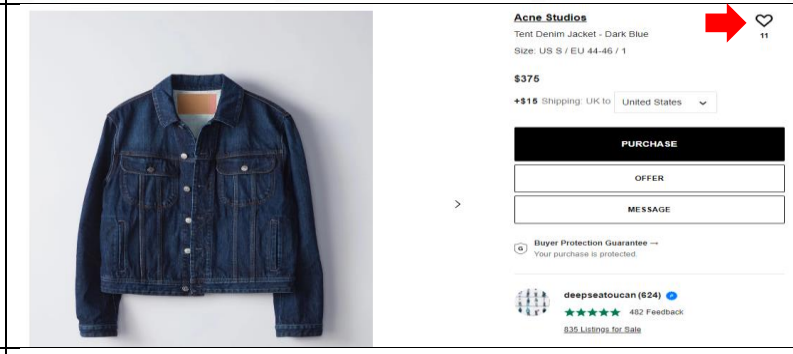
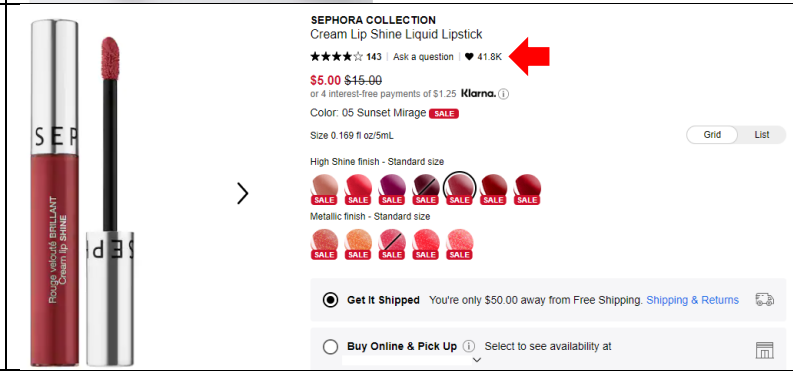
Figure B.1: An online shopping website with product likes and review/ratings (Sephora.com)

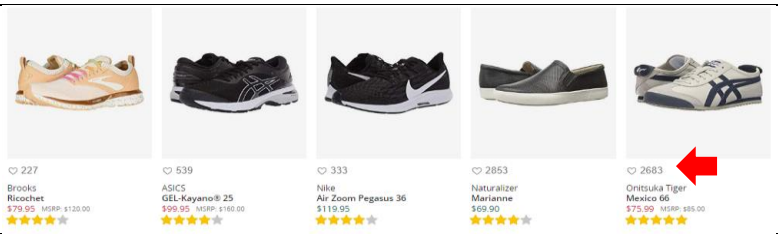
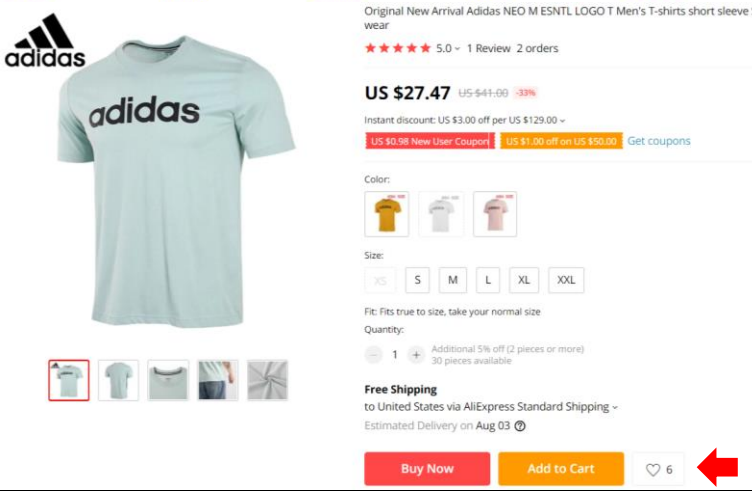
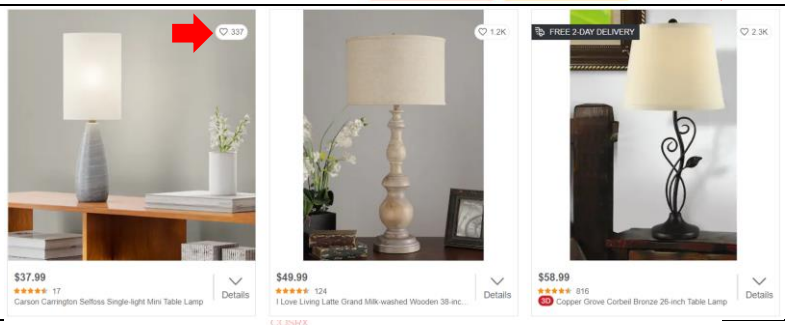
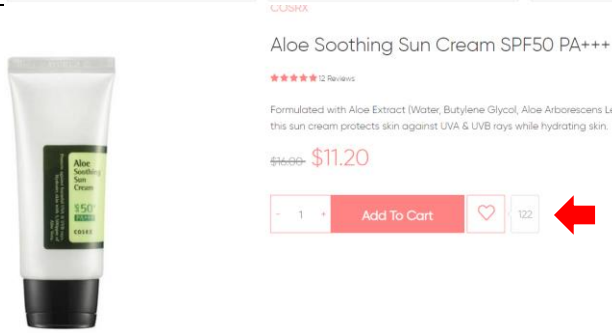
APPENDIX C

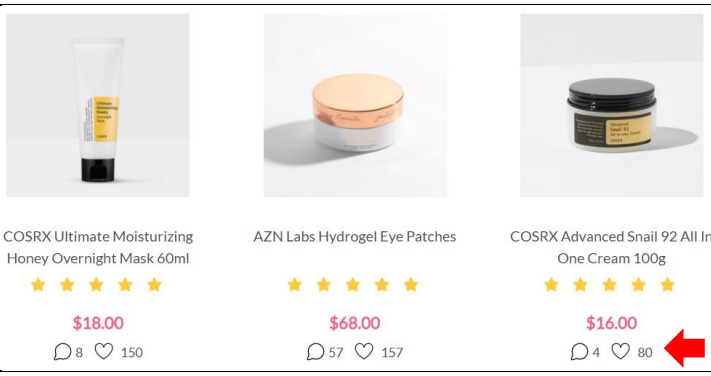
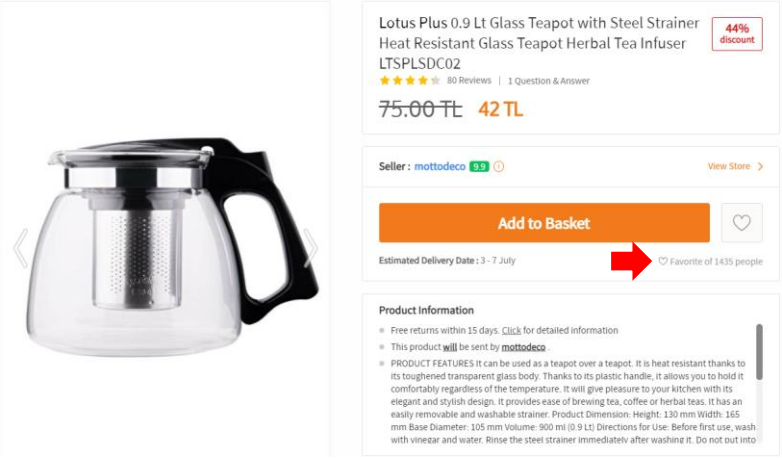
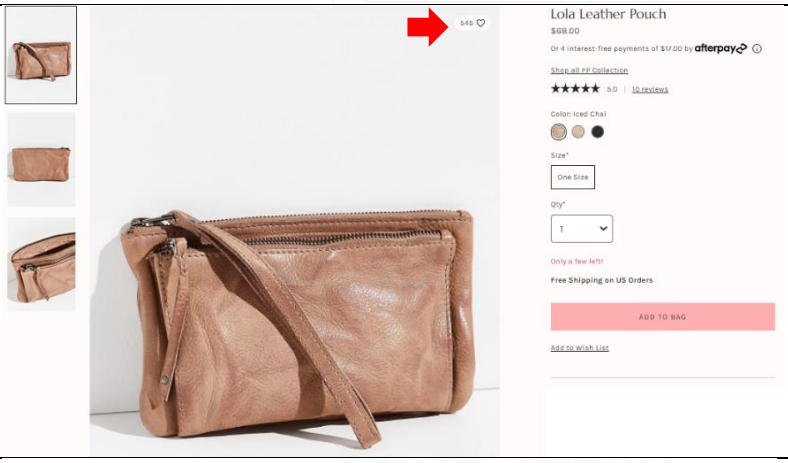
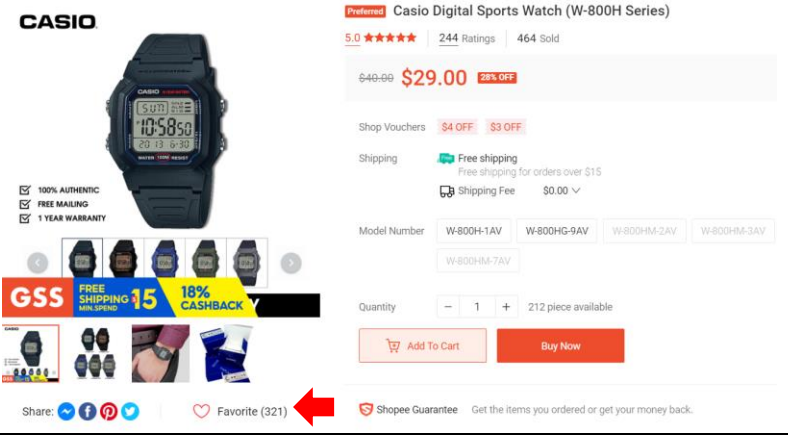
LIST OF EXAMPLES OF ONLINE SHOPPING WEBSITES WITH PRODUCT LIKES ONLY VS. PRODUCT LIKES AND REVIEWS/RATINGS

Table C.1: More examples of online shopping websites with product likes

	Company	Photo example
Product Likes only	6pm (Shoes and accessories) www.6pm.com	
	Tradesy (Pre-own luxury and fashion products) www.tradesy.com	
	Vinted (Pre-owned products) www.vinted.com	
	Thredup (Consignment and Thrift store) www.thredup.com	

Product Likes & Other Info (Reviews, Ratings)	Mercari (Online marketplace) www.mercari.com	
	Vestiaire Collective (Pre-owned luxury and fashion products) www.us.vestiairecollective.com	
	Grailed (New and used Men's fashion clothes) www.grailed.com	
	Sephora (Beauty products) www.sephora.com	

Product Likes & Other Info (Reviews, Ratings)	Zappos (Shoes and accessories) www.zappos.com	
	Aliexpress (Online marketplace – China) www.aliexpress.com	
	Overstock (Designer brands and home goods) www.aliexpress.com	
	Masksheets (Beauty products) www.masksheets.com	

Product Likes & Other Info (Reviews, Ratings)	Beauty tap (Beauty products) www.beautytap.com	
	Trendyol (Online marketplace - Turkey) www.trendyol.com	
	Freepeople (Women's apparel and lifestyle products) www.freepeople.com	
	Shopee (Online marketplace - Singapore) www.shopee.sg	

APPENDIX D

ITEMS USED TO MEASURE PURCHASE INTENTIONS

- The likelihood of purchasing this product is: (very high to very low)
- If I were going to buy this product, I would consider buying this product when seeing the number of likes shown on the product page (strongly agree to strongly disagree)
- Seeing the number of likes shown on product page, I would consider buying the product (strongly agree to strongly disagree)
- The probability that I would consider buying the product is: (very high to very low)
- My willingness to buy the product is: (very high to very low)

APPENDIX E

ITEMS USED TO MEASURE PERCEIVED POPULARITY

- This product is popular (strongly agree to strongly disagree)
- This product is in high demand (strongly agree to strongly disagree)

APPENDIX F

ITEMS USED TO MEASURE PERCEIVED PRODUCT QUALITY

- The likelihood that the product would be reliable is: (very high to very low)
- The workmanship/efficacy of product would be: (very high to very low)
- This product should be of: (very good quality to very poor quality)
- The likelihood that this product is dependable is: (very high to very low)
- This product would seem to be durable (strongly agree to strongly disagree)