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Why Do People Chase Fashionable Technologies? Toward a Systematic Understanding of IT Fashion Diffusion and Adoption of Fashionable IT

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WHY DO PEOPLE CHASE FASHIONABLE TECHNOLOGIES? TOWARD A SYSTEMATIC UNDERSTANDING OF IT FASHION DIFFUSION AND ADOPTION OF FASHIONABLE IT

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ABSTRACT

Fashion is a ubiquitous social phenomenon. People chase after fashionable clothes, furniture and jewelry for reasons beyond utilitarian benefits. Many people did not associate information technologies with fashion for a long time. Nevertheless, as consumer technologies become increasingly smaller and more portable, they can be carried around as body accessories that bear social meanings. The fashion elements have begun to exert tremendous influence on consumers' behaviors and companies' successes. The advent of fashionable technologies necessitates thorough research on IT fashion.

This dissertation aims to provide a systematic understanding of fashionable technologies. It first elucidates the process of IT fashion diffusion based on extant fashion theories and the unique characteristics of fashionable technologies. Then it investigates the reasons why people adopt fashionable technologies by identifying the core characteristics of fashionable technologies perceived by adopters and explicating how these perceived characteristics affect people's behavioral beliefs of using the technologies. To empirically test the research model, 256 responses were collected by hiring a professional survey company Qualtrics. The results support most of the hypotheses. The current dissertation lays the foundation for future IT fashion research and potentially breaks new theoretical grounds for the IS field.

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Lastly, I thank my husband Robert and other family members. They have always been there at my lowest points and have given me the courage to carry on.

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CHAPTER 1: INTRODUCTION

"But there's no question that for many, the iPhone has been and continues to be a "must have" purchase, a product that people just want for reasons beyond its technical features, a purchase they'll even line up for to have the day it comes out."

(Source: CENT.com[1])

People have long believed that fashion and utility do not go hand in hand. Women chase after tight jeans, high-heel shoes and short mini-skirts without considering comfortability or practicability. In his well-known book about fashion, Sproles (1979) argued that style is the unit of analysis in the fashion-oriented decision-making process instead of brand or function. However, the situation in which fashion and utility conflict with each other has changed with the widespread use of consumer technologies. Compared to organizational technologies, consumer technologies are expected to offer aesthetic and symbolic value in addition to utility. Consider cell phones as an example. Cell phones used to be dull and bulky, but they became more and more aesthetically appealing over the years, especially after Apple brought their products iPod into the fashion world.

To distinguish their products from other MP3 players, Apple first designed stylish looks for iPods. "It had a remarkable design, slim, understated, and white – incandescent" (Vejlgaard 2007, p. 139). Then they opened an Apple store in the trendiest district in New York City – the SoHo district, where most of the stores sell luxurious and high-fashion

[1] Danny Suillivan, "Life in the iPhone 5 line: Fashion as a must-have 'feature'," CNET.com, September 21, 2012. http://www.cnet.com/news/life-in-the-iphone-5-line-fashion-as-a-must-have-feature/

products. Meanwhile, iPods were promoted by famous fashion icons, such as Madonna and Beck. As a result, Apple was able to charge a premium price for their products and sold 100,000,000 iPods by 2007 (Vejlgaard 2007). Apple products have achieved great success ever since Apple adopted this strategy for all their products. Nowadays people line up in front of Apple stores whenever a new iPhone comes out, and these people are not necessarily motivated by the new technical features. "It's just shinier," said Elijah Tadj, who was waiting in line for iPhone 5 at 4 am[2]. Some other people are even willing to sacrifice performance for "something else". "I'm firmly in the fan group (for iPhone) that will stick with them no matter what," said another iPhone fan.[3] Evidently, people chase after these Apple products for reasons beyond utility.

Thanks to the advance of information technologies, not only can cell phones be fashionable, software, apps and websites could also be fashionable in today's world. For example, when e-commerce began to gain attention from the public, shopping online was associated with the symbolic meanings of 'wired' lifestyles (Shang et al., 2005). When the game console Nintendo Wii became popular among normal consumers instead of game lovers, people invited friends to play games on Wii at home, not only because it was fun but also because it was "cool" to own the device. Some functional features of the console allow people to show off the device, and hence these features began to bear symbolic meanings. Touch screens of smart devices do not only offer convenience to the

[2] Danny Suillivan, "Life in the iPhone 5 line: Fashion as a must-have 'feature'," CNET.com, September 21, 2012. http://www.cnet.com/news/life-in-the-iphone-5-line-fashion-as-a-must-have-feature/
[3] Danny Suillivan, "Life in the iPhone 5 line: Fashion as a must-have 'feature'," CNET.com, September 21, 2012. http://www.cnet.com/news/life-in-the-iphone-5-line-fashion-as-a-must-have-feature/

users but also help distinguish trendy people and "outdated" people.[4] The realm of fashion has been expanded with the advent of fashionable technologies. Previously, people always associated fashion with aesthetics, such as clothing styles (Sproles, 1979). Nowadays, when people purchase fashionable technologies, aesthetics is not their only consideration. Instead, they chase after these technologies for the trendiest and "coolest" features, such as the touch-screen and the intelligent assistant for smartphones. The meaning of fashion has been changed in that not only can style be fashionable, but functions can as well. Fashion and utility are united by fashionable technologies. Therefore, since IT fashion is different from the traditional clothing fashion, IS researchers can't simply apply clothing fashion research to IT fashion. New studies should be conducted to provide a fresh understanding of IT fashion.

Specifically, the concept of fashion needs to be redefined in the context of consumer technologies. Moreover, how IT fashion is diffused and why people chase after IT fashion need to be investigated. People could chase after IT fashion for different reasons, such as aesthetics and social meanings. However, in the context of IT fashion, the utility of a technology is another important consideration, and it impacts people's behaviors in two ways: 1) people may chase after fashion IT for the cutting-edge functional features; 2) the functional features themselves provides symbolic meanings which further attracts people to adopt the technology. Thus, new research should be conducted to study the unique relationship between utility and fashion and the motivations behind which people adopt fashionable technologies.

[4] Time, "The Few, The Proud: The Millennials Who Still Use Flip Phones," http://time.com/3318573/flip-phones-millennials-iphone6/

Traditionally, fashion literature focused on aesthetic products such as clothes (Abrahamson 1996; Vejlgaard 2007). Numerous articles and books tried to explain the fashion phenomenon from different perspectives. Some scholars studied the movement of fashion cycles and consumer behaviors in Economy (Corneo and Jeanne 1994; Frank 1985; Leibenstein 1950; Nystrom 1928; Pigou 1913). Sproles (1979) studied fashion through the lens of information-processing view in cognitive psychology. The most widely known fashion theories are the "trickle-down" theory by Simmel (1905) and "trickle-up" theory by Blumer (1969). The former one represents the traditional notion of fashion, which argues that fashion is a result of the lower class imitating the upper class by adopting the same style that the upper class endorses. The latter one disagreed with Simmel by contending that fashion is not determined by the upper class but instead is shaped by social changes. These fashion theories proved that fashion is an important determinant of human behaviors (Blumer 1969; Davis 1992; Miller et al. 1993; Nystrom 1928; Phau and Lo 2004; Reynolds 1968; Robinson 1958; Sproles 1979; Wasson 1968), but they need to be adapted to fit the IT fashion context. Despite two empirical studies on IT fashion at the organizational level (Lee and Collar Jr 2003; Wang 2010), studies on fashionable IT at the individual level are limited (Sun et al. 2014; Tzou and Lu 2009; Yang and Hsu 2011). Sun et al. (2014) examined the influence of fashion waves on post-adoption regret. Tzou and Lu (2009) and Yang and Hsu (2011) investigated the factors that influence the adoption of fashion technologies. Tzou and Lu (2009) proposed four factors as the antecedents of intention to use fashion technologies: perceived usefulness, perceived ease of use, pleasure and beauty, while Yang and Hsu (2011) further added two

more antecedents: social norms and perceived critical mass. Although these factors might be relevant to fashion, they fail to capture the uniqueness of IT fashion. These factors were adopted from other studies that concentrate on the context of general IT adoption and were not tailored and justified for the fashion context. For instance, the construct aesthetics could not reflect the relative and temporal nature of fashion. What's more, the nuanced relationship between different motivations and factors were not captured as well.

Overall, fashion is a complicated social phenomenon, evidenced by numerous fashion theories and studies from different perspectives. Understanding IT fashion will be even more challenging in that fashionable technologies are clearly distinct from fashionable clothes. Nevertheless, the extant fashion theories in other disciplines and related IS research on fashion failed to provide a holistic understanding of IT fashion. Thus, this research aims to first address the fundamental research question:

How is IT fashion formed and diffused in a social system?

Specifically, three sub-questions need to be addressed:

1. *What are the differences between fashionable technologies and aesthetic fashion products that were traditionally studied in the fashion literature?*
2. *What is the definition of fashionable technologies?*
3. *How is IT fashion formed and diffused?*

The first research question aims to understand IT fashion phenomenon at the macro and social level. After establishing a holistic understanding of IT fashion, more specific research model will be proposed, and the research model aims to under IT fashion phenomenon at the micro and individual level. More specifically, this study

focuses on the issue of fashion IT adoption in the consumer setting. Thus, the second fundamental research question is:

Why do people adopt fashionable technologies?

According to the theory of reasoned action (TRA), people's beliefs or perceptions about performing a behavior determine their attitudes toward it, which in turn affect their behavior intentions (Ajzen and Fishbein 1980). Therefore, it's reasonable to study the influence of fashion on consumers' behavior from the perspective of consumer perceptions. This research will first identify the core characteristics of fashionable technologies from consumers' perspective and then investigate how these characteristics affect people's behaviors through different motivations. This leads to two sub-questions:

4. *What are the major characteristics of fashionable IT that are perceived by consumers?*

5. *How do these perceived characteristics affect consumers' intention to adopt fashionable technologies?*

1.1 Research Frame

To provide a fresh understanding of IT fashion, fashionable technologies need to be defined first. In the current study, a fashionable technology was defined as *a technology with novel features which is temporarily adopted by a discernible proportion of members of a social group and delivers symbolic meanings for the time and situation*. Next, I proposed the process of IT fashion diffusion based on previous fashion theories and the unique characteristics of fashionable technologies (see Figure 1).

The process of IT fashion diffusion is largely based on innovation diffusion life cycle by Rogers (1962), which was applied to the fashion life cycle by Wasson (1968) and Sproles (1979). Fashion life cycles consist of five phases: market development, rapid growth, maturity, saturation and decline. I argued that in the early stage of IT fashion, novelty is crucial to the formation of IT fashion. Compared to fashionable clothes, fashionable technologies do not only have stylish looks but also have novel functional features that offer new capabilities to the users. Novel features of fashionable technologies meet people's desire for novelty, which is the most salient impetus in the early stage of IT fashion. However, not all novel technologies are fashionable. According to innovation diffusion theory by Rogers (1962), the diffusion of an innovation needs to reach the point of critical mass in order to become self-sustaining. That is, novel technologies cannot be fashionable until they reached the point when a discernable number of people in a social group are using the technology (Sproles 1979).

After the point of critical mass, social influence of fashion begins to take off in two different ways. On one hand, people with prestige or social status in one's social group legitimize the usage of the technology and make it become social norms in this group, according to trickle-down theory (Simmel 1904) and trickle-up theory (Blumer 1969). People adopt the technology in conformity with these social norms. On the other hand, symbolic meanings associated with the technology are constructed out of the aesthetic and functional features of the technology during the diffusion process. People who identify with these symbolic meanings consider using the technology as a way to express their own personalities, values, tastes, and lifestyles, based on self-congruity

theory (Grubb and Grathwohl 1967; Sirgy 1982; Sirgy 1985). In addition to the social influence of IT fashion, massive herd behaviors also occur based on the calculation of utility maximization. People defer to other people's decisions to adopt fashionable technologies instead of their own opinions. Eventually IT fashion begins to decline when fashionable technologies do not appear to be novel anymore and fail to meet people's desire for novelty.

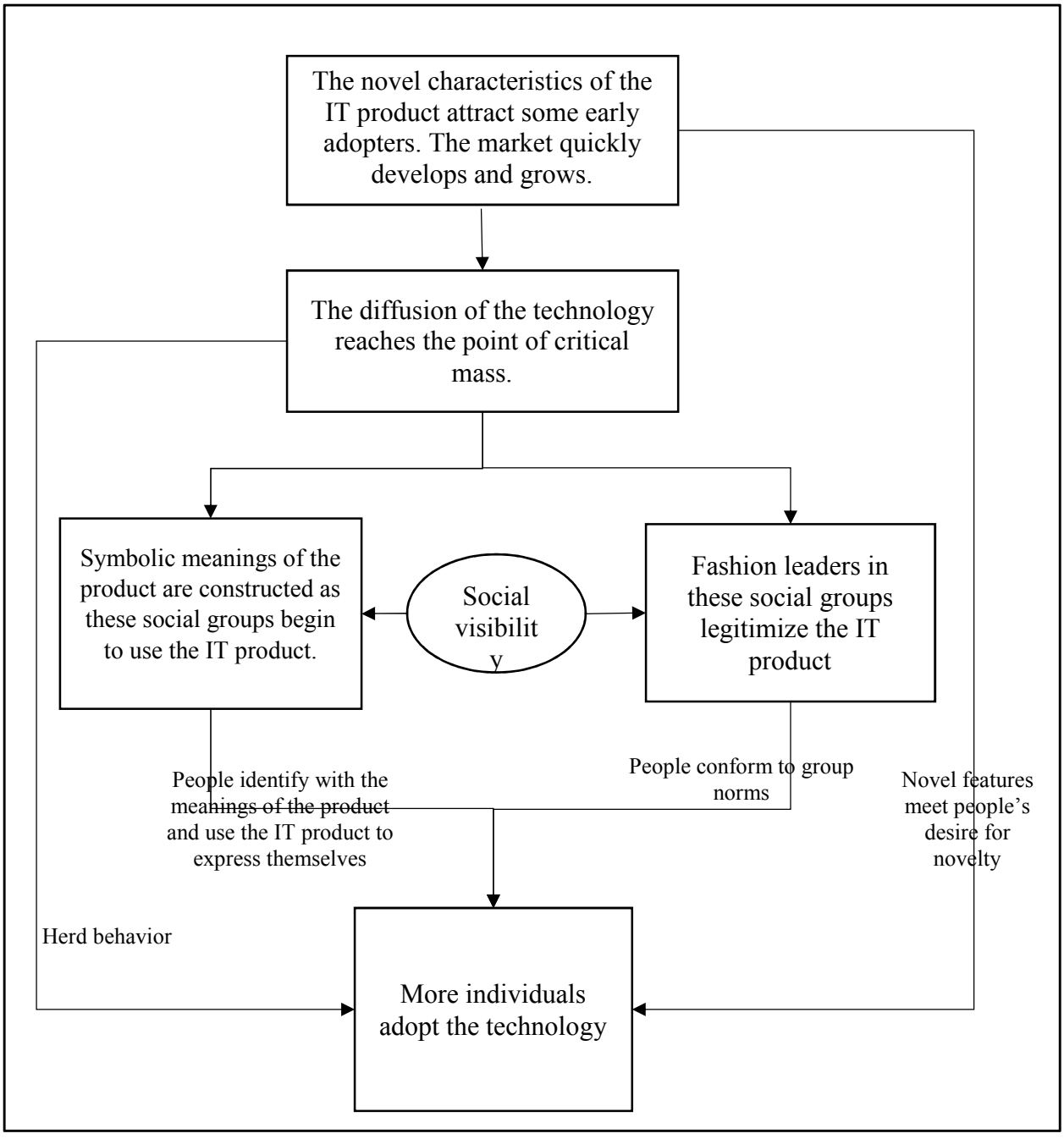

Figure 1. IT Fashion Diffusion

Based on the proposed IT fashion diffusion process, I argued that there are four motivations for adopting fashionable technologies: desire for novelty, group conformity, individualism, and herd behavior. Next, I proposed a research model of IT fashion

adoption based on the two-beliefs model by Wixom and Todd (2005), as shown in Figure 2. I this model, I identified four object-based beliefs about fashionable technologies: collective adoption, social endorsement, novelty and IT congruity. Then I identified four behavioral beliefs that pertain to the consequences of using fashionable technologies: perceived utilitarian belief, perceived external symbolic value, perceived internal symbolic value and perceived hedonic value. The four object-based beliefs impact behavior beliefs through the aforementioned four motivations. Specifically, I argued that novelty of IT meets people's desire for novelty and leads to perceived hedonic value. Collective adoption and social endorsement incur the belief that the utilitarian value of the technology is high because other people are all using it, which leads to herd behaviors. Collective adoption and social endorsement also cause group conformity, which makes people adopt the technology to obtain external symbolic value. Lastly, IT congruity describes the congruences between people's self-identity and the symbolic meanings of the technology. People tend to use the technology to express themselves when they perceive the congruence between the two. I further explained the seemingly contradictory relationship between external symbolic value and internal symbolic value.

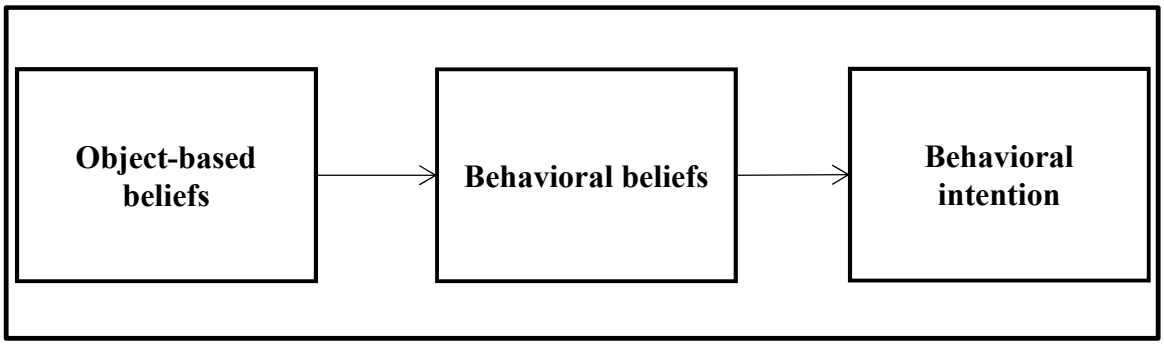

Figure 2. The Overall Frame of the Model

1.2 Empirical Settings

To test the research model, measurement items of the constructs were first developed based on the review of extant literature and the use of the domain sampling method. Card-sorting exercises were used to refine the items with IS researchers and IT professionals. Three technologies – Apple Watch, iPhone 7 and iPhone X – were selected for the pilot test. Around 50 responses were collected for each technology through an online survey. A professional survey company Qualtrics was hired for survey distribution and response collection. The three target technologies were compared against each other based on the core characteristics of fashion IT, and Apple Watch was chosen for the full test. The survey instrument was further refined by examining the reliability and validity of the constructs. Lastly, a full test with 256 responses was conducted. Results of the empirical test supported most of the hypotheses. In addition, perceived internal symbolic value was found to fully mediate the relationship between perceived external symbolic value and adoption intention.

1.3 Contributions

This dissertation contributes to the fashion literature and IT adoption literature in the following way:

1) By defining fashionable technologies and identifying the core characteristics of fashionable technologies, the current dissertation integrates the discrepant understandings of fashion and answers the question "what makes a technology fashionable". What's more, the magnitudes of the core characteristics of fashionable technologies are expected vary at different stages of IT fashion

life cycle. This novel understanding of IT fashion extends previous studies on fashion in both the IS field and other disciplines

2) By decomposing consumers' perceptions of fashionable technologies, the current study also offers a holistic understanding of IT fashion diffusion and explains the different reasons why people chase after IT fashion and how these different factors interact with each other. The current study also explains the differences between fashionable technologies and fashionable clothes which lead to different diffusion processes for IT fashion and clothing fashion.
3) The dissertation extends the studies on herd behavior in the IS field by explaining why herd behaviors are particularly salient in IT fashion context and how fashion factors affect people's perception of utility.
4) By dividing symbolic values into external symbolic value and internal symbolic value, the current study discovers that group conformity and individualism could go hand in hand in the context of IT fashion, which provides a deeper understanding of the impact of self-identity on IT adoption.

This dissertation also has significant practical implications:

1) The dissertation offers suggestions to IT manufacturers and marketers as to what fashionable technologies are and when a technology is fashionable.
2) It suggests that IT manufacturers should devote their effort to making significant technological improvement to make their product fashionable but could also manipulate the symbolic meanings associated with their products to distinguish from other products.

3) It also suggests that people could chase fashionable technologies for different reasons and hence IT practitioners should distinguish different motivations and customize their sales promotions and marketing strategies accordingly.
4) The current study also reveals that different technologies could be used for different symbolic purposes. One could use Apple Watch to express individuality while use iPhones to signify social status. Thus, the marketing strategies of these technologies should match different symbolic purposes accordingly.

1.4 Structure of the Dissertation

This dissertation is structured as follows:

Related theories and studies on the formation and diffusion of fashion are reviewed in chapter 2. The difference between IT fashion and clothing fashion is then discussed.

In chapter 3, the process of IT fashion formation and diffusion is proposed, which aims to provide a holistic view of IT fashion phenomena and lay down the foundations for the specific research model in the current study.

In chapter 4, the overarching frame of the research model is presented, and core constructs are conceptualized. The research model and hypotheses are then explained based on related fashion theories, self-identity theories, herd behavior perspective.

In chapter 5, the procedure to test the research model is then explicated, following the validation procedures suggested by MacKenzie et al., (2011). After that the empirical results are demonstrated.

Lastly, the theoretical and practical implications of the study are discussed in chapter 7. Chapter 8 discusses the limitations and future directions of the current study. Chapter 9 briefly summarizes and concludes the dissertation.

CHAPTER 2: LITERATURE REVIEW

Fashion was once considered irrational and trivial and didn't receive enough attention from the academia for a long time (Kawamura 2011). Later, scholars realized the ubiquitous existence of fashion and its importance to consumer behaviors. Blumer (1969) argued that the adoption of fashion products is usually out of thoughtful consideration and calculation, in that people need to deliberately observe other people and identify the current fashion trends to make sure that they follow the right one. At the organizational level, Wang (2010) argues that investing in fashionable technologies can increase companies' long-term performance. Considering the importance of fashion phenomenon, researchers from various fields (e.g., sociology, psychology, economics, marketing) have been dedicated to studying fashion (Blumer 1969; Miller et al. 1993). In order to understand the IT fashion phenomenon, it's important for us to understand how IT fashion is formed and diffused, and how IT fashion differs from clothing fashion, which has been studied by other disciplines. To do that, I will first review the extant fashion theories that were developed in these disciplines to understand the formation and diffusion of fashion and to anchor the current study on these theories. The following section is going to introduce the major theories on the formation and diffusion of fashion and fashion-related empirical studies in the IS field.

2.1 Related Fashion Theories

Sproles (1979) has defined fashion as "a way of behaving that is temporarily adopted by a discernible proportion of members of a social group because that chosen behavior is perceived to be socially appropriate for the time and situation." Fashion

phenomena have been widely studied in many disciplines and numerous fashion theories have been generated. On one hand, fashion theories in economics and sociology investigate the formation and diffusion of fashion life cycles at the macro/social level (Bikhchandani et al. 1992; Frank 1985; Leibenstein 1950; Nystrom 1928; Pigou 1913; Simmel 1904; Veblen 1899). Among them, the sociological theories that adopted symbolic interactionism fall between social level and individual level (Blumer 1969; Kawamura 2018; Lang and Lang 1961). On the other hand, fashion theories in psychology and semiology are mostly developed at the micro level and focus on studying individual behaviors and personal differences. In the following sections, I will review these fashion theories in different disciplines and explain how they inspire the current study. Meanwhile, considering the massive amount of fashion literature, I only review the most influential fashion theories that are widely cited and most relevant to the current study.

2.1.1. Fashion Theories in Sociology

Classical sociologists are among the early ones who theoretically conceptualized the notion of fashion (De Tarde 1903; Simmel 1904; Spencer 1896; Veblen 1899). They believe that fashion was spurred by postmodern capitalism. They argue that the development of fashion requires a certain level of mobility across social classes. Before the sixteenth century, social mobility almost didn't exist in the western societies. Different social classes and occupations adopt distinctly different dress codes. No ambiguity exists in terms of the signals delivered by these clothes; However, in postmodern times, social mobility has greatly increased. There are no clear dividing lines

among social classes. People have a variety of choices about what to wear for different occasions, which could cause confusion during social interactions because people cannot easily read clear information about the status, occupation, wealth, and social affiliation of the wearers. In this case, social negotiation of "what is desirable, appropriate, acceptable, attractive, tasteful, or modern" is needed (Kaiser et al. 1991, p. 175). Fashion is created during the process in which people constantly negotiate about the social class or social group that a certain style of clothes represents (Kaiser et al. 1991; Stone 1962). Furthermore, classical sociologists shared the view that fashion is the result of imitation. "Fashion functions as an equalizing mechanism because imitation is one the means of reducing inequality, suppressing caste, class, and national barriers" (Kawamura 2018, p. 24).

Among the classical sociological fashion theories, the most well-known one is the "trickle-down" theory by Simmel (1904) and Veblen (1899). According to trickle-down theory, the upper class, particularly, the celebrities and elite are believed to be the trendsetters of fashion. In order to distinguish them from the lower class, the upper class constantly seeks to adopt new styles of clothes. As the style becomes the symbol of the upper class, people from the lower class who want to be considered part of the upper class emulate the upper class by adopting the same style. As more and more people adopt the same style, a fashion takes place. However, the upper class will abandon that style when too many people are adopting it and seek new styles to distinguish them from the rest. Thus, fashion cycles keep evolving in the process of innovation and emulation.

Different from classical sociologists, later sociologists refuted the notion that social structures determine individual behaviors (Blumer 1969; Kawamura 2018; Lang and Lang 1961). Instead, they adopted symbolic interactionism and argue that individuals can actively construct their own reality and that society and agency mutually depend on each other. Specifically, they believe that individuals can actively "interpret, evaluate, define, and map out their own action, rather than as passive beings who are impinged upon by outside forces" (Kawamura 2018, p. 42). Symbolic meanings an object bears are constructed out of social interaction and interpretation, individuals act based on these meanings. By adopting symbolic interactionism, these sociologists studied both the social organization of fashion at the macro level and the fashion designers and adopters at the micro level. Particularly, Blumer (1969) refuted the class differentiation model and created the "trickle-up" or collective selection model. Blumer (1969) contends that the elite members don't set the trends but merely respond to the changes in the society. He claimed that fashion trends reflect the changes in many social realms in a modern society, such as people's daily needs, architecture, literature, and art. The designers and fashion leaders sense the changes happening in modern development, select the styles that could reflect these changes and then promote them through various fashion channels, such as fashion magazines, fashion shows, commercials, and so on. He believes that fashion is the result of collective selection.

Lastly, "trickle-across" theory or mass market theory (King 1963; Robinson 1958) also opposes the point that fashion is started by the upper class. But different from trickle-up theory, trickle-across theory argue that new styles can spread across all social

classes almost simultaneously, due to the mass production of commodity and rapid communication across social classes. He also believed that fashion leaders could come from consumers' own social classes or peer groups.

Summary and takeaway: overall, fashion theories in Sociology provide us theoretical bases for understanding the dynamics of fashion. From these theories, we understand that fashion appears in a society with a certain level of mobility. It may trickle down from the upper class to the lower class and reflect the collective taste of the public. Nevertheless, these fashion theories did not provide explicit explanations for individuals' decision-making processes and their various motivations to adopt fashion items. Table 1 summarizes the major fashion theories in Sociology.

Table 1. Extant Fashion Theories in Sociology

Theory Name	Author and Year	Summary	Explanations for Individual Motivations in the Theory
Trickle-down theory	Simmel 1904; Veblen, 1899	The theory argues that fashion arises from class differentiation and trickle down from the higher class to the lower class. The lower class imitates the upper class by adopting the style which symbolizes the upper class.	Upper class adopt fashion items in order to distinguish from the lower class, while the lower class adopt the fashion items to obtain social status.
Trickle-up theory	Blumer, 1969	The theory argues that fashion trends reflect the changes in many social realms in a modern society, such as people's daily needs, architecture, literature. Thus, fashion trickles up from the public to the designers and leaders.	People converge on their choices of clothes in that the clothes represent a collective public taste.
Trickle-across theory	King (1963), (Robinson 1958)	The theory shared the same view with trickle-up theory that fashion does not come	No explanation

		from class differentiation, instead, fashion styles can spread across all classes almost simultaneously because of the mass production and communication.	

2.1.2 Fashion Theories in Economics

Economists on fashion mainly focus on studying the rate and duration of fashion life cycles from the perspective of economics. Nystrom (1928) was among the early researchers who argue that fashion could be studied in the form of cycles. He proposed several factors that could influence the diffusion of fashion across a social system, including technology advances, consumer education, economic prosperity, and most importantly, consumers' imitation behaviors. Nystrom also attempted to identify the psychological motives for fashion, including curiosity, disappointment with achievements, lack of more serious interests, and philosophy of futility. He argues that the last three could cause fatigue or boredom, which drives people to chase after the newest fashion. Nystrom didn't systematically theorize the formation and evolution of fashion life cycles, but instead, he illustrated his speculations with several examples, such as fashion accessories. Later, other researchers tried to extend his work to explain the formation of fashion life cycles with the snob and bandwagon effects (Frank 1985; Leibenstein 1950; Pigou 1913). They argue that fashion cycles start with people's status-seeking behaviors. Their demands for a certain product are a function of the aggregate demand of other people. The higher the aggregate demand of other people, the high their demands for this product, which results in the bandwagon effect (Leibenstein 1950). Similarly, the snob

effect argues that people perceive the highly priced fashion items as indicators of privilege, and they are willing to pay for the premium to obtain social distinction (Leibenstein 1950).

In contrast, Bikhchandani et al. (1992) considered fad and fashion as informational cascades. They use perfect Bayesian equilibrium to study how individuals make decisions based on the observation of their predecessors' decisions. Specifically, they examined a sequence of individuals who are making decisions about whether to perform a certain behavior. Each individual observes the predecessors' decisions and the "utility" of the behavior. If individuals choose to follow the predecessors' behaviors and ignore his private information signal, then an informational cascade occurs. He argues that once a cascade starts, it will last forever. However, many informational cascades are wrong and hence fragile. A cascade will break when: 1) underlying values changed 2) "individuals' signals have different distributions", and 3) "public information is revealed at a later date" (Bikhchandani et al. 1992, p. 1000). He also discussed the role played by fashion leaders, referred to as people with higher precision. He argues that if an individual with higher precision makes the decision first, then it's more likely to lead to informative cascades in that everyone else will just refer to his decision instead of relying on their own information.

Summary and takeaway: overall, fashion theories in economics investigated fashion phenomena from the angle of supply and demand or information processing view. Snob effect shared the same point of view with fashion sociologists that people adopt fashion items to obtain social distinction. However, bandwagon effect and informational

cascade view differ from the fashion sociologists in that they believe people are motivated to obtain better utility when they choose to follow the crowd. Both sociologists and economists approached fashion phenomenon at the macro level but lack a deep understanding at the micro level. Table 2 summarizes the major fashion theories in economics.

Table 2. Extant Fashion Theories in Economics

Theory Name	**Author and Year**	**Summary**	**Explanations for Individual Motivations in the Theory**
Economics of Fashion	Nystrom 1928	He believed that fashion could be studied in the form of cycles. He proposed several important factors that influence the diffusion of fashion across a social system, including technology advances, consumer education, economic prosperity, and most importantly, consumers' imitation behaviors.	People are tired of sensations that they have experienced and become bored, which drives them to chase after new fashions.
Bandwagon effect and Snob effect	Frank 1985; Leibenstein 1950; Pigou 1913	Bandwagon effect contends that people's demands for a fashion item increase as the increase in the aggregate demand of other people. Snob affect argues that fashion adopters are willing to pay for a premium to obtain social distinction.	People adopt fashion items to maximize the utility or to obtain social distinction.
Informational cascades	Bikhchandani et al. 1992	They argued that individuals make decisions based on the observation of their	People follow other people's decisions to maximize the utility.

		predecessors' decisions. when they ignored their own information to follow the predecessors, an informational cascade occurs. However, new information that arrives later could easily break the cascade.	

2.1.3 Fashion Theories in Psychology and Semiology

Compared to sociologists and economists, psychologists on fashion are more concerned with the motivations of individual behaviors in fashion phenomenon. Traditionally, psychologists treat clothes as an intimate part of the self and study the impact of self-identities on people's behaviors (Eckman et al. 1990; Hurlock 1929; Morganosky and Postlewait 1989; Sproles 1979). As Hurlock (1929) stated, "We are apt to think of clothes as we do of our bodies, and so to appropriate them that they become perhaps more than any of our other possessions, a part of ourselves . . . in spite of the constant changes in clothing, it is still impossible to disassociate ourselves from this intimate part of our material possessions" (p. 44).

Sproles (1979) is one of the most well-known fashion studies in psychology, which combines Roger's innovation diffusion theory with psychological literature. The core argument in innovation diffusion theory is that human receptiveness is critical to the adoption and diffusion of an innovation. Roger argues that the diffusion process is a bell-shaped curve consisting of five stages. He further asserts that the adopters at different stages have different characteristics, and he categorizes them as innovators, early adopters, early majority, late majority and laggards. He also proposes five factors that

affect the adoption of an innovation, including relative advantage, compatibility, complexity, trialability and observability. In contrast, Sproles (1979) focuses on individuals' decision-making process and considers style as the primary unit of analysis for fashion-oriented decisions. He argues that aesthetic attributes outweigh utilitarian attributes and that people perceive symbolic meanings from the styles of the clothes, which are associated with their psychological identities. He contends that consumers receive many information cues during social interaction which may influence their fashion decisions later. Then they process these information cues and finally make their decisions as to what fashion items to wear. This decision-making process is divided into eight stages, including awareness, interest, evaluation, identification of alternatives, decision, inventory of clothing, use and obsolescence. He further argues that people's decisions to adopt a fashion item may be driven by different motives, such as individual innovativeness, personal values, and perceived risks.

In addition, several other researchers draw from semiotics to analyze the fashion system (Barnard 2002; Barthes 1983). Semiotics is the study of signs. It argues that meanings can be constructed and interpreted from the text (Chandler 2007). Similarly, Barthes (1983) believed that meanings can be constructed from fashion styles, which constitute the "codes". He distinguishes real clothing (i.e. the physically existing clothing) from image-clothing and argues that real clothing is transformed by the fashion system into something that bears with symbolic meanings and values. The clothing system gives us specific instructions about what to wear in different social occasions. Barthes (1983) and Barnard (2002) distinguish between denotational and connotational meaning, while

the former is "factual, concerning what the jacket is made of; when and where it was made" (Barnard 2002, p. 84) and the latter refers to "the things that the word or the image makes a person think or feel" (Barnard 2002, p. 85). Barnard (2002) further argues that meanings do not pre-exist the process of communication, but instead, meanings are constructed during the process of communication and created by the interaction between the local culture and the fashion items.

In addition to the fashion theories mentioned above, there are several important theories in psychology that were widely used to study fashion-related phenomena, even though they were not developed originally for fashion. These theories are all based on the concept self-identity. As discussed above, many researchers from different disciplines believe that fashion is a process of adopting symbols to provide identities to individuals (Leibenstein 1950; Reynolds 1968; Simmel 1904; Sproles 1979; Veblen 1899). Originally, the concept self-identity or self was developed in psychology and often refers to a warm sense or feeling that something is "about me" or "about us" (Leary and Tangney, 2003; Sirgy 1986). It includes both "I" (who thinks) and "me" (who is the object of thinking). Psychologists proposed three types of identities – person identity, role identity and social identity. Social identity is referred to the self-meanings associated with the membership in a social category or group (Tajfel 1974). Role identity is one's internalized meanings associated with the roles one performs (Burke 2004; Burke and Reitzes 1991). Lastly, person identity refers to the self-meanings that are independent of other people and define one as a distinct entity (Burke and Stets 2009). Many theories were developed based on the three types of self-identity. Among these theories, three

theories are most relevant to the focal fashion context – social identity theory (Stets and Burke 2000; Tajfel 1974), self-verification theory (Swann 1983; Swann and Read 1981) and self-congruity theory (Sirgy 1982; Sirgy 1985).

Social identity theory asserts that people's social identities are derived from their membership in their own social groups. By behaving like in-group members and seeing things from in-group members' perspectives, people can enhance their worth-based self-esteem (Stets and Burke 2000; Tajfel 1974). Meanwhile, people suppress their own individuality to be more consistent with the group members. This process is called depersonalization. Fashion is considered a process of imitation and conformity (Kawamura 2018). People conform to social norms in their social groups and imitate other group members by adopting the fashion item.

In contrast, self-verification theory focuses on person identity and contends that one's person identities are verified when he "distinguishes himself or herself as a unique and identifiable individual with qualities that other individuals can count on and use to verify their own person identities (or group or role identities)" (Burke 2004, p. 10). By behaving consistent with their person identities, people can obtain feelings of coherence and self-respect, which are referred to as authenticity-based self-esteem (Burke 2004; Swann 1983). Fashion is also considered a means to express individuality (Farennikova and Prinz 2011). People adopt fashionable clothes to express their own political views, tastes, lifestyles, etc. fashion is a form of self-expression (Farennikova and Prinz 2011).

Lastly, self-congruity theory was developed based on self-verification theory, (Grubb and Grathwohl 1967; Sirgy 1982; Sirgy 1985; Sirgy and Su 2000). The theory

further explicates how self-identities impact consumers' behaviors. Specifically, it argues that products all have personality images (e.g., feminine, modern, youthful, etc.). These images are determined by various factors, such as the physical characteristics of the product, advertising, prices, stereotypes of the generalized users, and so on (Sirgy 1985). Consumers perceive match or mismatch between these product images and their self-images, which is referred to as self-congruity, and the congruity would further impact their product preferences and behavioral intentions (Sirgy 1985; Sirgy and Su 2000). Although self-congruity theory was developed for all kinds of products, a number of researchers have used it to study purchasing or adopting of luxury products and aesthetic products, and they have proved congruity is a significant factor that motivates people's behaviors (Patrick et al. 2002; Puntoni 2001; Tsai 2005). Admittedly, fashion items and luxury items are not identical, and the symbolic meanings of fashion items and product images are not necessarily the same. But fashion and luxury brands do overlap to some extent. Thus, self-congruity theory could be used to help us understand the fashion phenomenon.

Summary and takeaway: compared to fashion theories in sociology and economics, fashion literature in psychology provides a deeper understanding of an individual's motivations and decision-making processes in fashion. Since the current study is conducted at the individual level, these theories have greater inspirations to the current study than the ones in sociology and economics. From these theories, we learn that self-identity is vital to the understanding of people's behaviors in fashion. Two types of self-identities, including social identity and person identity, could both be relevant.

Moreover, the symbolic meanings associated with a fashion product could interact with self-identities and jointly affect behavioral intentions. Table 3 summarizes all the fashion theories reviewed above.

Table 3. Extant Fashion Theories in Psychology and Semiology

Theory Name	Author and Year	Discipline	Summary	Explanations for Individual Motivations in the Theory
Fashion consumer behaviors	Sproles, 1979	Psychology; Marketing	He argued that the symbolic meanings of a certain style interact with consumers' psychological identities, which in turn influence their decision-making processes. He divided the decision-making process into eight stages, including awareness, interest, evaluation, identification of alternatives, decision, inventory of clothing, use and obsolescence.	• Personal values. • Perceived risks, including risks of losing self-esteem, social approval, unsatisfactory quality or performance, etc. • Individual innovativeness.
Fashion as communication	Barnard 2002; Barthes 1983	Semiology	They believed that real clothing is transformed by the fashion system into something that bears with symbolic meanings and values. Those meanings do not pre-exist the process of communication. There are two types of meanings -	People use combinations of fashion items to communicate symbolic meanings to other people.

			denotational and connotational meaning.	
Social identity theory	Stets and Burke 2000; Tajfel 1974	Psychology	Social identity theory asserts that people suppress their own individuality to behave in ways that are consistent with the other members in their social groups to obtain social identities and enhance their worth-based self-esteem. Fashion is considered a process of conforming to social norms.	People's adoption of fashionable products is driven by the motives of obtaining social identities in their own social groups and enhance their worth-based self-esteem.
Self-verification theory	Swann 1983; Swann and Read 1981	Psychology	Self-verification theory believes that people tend to behavior consistently with their person identities, in order to obtain authenticity-based self-esteem. Similarly, people adopt fashion items to express themselves.	People adopt fashion products to express their personalities, values, lifestyles, political views, etc.
Self-congruity theory	Grubb and Grathwohl 1967; Sirgy 1982; Sirgy 1985	Psychology	Self-congruity theory argues that people perceive match or mismatch between the product images and their self-image, which in turn impact their product preference and behavioral intentions. Similarly, the match or mismatch between	By adopting the fashion products that are congruent with their self-identities, people can verify who they are and obtain authenticity-based self-esteem.

			the symbolic meanings of fashion items and people's self-image could also affect their intention to adopt the fashion items.	

Extant fashion theories explained fashion diffusion process and people's motivations to follow fashion from both the group level and individual level. However, since these theories were developed from different perspectives and were usually used separately in subsequent studies, we are not clear about how different factors and motivations are connected and how they interact with each other. For instance, we are not sure how social identity interacts with person identity, and how they affect fashion adoption together. Moreover, since fashionable technologies are different from fashionable clothes, our understanding from these fashion theories which normally focus on fashionable clothes need to be modified accordingly.

Empirical tests of these theories are limited. Most empirical studies on fashion focus on the characteristics of fashion innovators, recognition styles, self-consciousness, fashion involvement and impulse purchase (Bertrandias and Goldsmith 2006; Cardoso et al. 2010; Davis 1984; Fairhurst et al. 1989; Goldsmith et al. 1987; Gutman and Mills 1982; Kang and Park-Poaps 2010; Kim et al. 2011; Lee and Johnson 2010; Lennon and Davis 1987; O'Cass 2004; Phau and Lo 2004; Summers 1970; Summers et al. 1992; Tigert et al. 1976; Workman and Studak 2006). Since these empirical studies were conducted from the perspective of marketing strategies or individual psychological differences, they are not directly relevant to the current study and hence will not be

reviewed in detail. Instead, the next section will be dedicated to reviewing the extant empirical studies in the IS field and the inspirations of these studies to the current dissertation.

2.2 IS Empirical Studies

Considering IT fashion is a relatively new phenomenon, not many IS studies on IT fashion have been conducted. This section reviews the extant IS studies on IT fashion at the organizational level and individual level and discuss how these studies inspire the current study.

In the IS field, a few studies on fashion at the organizational level have been conducted (Lee and Collar Jr 2003; Wang 2010). Lee and Collar Jr. (2003) showed that IT fashion waves do exist and that the duration of fashion waves is shorter than that of management fashion waves. Wang (2010) further extended their study by investigating the consequences of chasing after IT fashion and showed that following fashion can help organizations and executives gain reputation and enhance long-term firm performance. Both studies demonstrated the existence of IT fashion and showed that IT fashion could have a significant impact on organizations.

Despite these studies at the organizational level, IS studies on fashion at the individual level are limited. A number of studies indirectly related to fashion have been conducted. For example, social influence is proved to an important aspect of fashion (Simmel 1904; Sproles 1979), and a number of studies on the social influence of IT have been conducted. Based on innovation diffusion theory by Rogers, Moore and Benbasat (1991) first introduced symbolic values of IT into the IT adoption literature. They

propose a construct called "image", which was defined as "the degree to which the use of an innovation is perceived to enhance one's reputation or status in their social system" (p. 195). In the later versions of Technology Acceptance Model (TAM), Venkatesh et al. (2003) and Venkatesh et al. (2012) re-conceptualized this construct and renamed it as social influence, and defined it as "the degree to which an individual perceives that important others believe he or she should use the new system" (p. 451). These studies proved that social factors are important determinants of IT adoption in both the work setting and consumer setting. Hong and Tam (2006)'s study complemented the previous studies by adding a psychographic factor to the adoption model – need for uniqueness (NU). NU is different from social influence in that social influence represents external forces that facilitate group conformity while NU is an internal motivation for being unique. Later on more studies were conducted based on identity theories (Kim et al. 2012; Rahman and Cherrier 2010; Whitley et al. 2014). Arbore et al. (2014b) systematically investigated the symbolic value of IT products from the perspective of self-identity and argued that self-identity is an antecedent of technology adoption intention. Carter and Grover (2015) conceptualized a new construct IT identity which captures the interweaving relationship between IT and self-identity.

Some other studies dealt with aesthetics in IS design. Hegmon (1998) argues that style and function can coexist. Other studies mainly focus on the influence of website aesthetics on consumers' moods or behaviors (Cai and Xu 2011; Cyr et al. 2010; Moshagen and Thielsch 2010; Pelet and Papadopoulou 2012; Sonderegger et al. 2012).

In addition to the above fashion-related studies in the IS literature, two studies directly investigated the adoption of fashionable technologies at the individual level (Tzou and Lu 2009; Yang and Hsu 2011). Both studies examined the antecedents of the intention to adopt fashionable technologies and incorporated the two major antecedents of adoption intention from TAM - perceived usefulness (PU) and perceived ease of use (PEU). In addition to PU and PEU, Tzou and Lu (2009) further added pleasure and beauty as another two antecedents, while Yang and Hsu (2011) added perceived playfulness, perceived aesthetics and a social psychological factor perceived critical mass. Sun et al. (2014) investigated the influence of IT fashion waves on consumer regret and satisfaction at the post-adoption stage. They analyzed over 20,000 customer reviews on Amazon about smartphones and found out that adopters of fashionable smartphones experienced less regret and more satisfaction with their phones than adopters of non-fashionable smartphones when a new edition of a fashionable phone was being released.

Table 4 summarizes the related IS studies and their inspirations to the current study. Particularly, it summarizes the fashion-related factors/constructs proposed in these studies, including the definitions and the measurement items of the constructs, which provide references for the current study in the following chapters. Overall, extant IS studies and observations from practice confirm the existence and importance of IT fashion in both the work setting and the consumer setting. Nevertheless, despite the theoretical foundations laid by previous IS studies, we still do not have a clear understanding of fashionable technologies.

Table 4. Fashion-related Studies in IS

Author	Major Findings and	Key	Definition	Measures

and Year	Inspiration to the Current Study	Fashion-Related Constructs		
Lee and Collar Jr. 2003	This study tested Management Fashion theory in IT context and showed IT fashion waves do exit and the duration of fashion waves is shorter than that of management fashion waves due to the rapid development of information technologies. It confirms the existence of IT fashion waves.	No construct	NA	NA
Hong and Tam 2006	They stressed the importance of psychographic factor for consumer behavior and proposed a construct called need for uniqueness (NU), which is different from social influence. The results showed the NU is also an important determinant of IT adoption. In the consumer setting, factors considered by consumers are much more complicated than the ones in the work setting, because technologies become personal possessions and even part of themselves. In this case, the role of psychographics in adoption behavior needs to be considered. Social influence and need for uniqueness are all important motivations for following IT fashion.	Need for Uniqueness (NU)	NU is defined as the individual's tendency to seek uniqueness through the adoption and use of symbolic products or innovations for the purpose of enhancing the self-concept.	Item 1: I often think of the things I buy and do in terms of how I can use them to shape a more unusual personal image. Item 2: I am often on the lookout for new products or brands that will add to my personal uniqueness. Item 3: I actively seek to develop my personal uniqueness by buying special products or brands. Item 4: Buying and using products that are interesting and unusual assists me in establishing a distinctive image.
		Social Influence	social influence (SI) is defined as the extent to which users believe that	Item 1: People who are important to me would want me to use MDS. Item 2: People who influence my behavior would think I should use MDS.

			"important others" would approve or disapprove of their performing a given behavior	Item 3: People whose opinions I value would prefer me to use MDS.
Tzou and Lu, 2009	They proposed four antecedents of the intention to adopt fashion technology: PU, PEU, pleasure and beauty. It showed the affective factor and aesthetics are important in the fashion context.	Beauty of Perceived Aesthetics	No definition	Item 1: I think the appearance of Sony Vaio is beautiful. Item 2: I think the appearance of Sony Vaio is outstanding. Item 3: I think the appearance of Sony Vaio is charming.
		Pleasure of Perceived Aesthetics	No definition	Item 1: I think Sony Vaio can satisfy me. Item 2: I think I will be very pleased with Sony Vaio. Item 3: I think Sony Vaio can make me happy.
Wang 2010	This study showed that following fashion can legitimize organizations and executives and that investing in fashion IT can enhance long-term firm performance. It demonstrates the existence of fashion in organizational technologies and the significant influence of fashion on organizations.	NA	NA	NA
Yang and Hsu, 2011	They proposed six antecedents of intention to adopt fashion technology: perceived usefulness, perceived ease of use,	Perceived Aesthetics	Perceived aesthetics is defined as the degree to which a	Item 1: I think the appearance of the Apple iPod is attractive. Item 2: I think the

	perceived playfulness, perceived aesthetics, social norms and perceived critical mass. It showed that both ergonomic factor (perceived aesthetics) and social psychological factor (perceived critical mass) are important determinants of adopting fashion technologies		person believed that the fashion technology is attractive and pleasurable to the eye.	appearance of the Apple iPod is well designed. Item 3: I think the appearance of the Apple iPod is interesting.
		Perceived Critical Mass	No definition	Item 1: I believe many people use the Apple iPod. Item 2: I think many people I communicate with frequently use the Apple iPod. Item 3: In my opinion, there are a lot of people who use the Apple iPod.
Arbore et al. 2014	This study systematically investigated the symbolic value of adoption from the perspective of self-identity and further argued that self-identity is an antecedent of technology adoption intention. It provided theoretical support for the role of self-identity in fashion.	Self-Identity	Self-identity is defined as the symbolic meaning of an innovation	Item 1: Having a mobile TV would reflect my identity Item 2: Having a mobile TV would reflect who I am Item 3: Having a mobile TV would express the personality that I want to communicate to others Item 4: Having a mobile TV would reflect the way that I want to present myself to others Item 5: Having a mobile TV suits me well
		Status Gain	The increase in prestige that coincides with the purchase of a PC for	Item 1: Having a mobile TV is a status symbol Item 2: People who have a mobile TV have more prestige than those who do not

			home use	Item 3: People who have a mobile TV have a high profile
Sun et al. 2014	This study studies the influence of IT fashion waves on post-adoption regret and satisfaction. It verifies the existence of IT fashion waves in the context of consumer technologies and their influence on consumer behaviors.	Exposure to Fashion Wave	NA	Whether the customer review within 60 days after a new fashionable phone was released.

2.3 Summary

As we see, many theories were created to study the perplexing fashion phenomena. From these fashion theories, we understand that fashion diffusion process has different stages (Rogers 1962; Sproles 1979) and could either trickle down from the top to the bottom of a social system, or vice versa (Blumer 1969; Simmel 1904; Veblen 1899). We also learn that people's adoption behaviors could be driven by different motivations, such as identity (Sproles 1979), social influence (Nystrom 1928; Simmel 1904; Veblen 1899), symbolic meanings (Barnard 2002; Barthes 1983), informational signal they received (Bikhchandani et al. 1992). Meanwhile, fashion-related studies in the IS field extended TAM and added a few more factors such as aesthetics and self-identity to the original antecedents (e.g., perceived usefulness and perceived ease of use) to TAM. However, the various points of views provided by these theories and studies also expose us to a serious problem: we do not know how these different factors work together to affect people's behaviors and whether their influences vary across different fashion stages. In addition, IT fashion is different from clothing fashion. Therefore, we need to

capture the uniqueness of fashionable technologies to form a new and holistic understanding of IT fashion. In the next chapter, I will first discuss the differences between fashionable technologies and fashionable clothes and then offer my own definition of fashionable technologies. Based on these differences and previous fashion theories, I will propose and explain the process of IT fashion diffusion.

CHAPTER 3: THE FORMATION AND DIFFUSION OF IT FASHION

In this chapter, I first discuss the differences between fashionable clothes and aesthetic fashion items. Then I review the current definitions of fashion and then provide my own definition of IT fashion. Next, I will suggest the preconditions under which IT fashion should occur. Lastly, I will explicate the formation and diffusion of IT fashion based on previous fashion theories and my own understanding.

3.1 Difference between IT Fashion and Aesthetic Fashion

The major difference between consumer technologies and aesthetic products (such as clothes, jewelry, handbags) lies in "the degree to which socially symbolic meaning contributes to their perceived innovativeness" (Hirschman 1982, p. 538) and accordingly in the process of innovation diffusion. According to Hirschman (1982), product innovations can be generally classified along two dimensions – symbolism and technology. Some product innovations may not have any technological improvement but can still be considered innovations because of the changes in symbolic meanings while some other products are perceived as novel because of major technical improvement. Along the two dimensions, he proposed four types of product innovations, as shown in Figure 3.

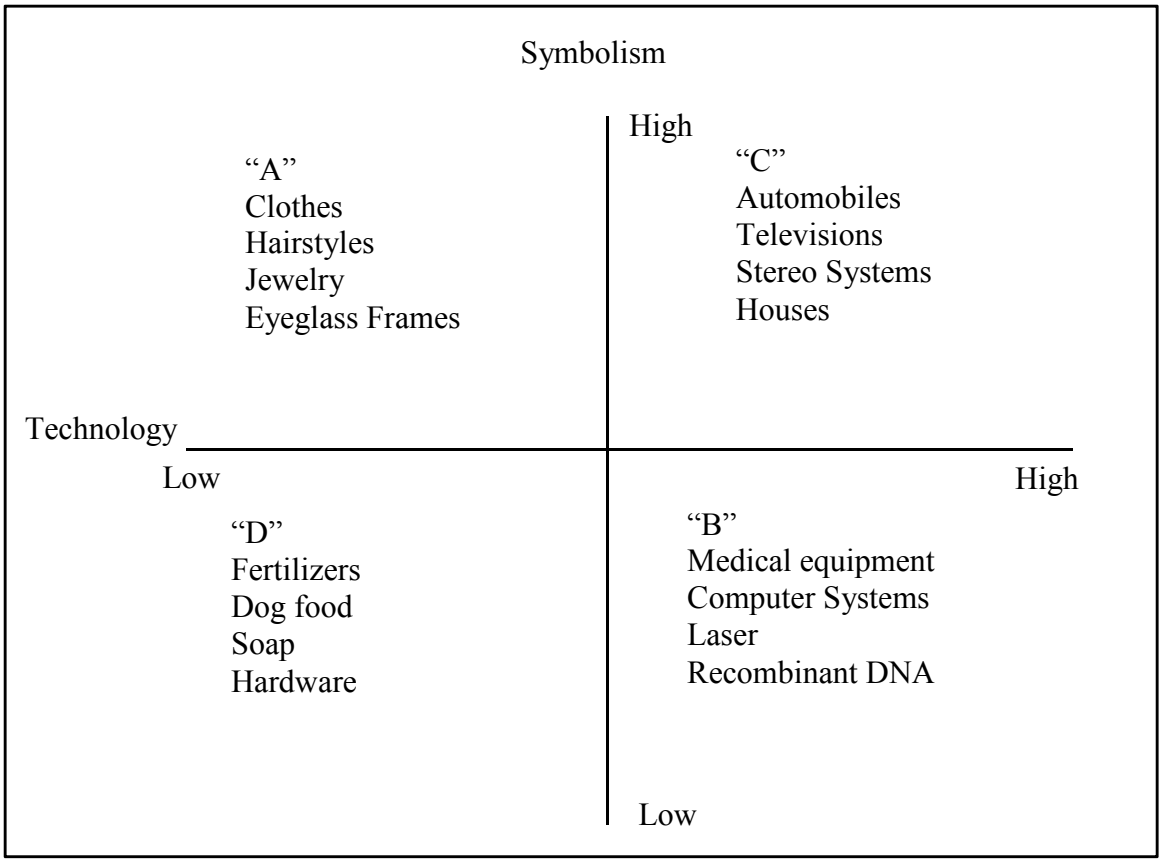

Figure 3. Product Innovation Types (source: (Hirschman 1982, p. 540))

As we can see, aesthetic products such as clothes are considered high in symbolism and low technology (class A). For this type of products, they are adopted largely because of the symbolic values of the products, as explained by previous fashion theories (Blumer 1969; Simmel 1904; Sproles 1979). The same clothing styles may keep coming back as new fashions when they are assigned with new symbolic meanings but not with any technological or functional improvement (Barnard 2002; Hirschman 1982). For instance, flare pants were very popular among hippies in the 1960s and 1970s. Forty years later, this style of pants is making a comeback in the name of vintage, promoted by

fashion designers and fashion icons, such as Gigi Hadid and Meghan Markle.[5] Medical equipment and computer systems are considered high technology and low symbolism products (class B), in that they mainly advance through technological improvement. Products such as soap and hardware are low in both technology and symbolism (class D). Lastly, automobiles and televisions are considered high in both symbolism and technology (class C). For these products, symbolic meanings and technological improvement both contribute to consumers' perceived innovativeness of the product, and people may adopt the products for both performance improvement and symbolic values. I argue that fashionable technologies should fall into this category. On one hand, for many consumer technologies such as smartphones and smartwatches, their technological improvement results from the accumulation of scientific knowledge, like any other information technologies (Hirschman 1982). New technologies do not exist before necessary new knowledge is created. This implies that old consumer technologies cannot come back as new fashions without any technological improvement. On the other hand, these consumer technologies are also capable of communicating symbolic meanings, largely because they are portable and socially consumed (Arbore et al. 2014b; Hong and Tam 2006). According to Sirgy, whether a product displays strong symbolic meanings or stereotypic images is affected by product conspicuousness (socially consumed and visible) (Sirgy 1982; Sirgy et al. 1986). Thus, when a new fashionable technology emerges, new symbolic meanings will be also constructed out of the design features of the technology,

[5] Bazaar, "Are Flares Already the Biggest Trouser Trend of 2018?",https://www.harpersbazaar.com.au/fashion/flares-trousers-trend-2018-15474

and these symbolic meanings could be another important consideration for people's adoption of these technologies.

Based on the differences between consumer technologies in the fashion context and aesthetic products, I summarized the following differences between IT fashion diffusion and clothing fashion diffusion:

1) IT fashion emerges and evolves in different ways

As discussed above, aesthetic innovations are mostly symbolic products. Fashion designers sometimes invent new styles, but most of the time they simply switch between existing styles, which consists of color, shape, material, etc., and combine them in new ways (Barnard 2002). New clothes fashions are created by reassigning symbolic meanings to the older clothing styles (Hirschman 1982). According to trickle-up theory by Blumer (1969), it's the fashion designers and fashion magazines that sense the changes in social life and public tastes and choose the styles that respond to these changes. When they choose a certain style, they promote this style on runways or fashion magazines and try to assign certain symbolic meanings to this clothing style.

However, it's not the case for fashionable technologies. Fashionable technologies can't evolve by simply changing the combination of existing styles/features. In the IT industry, new technologies are usually promoted by their own manufacturers or some IT experts. However, there are no opinion leaders in the IS industry who are as influential as fashion designers or fashion magazines in the clothing industry. In most cases, IT fashion waves emerge with major breakthroughs in information technologies. For example, iPhone was the first smartphone that had a virtual keyboard in 2007, and the first Android

phone with a virtual keyboard came out two years later[6]. Nowadays, a virtual keyboard already becomes a must-have feature for any smartphones. The popularity of smartphones can also be considered a fashion wave after the non-smartphone fashion wave. Smartphones feature slick looks and "smart" functions, including Bluetooth, intelligent assistants, touchscreen, mobile operating systems, high-speed access to the Internet, etc. [7] In this dissertation, I call this type of fashion *feature-level fashion*.

2) Novel functions are important to fashionable IT and symbolic meanings are associated with functional features.

As we discussed above, people chase after fashionable clothes purely for the styles in fashion. However, for fashionable IT, aesthetics might be important, but it's not the only reason why people chase after the technology. Essentially, fashionable technologies are still information technologies. People expect to obtain utility from IT products. Regardless of the stylish looks, people still expect to use smartphones to surf online and make phone calls. Technologies become popular because they can provide "cool" features. According to the classification of product innovations by Hirschman (1982), fashionable technologies are high in both symbolism and technology. People chase after fashionable technologies for both utility and symbolic values,

What's more, for fashionable technologies, I argue that not only the aesthetical features but also the functional features could have symbolic meanings. One hundred years ago, when Henry Adams saw whirling dynamos for the first time, he felt that the

[6] Zach Spear, Feb. 2009, Appleinsider.com, "First Android phone with iPhone-like virtual keyboard debuts", http://appleinsider.com/articles/09/02/17/first_android_phone_with_iphone_like_virtual_keyboard_debuts

[7] Wikipedia about Smartphone, https://en.wikipedia.org/wiki/Smartphone

huge wheel, revolving at a high speed and humming as a moral force, was similar to the Cross to Christians (Adams 1900). Cox also agreed that technological artifacts could become symbols as well, "when they release emotions incommensurate with their mere utility, when they arouse hopes and fears only indirectly related to their use, when they begin to provide elements for the mapping of cognitive experience" (Cox 1971, p. 282). Since today's consumer technologies are usually portable and socially visible, it becomes even easier for their functional features to be associated with symbolic meanings than the technologies one hundred years ago. For instance, Google glasses are equipped with functions of taking pictures and uploading documents to the Internet at any time without being noticed. These functions could make the technology be associated with fears of privacy invasion.[8]

3) Information technologies could have both feature-level fashion and product-level fashion.

I discussed the feature-level IT fashion above and stated that symbolic meanings could be associated with both aesthetic features and functional features. Consequently, if symbolic meanings could be constructed out of different combinations of aesthetic features and functional features, then different IT products could associate different symbolic meanings with their own features. For example, iPhones feature shiny looks, easy-to-use, and synchronization while Samsung feature novel gadgets. These different features attract different groups of people: young people tend to like to use iPhones while people who consider themselves as tech-savvy like to use Samsung phones. Thus,

[8] Medium, "The Technological Symbol of Our Age," https://medium.com/@frailestthing/the-technological-symbol-of-our-age-d7001af96d4b

although both iPhones and Samsung phones are fashionable in general in that they are both smartphones (feature-level fashion), they could have different symbolic meanings and hence form their own fashion waves. I called this type of fashion *product-level fashion*. Feature-level fashion and product-level fashion could co-exist on one IT product. The existence of two types of fashion on one product is not common for clothing fashion, in that the unit of analysis in fashion-oriented decision process is style, not brand, according to Sproles (1979). That is, people mainly consider which style to follow when they are making fashion decisions, not brand, although brand could be an important factor.

Product-level fashion could be independent of feature-level fashion to some extent. Using smartphones as an example, due to the widespread use of smartphones, the fashion wave of smartphones has almost reached its saturation point, according to Roger's five-stage model (Rogers 1962). However, iPhone could still have its independent fashion waves by releasing new editions, and each fashion wave associated with the new edition could go through a complete fashion life cycle.

Table 5 summarizes the differences between IT fashion and clothing fashion. Overall, due to the differences between IT fashion and clothing fashion, a systematic understanding of IT fashion is imperative. The section below seeks to integrate the extant fashion literature and incorporate the differences between IT fashion and clothing fashion to explicate the formation and diffusion of IT fashion.

Table 5. Differences between IT Fashion and Clothing Fashion

	Clothing Fashion	**IT Fashion**
How do new fashions emerge?	Old styles being assigned with new symbolic values	Major technological breakthroughs

Who determines the new fashions?	Fashion designers and fashion magazines	No one can determine the new IT fashions
Purposes of adoption	To obtain symbolic values	To obtain both utility and symbolic value
What are symbolic meanings constructed out of?	Aesthetic design	Aesthetic design or functional design
Existence of feature-level fashion and product-level fashion on one product	Not common	Common

3.2 The Definition of IT Fashion

In the literature, there are numerous definitions for fashion. Overall, fashion is usually defined as either a style or a collective behavior. For instance, Nystrom (1928) defined fashion as the prevailing style at any given time. Webster's Unabridged Dictionary (1966) refers fashion to a way of dressing, behaving… that is considered especially up-to-date or noticeably following the contemporary trend. Table 6 shows other examples of definitions for fashion:

Table 6. Previous Definitions of Fashion

Author and Dear	Definition
Anspach (1967)	Fashion is public taste, the result of many individual tastes simultaneously but separately selecting the same thing
Barber and Lobel (1952)	The styles…. That are socially prescribed and socially accepted as appropriate for certain social roles
Barnard (2002)	Fashion is one of the ways in which people are constructed as members (and/or non-members) of cultural groups
Barnard (2017)	Fashion is thus defined as modern, western, meaningful and communicative bodily adornments, or dress.
Daniels (1951)	A conception of what is currently appropriate
Davis (1992)	Fashion…refer [s] to some alteration in the code of visual conventions by which we read meanings…into the clothes we and our contemporaries wear
King (1963)	A process of social contagion by which a new style or

	product is adopted by the consumer after commercial introduction
Lang and Lang (1961)	An elementary form of collective behavior
Lee and Collar Jr (2003)	An IT fashion was defined as the production and consumption of temporarily intensive [information technology] discourse.
Lynch and Strauss (2007)	Fashion can be defined as the prevailing style at any given time
Merriam-Webster Dictionary[9]	A prevailing custom, usage, or style
Merriam-Webster Dictionary[7]	(1): the prevailing style (as in dress) during a particular time (2): a garment in such a style
Merriam-Webster Dictionary[7]	Social standing or prominence especially as signalized by dress or conduct
Nystrom (1928)	The prevailing style at any given time
Oxford English Dictionary, 1901	Fashion is the mode of dress, etiquette, furniture, style of speech, etc. adopted in the society for the time being
Picken (1973)	Fashion is the prevailing or accepted style; often embracing many styles at one time
Robinson (1958)	The pursuit of novelty for its own sake
Sproles (1979)	A way of behaving that is temporarily adopted by a discernible proportion of members of a social group because that chosen behavior is perceived to be socially appropriate for the time and situation.
Wang (2010)	An IT fashion is a transitory collective belief that an information technology is new, efficient, and at the forefront of practice
Wilson (1985)	Fashion is a branch of aesthetics, of the art of modern society. It is also a mass pastime, a form of group entertainment, of popular culture.

From the above definitions we can tell that there is no uniform definition for fashion. Several prior studies defined fashion as a style, in that style is the unit of analysis in fashion-related decisions (Sproles 1979). But it's not the case for fashionable technologies. Consumers chase after fashionable technologies not only for their modern looks but also for their "cool" features, such as touch screens for smartphones. Thus, it's not appropriate to define fashionable technologies as styles. Among all the definitions for

[9] Merriam-Webster.com, http://www.merriam-webster.com/dictionary/fashion

fashion, Sproles (1979)'s definition is believed to well summarize other definitions and was adopted by many other studies on fashion (Earl and Kemp 2002; Kim et al. 2013; Miller et al. 1993; Shang et al. 2005; Tzou and Lu 2009). Sproles's definition stresses that a fashion style is adopted by a discernible proportion of members in a certain social group, which is a major feature of fashionable technologies, based on extant fashion theories (Simmel 1904; Sproles 1979). He also indicated that a fashionable item is a communicative product with symbolic meanings (1979). Similarly, Barnard defined fashion as "modern, western, meaningful and communicative bodily adornments, or dress" (Barnard 2017, p. 4). Both Sproles and Barnard believe that fashion objects are capable of communicating symbolic meanings. Lastly, the current dissertation emphasizes the importance of novel features to fashionable technologies, which should be included in the definition as well. Overall, the current study defines a fashionable IT as *a technology with novel features which is temporarily adopted by a discernible proportion of members of a social group and delivers symbolic meanings for the time and situation.* In this definition, the phrases "temporarily", "a social group" and "for the time and situation" all stress that an IT fashion is temporal and relative. What is considered fashionable in one group may not be fashionable in another group, and a technology is only fashionable for a certain amount of time. Different from Sproles, who mainly stresses the influence of social norms generated by fashion in a social group, I expanded social norms to various social and symbolic meanings of fashionable technologies. Lastly, the definition also stresses the importance of novel features to fashionable technologies. The term technology refers to a certain IT product in the consumer setting. It can be a device, software, an app and so

on. That being said, IT fashion only appears in certain product categories or on certain products. People do not buy desktops for social status or aesthetics. The preconditions for IT fashion need to be defined. The next section presents four preconditions of IT fashion.

3.3 Preconditions of IT Fashion

The first precondition of IT fashion is that the technology should be socially visible or socially consumed. Both Barnard (2002) and Sproles (1979) highlighted the ability of fashion items to communicate symbolic meanings. In order for a technology to be communicative, it needs to be socially visible or conspicuous (Barnard 2002; Belk 1981; Sirgy et al. 1986). Chao and Schor (1998) also argued that consumptions motivated by status-seeking normally occur only with publicly or socially visible products. Socially visible or consumed products facilitate perception, construction and communication of the symbolic meanings (Barnard 2002). When it comes to information technologies, being socially visible requires the usage of the technology to meet two conditions: 1) people have the needs to use the technology in social occasions; if people only use the technology in private situations, then it wouldn't be socially visible; 2) the usage of the technology can be seen by other people. In this case, physical and portable devices are naturally more socially visible than software, mobile apps and websites and hence are easier to become fashionable. That being said, with the appearance of social networking and social shopping websites, the usage of some technologies could be presented online as well, which makes them socially visible. In some cases, mobile apps and games can be socially visible as well among certain groups of people. Similarly, usage of information systems could be "socially" visible among organizations. However, since the current

dissertation focuses on consumer technologies, discussion on information systems at the organizational level will not be carried out in the dissertation.

In addition to the first precondition, this study also proposes three other essential conditions for fashion to appear in a certain technology domain based on Blumer (1969):

Second, fashion is fluid and always reflects the changes taking place in various realms of the society. Therefore, fashionable IT must reflect and respond to the continuous changes in the surrounding world, with people always ready to discard old beliefs, practices, interests and social norms, and to embrace new ones.

Third, potential adopters of the technology should have the necessary facilities and means (such as wealth, intellect, skills) to adopt the technology. In nature, fashion always keeps evolving. A new fashionable technology is always a departure from the prevailing one in terms of style, functions, and even social interaction forms. If the adoption of the technology requires major changes in people's current lifestyles, habits, mindsets, skills and incomes, then it would be difficult for people to comprehend the purpose of the technology and to use it. Then collective adoption will not be achieved and hence it will not be fashionable. For instance, one of the first personal digital assistants, PalmPilot, was launched in 1997. The technology allowed people to sync all their files to computers, similar to Dropbox and iCloud used nowadays. However, the idea was so far ahead of its time that people did not have the needs for it, nor have the skills and facilities (such as unlimited Internet access and Cloud computing techniques) to use it.[10]

[10] Popular Mechanics, "10 Gadgets Ahead of Their time," https://www.popularmechanics.com/technology/gadgets/reviews/g1234/10-gadgets-ahead-of-their-time/?slide=1

Fourth, people choose the technology for reasons beyond utilitarian or rational reasons. These reasons do not always involve deliberation and calculation. For example, compared to smartphones or smart watches, desktops are adopted mainly for utilitarian reasons. Hence, people rarely consider desktops as fashionable.

If a technology meets the four conditions, then we may find fashion to be in play. In other words, collective adoption of the technology may occur for reasons beyond utilitarian merits, symbolic meanings will be associated with the technology, and lastly, people's convergent choice on this product may shift away over time as the fashion ends. In the next two sections, I will explain the formation and diffusion of IT fashion based on the discussion above.

3.4 Formation and Diffusion of IT Fashion

In this section, I integrate the previous fashion theories in other disciplines with unique characteristics of information technologies and propose the process of IT fashion diffusion.

3.4.1 IT Fashion Begins with Novelty

People line up in front of Apple stores when a new iPhone product comes out. They are willing to wait for hours to be the first to try out the newest model. It makes us wonder what motivates people to bear such a long wait to be the early owners of new iPhones. If we turn to the current fashion literature to explain this phenomenon, we could find divergent opinions about it, and different motivations may be proposed, such as the desire to obtain social distinction or herd behavior ("Since other people are doing it, I

want it as well"). However, I argue that the most salient motivation behind their behaviors in the early stages of IT fashion is the desire for novelty.

Robinson (1958) believes that fashion is "the pursuit of novelty for its own sake" (p. 127). Desire for novelty refers to people's compelling need for constant stimulation (Berlyne 1970; Bianchi 2002; Sapir 1937). People relentlessly look for a certain level of stimulation in their daily lives to obtain satisfaction and pleasure, which is referred to as self-illusory hedonism (Berlyne 1970; Bianchi 2002). People imagine an optimal level of stimulation which could provide superior enjoyment to them, and they engage in pleasure-seeking activities to obtain the optimal stimulation. These activities almost resemble day-dreaming (Howard and Sheth 1969; Streufert and Driver 1965). To obtain the optimal stimulation and enjoyment, people constantly engage in novelty-seeking activities to explore the environment. However, the reality always turns out to disappoint them which in turn, makes the dissatisfied individuals long for the perfect enjoyment and excitement and help them form the constant desire for novelty (Berlyne 1960; Berlyne 1970; Bianchi 2002).

Novelty is crucial to the formation of IT fashion. To further expand on that, we first need to clarify the distinction between novel technologies and novel clothing. As discussed above, novel technologies are essentially different from novel fashion clothing. Barnard (2002) believes that clothing fashion evolves by changing the combinations of previous styles. A style that was fashionable thirty years ago could become fashionable again with a slight twist in colors, shapes, materials and combinations with other different

styles. [11] However, old fashionable technologies could not come back with a simple twist. IT fashions always occur with major breakthroughs in information technologies. Novel technologies do not simply improve existing functions or design features, such as improving camera performance, extending battery life and so on. Instead, novel technologies create new functions or new design features, such as creating touch screens to replace the physical keyboard. Novel features of an information technology should offer new capabilities to the users. They allow people to perform new tasks (e.g., iPhone 4 allow people to surf online) or perform old tasks in new ways (e.g., using the fingerprint to unlock the phone instead of typing password manually). In addition to utilitarian values, hedonic values could be provided by the novel features as well. For example, the "live" photos of iPhones and Samsung phones provide new ways for people to take photos to entertain themselves.

In the early stage of an IT fashion, the technology remains unknown to most people. However, the novel features of the technology could attract the elite, IT professionals and innovators. These people become fashion leaders in the early stage of fashion life cycles. They endorse and promote the technology, which could in turn attract more followers. Novel features could also attract media attention and report, which makes the technology enter the public discourse. Media buzz and heated discussion could be generated, and more people are drawn to the technology.

Overall, fashionable technologies always have novel features that could meet people's desire for novelty, attract fashion leaders that endorse the technology and create

[11] Bazaar, "Are Flares Already the Biggest Trouser Trend of 2018?",https://www.harpersbazaar.com.au/fashion/flares-trousers-trend-2018-15474

media buzz to attract the public's attention. Novelty of IT is essentially important for the formation of IT fashion.

Lastly, novelty could also be the reason why an IT fashion ends. As Berlyne (1970) argued, enjoyment and excitement decrease as people are getting more and more familiar with the stimulation. Once the simulation reduces to a certain level, the attractiveness of the fashionable technology will be greatly reduced. People get bored and their desire for something new will rise again. People will engage in activities to seek other novel products that provide new stimulations (Howard and Sheth 1969). To some extent, people's constant need for novelty is similar to addiction. Robinson (1958) believed that it's the pursuit of novelty that drives the evolvement of fashions. In the context of IT fashion, Fashionable technology manufacturers need to keep providing new features to cater to people's addiction and keep IT fashions evolve.

3.4.2 The Point of Critical Mass

All fashionable technologies are novel, but not all novel technologies can become fashionable. According to Sproles (1979), fashion items are adopted by a discernible number of people in a social group. The extant fashion theories (i.e., trickle-down, trickle-up and trickle-across theory) in sociology all indicate that fashion involves large-scale adoption. Although trickle-down theory and trickle-up theory have divergent opinions regarding the role played by the elite in the formation of fashion, they both agree that fashion starts with the adoption from a few fashion leaders and innovators, then gradually attracts more attention and interests from the public, and eventually gains significant social acceptance in social groups (Blumer 1969; Simmel 1904; Simmel 1957).

However, not all novel technologies follow this trajectory. The current dissertation emphasizes "the point of critical mass" proposed by Rogers (1962) and argues that in order for a novel technology to become fashionable, the diffusion of the technology needs to reach the "point of critical mass". As to how it could reach this point, many factors could come into play, such as marketing and promotion effort, price, quality, competition in the market and so no. These factors are out of the range of the current dissertation and hence will not be discussed.

The innovation diffusion theory by Rogers (1962) indicates that as an innovation diffuses through a social system, its trajectory follows an S-shaped curve. At the early stage of innovation diffusion, only a few people adopt the innovation. As the innovation diffuses through social channels, it may dissipate quickly, or instead, become self-sustaining. In order for an innovation to become self-sustaining, it requires enough adopters at a certain point to provide enough utility for potential adopters. Rogers refers this point as the "point of critical mass" and defines it as "the certain minimal number of innovation adopters for the further rate of adoption to become self-sustaining" (p. 313). After the diffusion reaches the point of critical mass, the number of adopters grows almost exponentially before it reaches the saturation point. The more people adopt the innovation, the more benefits other adopters perceive from using it, which is similar to the concept of network externality (Mahler and Rogers 1999). The point of critical mass refers to the point when there are enough adopters of the innovation to provide sufficient utility to justify its adoption. There is no exact threshold for the number of adopters for the point of critical mass, but rather, it's a perception that many people in the system are

using it (Mahler and Rogers 1999). In other words, everyone has its own idea about whether there are many people are using the innovation. However, the objective number of adopters in a social group needs to reach a certain level to make everyone in this group to have this perception. According to Mahler and Rogers (1999), the point of critical mass appears at some point of the rapid growth stage (see Figure 4).

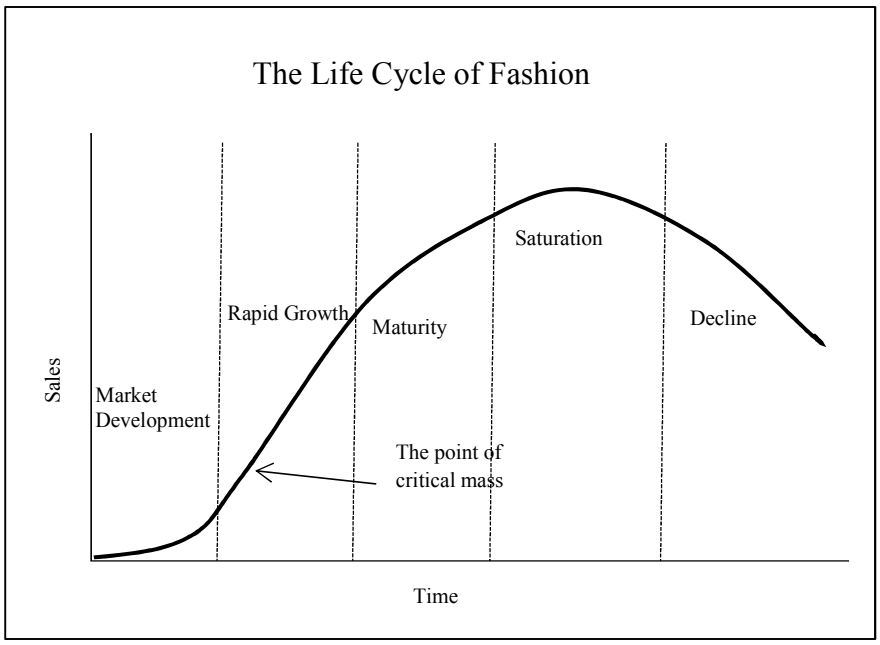

Figure 4. The Life Cycle of Fashion (Source: Wasson, 1968. p. 38)

The diffusion of IT fashion is essentially a process of innovation diffusion. Wasson (1968) believes that the trajectory of fashion diffusion should also follow an S-shaped curve (see Figure 4). That is, fashion should rise slowly first and then maintain continuing popularity for a long time, instead of abruptly and quickly disappear. In Roger's words, the diffusion of IT fashion should also be self-sustaining, which means that the diffusion of IT fashion also needs to reach the point of critical mass. In the IT industry, there are no professionals who have as equivalent influence as fashion designers

or fashion magazine editors do in the clothing industry. Instead, it's the IT manufacturers who promote their own products. Nevertheless, IT fashion also starts with adoptions from a small number of innovators, elites and experts, like clothing fashion. For instance, when iPhones first appeared in the market, most people could not afford them because of their high price tags; Apple desktops and laptops were mainly used by graphic designers and other tech experts in earlier years; Instagram was only popular among fashion bloggers before it gained public attention. Later on, normal consumers began to adopt them to emulate the fashion leaders and the diffusion of these fashion products began to go through rapid growth. Nowadays, iPhones and Samsung smartphones have the largest market shares in the smartphone market,[12] and Instagram has over 500 million users.[13] Their market development processes match the trajectory of fashion life cycles and they are all adopted by a significant number of people in society.

Once the diffusion of the technology reaches the point of critical mass, social influence begins to take effect in two forms. On one hand, fashionable technologies become social norms in consumers' own social groups, which force them to adopt the technology to be able to fit in. On the other hand, people identify with the symbolic meanings associated with the technology and use the technology to express themselves. The influence of IT fashion is exhibited through both group conformity and individuality (Farennikova and Prinz 2011; Miller et al. 1993). The next section proposes possible explanations for the duality of IT fashion.

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[12] IDC, Aug 2015, http://www.idc.com/prodserv/smartphone-market-share.jsp
[13] Hootsuite, "A Long List of Instagram Statistics That Marketers Need to Know", https://blog.hootsuite.com/instagram-statistics/

3.4.3 Social Norms and Symbolic Meanings

Fashion generates overwhelming social influences on people's behaviors and coerces them into going with the flow (Bikhchandani et al. 1992; Simmel 1957). According to "trickle-down" theory by Simmel (1904), fashion is started by the upper class that constantly seeks and adopts new styles or aesthetics products to distinguish themselves from the lower class. These belongings can be viewed as extensions of the body and self (Belk 1981). Symbolic self-completion theory (Wicklund and Gollwitzer 1981) asserts that these belongings serve as socially acknowledged symbols that communicate the owners' identities to others. Therefore, the style or the product that is adopted by the upper class signifies the membership of the upper class (Grubb and Grathwohl 1967). The people in the lower class emulate the upper class by adopting the status symbol to obtain identity and social status.

Trickle-up theory by Blumer (1969) believes that fashion leaders do not set the trends, but instead they sense the changes happening in the modern society and select a style that can reflect these changes. Therefore, fashion leaders still play a crucial role in legitimizing the style of clothing. "It is not the prestige of the elite which makes the design fashionable but, instead, it is the suitability or potential fashionableness of the design which allows the prestige of the elite to be attached to it" (Blumer 1969, p. 280). The mass market theory contends that fashion leaders could also come from one's own social group. But they are still the people with prestige or creativity. Hence, despite the differences, there are essentially no conflicts among fashion theories regarding the roles played by the prestigious figures in fashion: fashion will not happen without the

endorsement from opinion leaders (Sproles 1979). That is to say, it's the people with prestige or social status who legitimize the fashion products and decide which one is socially appropriate and which one is not. Instagram is considered "cool" among young people because of the endorsement from fashion bloggers and celebrities. iPods gained tremendous success when fashion leaders began to use them, and the normal consumers followed their actions in order to obtain superior status. For anyone who wants to fit in in their own social groups, they need to conform to the social norms to adopt the fashionable technology.

Based on the discussion above, IT fashion involves group conformity (Farennikova and Prinz 2011). Nevertheless, fashion is also a form of self-expression through making choices (Farennikova and Prinz 2011), in that people always have to decide whether to follow fashion or not, what kind of fashion items to follow and how to match different fashion elements to fit their personality or mood. In the case of IT fashion, different social groups chase after different fashionable products: young people are generally fond of iPhones, while older and well-educated people with higher income tend to use Apple Watch. [14] These people may chase the fashionable technologies for the sake of obtaining social distinction. However, the reason why different technologies appear to different groups of people is unclear. We are also not clear how group conformity and individuality of fashionable technologies interact. By examining the literature, two possible explanations are proposed from the psychology literature and semiology literature.

[14] iPhone-Tricks.com. "This is the Average Apple Watch User: Study", https://iphone-tricks.com/news/4207-this-is-the-average-apple-watch-user-study

In psychology, the seemingly contradictory nature of fashion is rooted in two types of self-identity of human beings – social identity and person identity. The concept of self has been widely studied in many disciplines, such as psychology, advertising, and consumer behavior (Sirgy 1985). It often refers to a warm sense or feeling that something is "about me" or "about us" (Leary and Tangney 2003; Sirgy 1982; Sirgy 1985), and it includes both "I" (who thinks) and "me" (who is the object of thinking). Self-identity is referred to "any category label to which a person self-associates or disassociates by choice or endowment" (Arbore et al. 2014b, p. 88). In the literature, three types of self-identity are proposed: social identity, role identity and person identity. Social identity is referred to the self-meanings associated with the membership in a social category or group (Tajfel 1974; Tajfel and Turner 1979). Role identity is one's internalized meanings associated with the roles one performs (Burke 2004; Burke and Stets 2009; Stets and Burke 2000). Lastly, person identity refers to the self-meanings that are independent of other people and define one as a distinct entity (Burke and Stets 2009).

Three types of self-esteem are associated with these three types of self-identity: worth-based self-esteem, efficacy-based self-esteem and authenticity-based self-esteem. People can obtain worth-based self-esteem from the sense of belongingness in a social group (Gecas and Schwalbe 1983). When one is competent in the role he/she performed, the efficacy-based self-esteem can be enhanced (Bandura 2002; Gecas and Schwalbe 1983). When people are being true to who they are as a person, their authenticity-based self-esteem can be sustained (Burke and Stets 2009). People's behaviors are mostly motivated by the goal to sustain and enhance these three types of self-esteem. In addition

to that, people's self-identity affects their behaviors through self-consistency motivation (Swann 1983; Swann 2005; Swann and Read 1981). That is, people need to constantly confirm whom they believe they are by behaving in ways that are consistent with their self-concepts. Previous studies showed that this motivation will affect the clothes people wear, the brands they choose, the organizations they are loyal to, etc. (Schlenker 1975; Shrauger and Lund 1975).

The above researches from psychology literature explain the relationship between self-identity and people's behaviors. However, they fall short of explaining the relationship between technological features of the fashionable technology, symbolic meanings and self-identity. In other words, people's behaviors are driven by their self-identities, which are associated with the symbolic meanings of the fashionable product (Sproles 1979). However, whether and how the symbolic meanings are derived out of the technological features of the technology are unclear. Therefore, I draw from the fashion theories in semiotics (Barnard 2002; Barthes 1983) to supplement the discussion above.

According to Barnard (2017), Fashion is defined as "modern, western, meaningful and communicative bodily adornments, or dress" (p. 4). He believes that humans do not communicate directly. Instead, their communication involves the use of "signs". A sign consists of a "signifier" and the "signified" (De Saussure 2011). Signifiers are the physical part of signs (i.e., the bearer of the meanings), such as the color "red". The signified is the meaning of the signifier or "the metal concept to which that signifier refers" (Barnard 2002, p. 81). The meaning of a certain signifier varies across different cultures and social groups. For instance, red could represent "holiday" in some culture

but could mean "danger" in some other culture. Sometimes a strong sign requires a combination of several signifiers (Barnard 2002; De Saussure 2011). Using the hippie fashion in the 1960s as an example. The hippie fashion consisted of long and fussy hair, baggy clothes made of certain materials (such as cotton and hemp) and so on[15]. People who simply have long hairs might not be recognized as hippies. Barnard also argued that communication through fashion is not a simple sending and receiving of messages and that meanings do not pre-exist the process of communication. Instead, meanings are constructed when the fashion item is diffused through a social system and interacts with the cultural values in the social system (Barnard 2002).

Likewise, the symbolic meanings of fashionable technologies need to be constructed out of some signifiers of the technologies. Those signifiers are the physical properties or design features of the technologies. In order to effectively deliver the messages, the signifiers should be socially visible (Barnard 2002; Sproles 1979). In this case, the aesthetical features of a technology are the best candidates for signifiers. People can easily tell a difference between a smartphone and non-smartphone by the looks (such as the thin and slick body). Some functions can be signifiers as well, such as the intelligent assistant, virtual keyboard and face scanner. Through marketing and promotion effort, technology manufacturers may try to connect those design features with certain meanings, such as young, cool, edgy, modern. However, the associations between design features and the symbolic meanings intended by the manufacturers may or may be accepted by their consumers. The symbolic meanings are determined by the culture in the

[15] Beauty & Fashion, "1960s Hippie Fashion", https://womens-fashion.lovetoknow.com/1960s_Hippie_Fashion

social systems, and they could change over time (Barnard 2002). Through social negotiation and communication, people widely recognize and accept the meanings represented by these design features.

In previous discussions I distinguish between feature-level IT fashion and product-level IT fashion. Feature-level IT fashion is IT fashion associated with certain design features, such as flat phones versus flip phones or smartphone versus non-smartphones. Accordingly, the symbolic meanings are constructed out of these design features (e.g., users of non-smartphones nowadays are generally considered older and outdated). Meanwhile, feature-level IT fashion could have different branches. Different products could distinguish themselves by a different combination of styles and functions. For example, iPhones feature shiny looks, user-friendly interface, and synchronization with other Apple products while Samsung phones feature novel gadgets. Those products attract consumers from different social groups and form independent fashion waves. Young people tend to be drawn to iPhones while people who consider themselves as tech-savvy prefer Samsung phones. The social groups who adopt a certain fashionable product have their shared understanding of the meanings of the product while the people outside those social groups may have different perceptions. For example, young people might perceive iPhone as cool, fun, edgy, while some people outside these social groups might perceive it as overpriced, technically generic, and over-hyped.[16] Different people could have different perceptions of a fashionable technology.

[16] Zach Epstein, 2016, BGR, "8 reasons I still can't leave the iPhone and switch to Android," http://bgr.com/2016/01/28/iphone-vs-android-apple-google-comparison/

Social influence could begin to take effect in the early stages of IT fashion since fashion leaders and innovators are the ones who are adopting and endorsing the technology. However, it exerts a greater influence once the fashionable technology has been adopted by people with prestige in consumers' own social groups and using the technology becomes a social norm (Blumer 1969; King 1963). In addition, constructing the symbolic meanings out of the technologies also takes time. Consensus regarding the symbolic meanings will be reached only when the technology has been diffused into a social system to a certain extent. Overall, group conformity and individuality of IT fashion seem to contradict each other, but they are essentially two sides of the same coin, and they could affect each other. Their relationship will be further explained in chapter 4 and chapter 5.

3.4.4 Herd Behavior

Lastly, as more and more people adopt fashionable technologies under social influence, herd behaviors also begin to emerge. When making decisions with uncertainty, many people choose to follow the predecessors' actions regardless of their own private information. The convergence of people's decisions is referred to as herd behavior. "Everyone does what everyone else is doing, even when their private information suggests doing something quite different" (Banerjee 1992, p. 798). Herd behavior has been observed in many decision-making situations, such as choosing a restaurant, purchasing a laptop, buying and selling stocks. In economics, Keynes (1930) argues that people follow the predecessors' actions because they believe that the predecessors are better informed. Later on, herd behavior was further explained by using Bayes' rule:

people's actions are determined by their estimations of the probabilities of certain outcomes; based on Bayes' rule, people adjust their probabilistic estimations using the information about others' actions (Banerjee 1992; Bikhchandani et al. 1992).

However, the economic explanations of herd behavior are based on the premise that "economic decisions are in essence the outcome of a cognitive process employing a mathematical algorithm to process information and form expectations" (Baddeley 2010, p. 282). In this case, herd behavior is purely a result of the mathematical calculation. But the truth is, herd behavior could also be influenced by sociological and psychological factors. For example, when fund managers are making buying and selling decisions, following other managers helps maintain their reputation (Bikhchandani and Sharma 2000). For them, it's better to be conventionally wrong than unconventionally right (Keynes 1930). Herd behavior could also happen when one is strongly attached to a social group. When a certain behavior (such as adopting a technology) becomes a social norm in this group, individuals might surrender to the group pressure and ignore their own judgment and preferences (Baddeley 2010).

Overall, herd behaviors in fashion can be motivated by different reasons. On one hand, people could herd due to the mathematical calculation of possible outcomes based on other people's information instead of their own information. On the other hand, herd behavior could be motivated by desires for social approval. According to imitation theory, these herd behaviors can all be seen as the imitation of others (De Tarde 1903). The former is an imitation of prior adopters while the latter is an imitation of group members who have higher social status.

Based on the broad definition of herd behavior, situations in which only one person follows another regardless of his/her own private information can be considered herd behavior, which means that herd behavior could happen during any stage of a fashion life cycle. However, I argue that massive herd behaviors mostly happen after two critical points have been reached during the process of IT fashion diffusion, based on the rationale that it's more likely for herd behavior to happen if there are a lot of adopters of the product and the adopters turn out to be market leaders or experts (Bikhchandani et al. 1992; Graham 1999). The first critical point is the point of critical mass. The point of critical mass signifies the point when consumers feel a large portion of people in their own social groups are using the fashionable technology. It's more likely for people to make the decision to ignore their private information and follow other peoples in this situation. The second critical point is the point when significant social influence is taking effect. At this point, not only are the fashion leaders endorsing the fashionable IT but also the prestigious people in one's own social groups are legitimizing the fashionable technology. In this case, people tend to surrender to the group pressure and social norms, regardless of their own information (Baddeley 2010).

3.5 Summary and the Research Angle of the Model

The above sections explicate how IT fashion is formed and diffused as demonstrated in Figure 5.

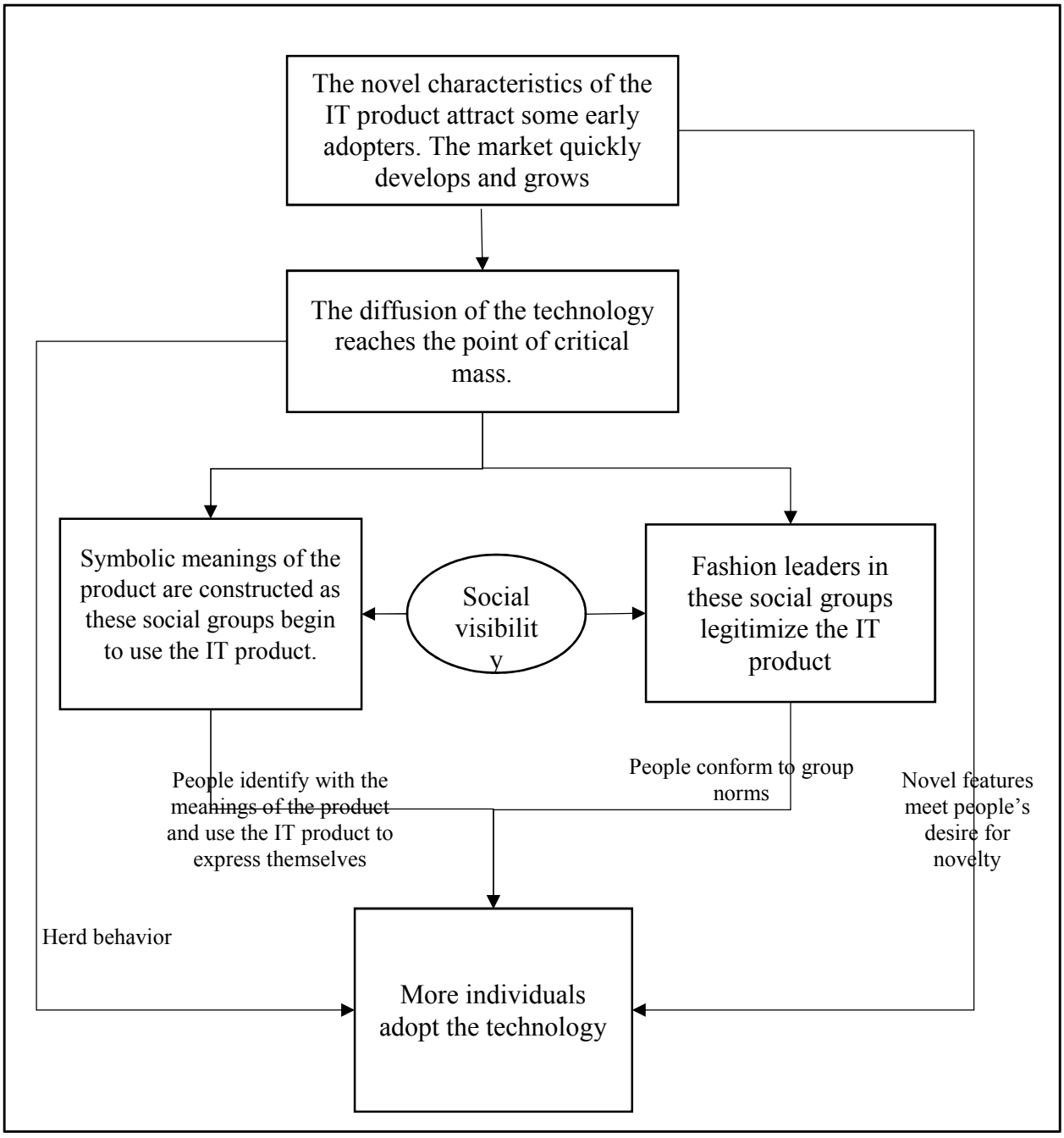

Figure 5. IT fashion Diffusion

Summaries are made below based on the above discussions:

- Social visibility is the crucial necessary condition of IT fashion. Therefore, it's more likely for physical devices to become fashionable than software. However, in a digital era, applications, games, websites can be socially consumed online in certain situations, which makes them meet the first precondition of IT fashion.
- Desire for novelty is the major impetus in the early stage of IT fashion and its effect gradually decreases as IT fashion progresses. Towards the end of the IT fashion life cycle, the adverse effect from novelty takes places which facilitates the termination of the current IT fashion and the beginning of the next IT fashion.
- In order for an IT fashion to become self-sustainable, its diffusion needs to reach the point of critical mass.
- Social influence begins to take effect in two forms after the point of critical mass has been reached: group conformity and individuality.
- Herd behavior could happen at any stage of IT fashion, but it is strengthened after two critical points: the point of critical mass and the point when significant social influence is taking effect.
- Overall, the magnitudes of the four factors – novelty, group conformity, individuality and herd behavior – change as IT fashion diffusion progresses. After the point of critical mass, all four factors exert influence on people's behaviors. Different people could be driven by any one or more of the factors.

- After reaching the saturation point, all four factors should begin to decline.

Based on the above understanding of IT fashion, many research angles can be taken to further study IT fashion at the individual level. Nevertheless, I decided to focus on the issue of fashion IT adoption for the research model in the following chapters. More specifically, the research model focuses on the stage of IT fashion after it has reached the point of critical mass and before it begins to decline. That is to say, the research model assumes that the diffusion of IT fashion has already reached the point of critical mass and that symbolic meanings of the technology have been constructed and widely recognized. At this stage, all four factors are exerting influence on people's behaviors: novelty, group conformity, individuality and herd behavior. This model does not study how the four different factors change during different stages of IT fashion and does not compare the magnitudes of the factors.

I also decide to use the theory of reasoned action (TRA) (Ajzen and Fishbein 1980) as the theoretical lens of the research model. According to TRA, people's attitudes toward a certain behavior are determined by their beliefs or perceptions about performing the behavior. Their attitudes in turn affect their behavior intentions (Ajzen and Fishbein 1980). Moreover, Wixom and Todd (2005) further divided beliefs in TRA into object-based beliefs (beliefs about the characteristics of a technology) and behavioral beliefs (beliefs about using the technology). Therefore, the research model will identify key behavioral beliefs in the fashion context and study the relationship between these behavioral beliefs and adoption intention. Moreover, the research model will also attempt to conceptualize the core characteristics of fashionable technologies from a consumer's

perspectives and then investigate how these characteristics affect people's behavioral beliefs. The following chapter explains the frame of the research model and identifies the core constructs in the model.

CHAPTER 4: FRAME OF THE RESEARCH MODEL

In the last chapter I decided to focus on the issue of IT fashion adoption for the research model via the theoretical lens of TRA, which argues that people's perceptions or beliefs about a certain behavior determine their intention to perform that behavior. Thus, in this chapter I identify the important perceptions or beliefs about fashionable technologies in the IT fashion context. In this chapter, I first adopt a two-beliefs model by Wixom and Todd (2005), which complements TRA and allows me to classify beliefs about fashionable technologies into two types. Then I theoretically develop the core constructs in the research model.

4.1 Two Beliefs Model

By examining fashion-related factors, two types of beliefs can be identified. Constructs such as perceived aesthetics and perceived critical mass are beliefs about the characteristics of fashionable technologies while constructs such as perceived usefulness and perceived ease of use are beliefs about using a fashion technology. Wixom and Todd (2005) called the former "object-based beliefs" and the latter "behavioral beliefs". In the literature, object-based beliefs and attitudes are believed to be weak predictors of behaviors (Ajzen and Fishbein 1980; Kraus 1995; Wixom and Todd 2005). To bridge the gap between object-based beliefs and behavioral intentions, Wixom and Todd (2005) argue that object-based beliefs and attitudes influence behavioral beliefs and attitudes first, which in turn, lead to behavioral intentions. In TAM 2 by Venkatesh and Davis (2000), the constructs output quality and result demonstrability can be considered object-based beliefs. Specifically, the "objects" in the two constructs are information systems,

and the two constructs refer to beliefs that an information system has quality output and demonstrable results. In other words, they are beliefs about the characteristics of the system, not beliefs about the outcomes of using the system by the user himself/herself. In contrast, perceived usefulness is considered a behavioral belief in that it refers to a belief that the behavior of using a technology can enhance the user's job performance. Since behavioral beliefs directly relate to the outcomes of using the technology, they are better predictors of behavioral intentions (Davis et al. 1989; Wixom and Todd 2005). In TAM 2, the model shows that these two object-based beliefs directly influence the behavioral belief perceived usefulness. Therefore, this study adopts the argument that object-based beliefs shape behavioral beliefs, which in turn, influence behavior intentions, and uses it as the overall frame of the model (see figure 6). The next two sections will identify the most important object-based beliefs and behavioral beliefs in the fashion context, based on fashion literature and the unique characteristics of information technologies

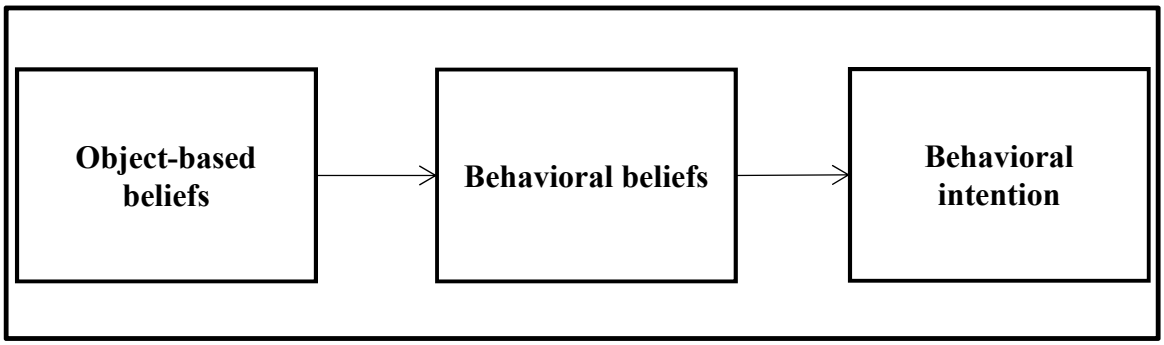

Figure 6. The Overall Frame of the Model

4.2 Core Characteristics of Fashion IT

In the context of IT fashion, object-based beliefs reflect the core characteristics of fashionable technologies from the perspective of consumer perceptions. Identifying the core characteristics of fashionable technologies from the perspective of consumer

perceptions is essentially answering the question: what makes a technology fashionable? If we examine the previous definitions for fashion, we can tell that different aspects of fashion are emphasized in these definitions. For example, some definitions emphasize the collectivity of fashion (King 1963; Lang and Lang 1961; Wang 2010) while some definitions emphasize the social meanings of fashion (Davis 1992; Sproles 1979). Based on the process of IT fashion formation and diffusion in chapter 3, I propose three core characteristics of fashion IT: collective adoption, social endorsement and novelty. I argue that for a technology to be considered fashionable, it should at least have these three characteristics.[17] In addition, these characteristics are not objective properties of fashionable technologies, but rather consumers' perceptions. The following sections will explain how the three characteristics of fashionable technologies are derived out of the IT fashion diffusion process. Then the three characteristics of fashionable technologies will be defined. Related constructs in the literature will be reviewed and used as references for the definitions and measurements of the constructs (MacKenzie et al. 2011).

4.2.1 Collective Adoption of IT

When explaining the formation and diffusion of IT fashion, I emphasize the importance of the point of critical mass. I argue that the diffusion of IT fashion also follows the trajectory of innovation diffusion proposed by Rogers (1962). For any IT fashion to become self-sustaining, the diffusion process needs to reach the point of critical mass. Yang and Hsu (2011) adopted the concept of critical mass proposed by Rogers (1962) as an antecedent of the intention to adopt fashionable technologies. They

[17] Fashionable technologies might have other characteristics but will have at minimum the three core characteristics.

argued that once the point of critical mass is reached, the network externality effect will be significantly magnified. Hence, perceived critical mass positively affects users' intentions to adopt fashion technologies (Yang and Hsu 2011). I argue that being adopted by a significant number of people in a social group is an essential characteristic of fashionable technologies and accordingly proposes a construct called collective adoption of IT.

It's worth pointing out that after reaching the point of saturation, fashion begins to decline (as shown in figure 4). That is, when too many people adopt the technology, it is not fashionable anymore. As the trickle-up theory indicates, when too many people in the lower class adopt a certain fashionable style, the upper class will abandon this style and seek new ones to distinguish them from the lower class. Therefore, the symbolic meanings attached to the style vanish as well. "The very character of fashion demands that it should be exercised at one time only by a portion of the given group, the great majority being merely on the road to adopting it." (Simmel 1957, p. 547) In his definition of fashion, Sproles also stated that fashion style is only adopted by a discernible proportion of members of a social group. Therefore, this study uses the phrase "a discernible proportion" from his definition and defines collective adoption of IT *as the degree to which a consumer perceives that a discernible proportion of people in a social group adopt the IT product*. The general property of the construct is a *perception about the number of adopters of an IT product* while the entities to which the construct applies are *consumers*. It's worth pointing out that the construct collective adoption of IT and perceived critical mass are not necessarily the same, in that the point at which a

discernible proportion of people in a social group adopt the IT product is not necessarily equivalent to the point of critical mass. Instead, it could be any point between the point of critical mass and the point of saturation. What's more, the point of critical mass in innovation diffusion theory is an objective minimum number for a certain group. However, Rogers (1962) admitted that it's hard to define the threshold for the point of critical mass and that the number is relative to different groups. Thus, it's a minimum number that the adoption of an innovation in a group needs to reach in order for the group members to have the perception that many people are using this innovation. In contrast, the construct collective adoption of IT is defined from the perspective of individual perception, not an objective number for a certain group.

Another similar construct is perceived popularity. In the literature there is no clear definition for this construct, mostly because perceived popularity is a "socially constructed reputational variable", and hence no uniform definition can be applied to it (Rose et al. 2004). Nevertheless, perceived popularity is believed to contain the meanings such as attractive, desirable, widely accepted and well-known. It is also believed to be associated with status (Lease et al. 2002; Parkhurst and Hopmeyer 1998). Popularity is usually operationalized by asking peers to nominate the most popular person (Lease et al. 2002; Parkhurst and Hopmeyer 1998; Rose et al. 2004). Obviously, some conceptual domains of popularity such as social desirability and social dominance are very important aspects of IT fashion. However, the construct collective adoption of IT only captures the aspect of collectivity, not the other aspects such as social desirability. Collectivity may or may not be the result of social desirability, and hence they are two different concepts.

Table 8 summarizes the relationships and distinctions between the construct and the related constructs.

4.2.2. Social endorsement of IT

Admittedly, fashion products are always adopted by a large number of people in a social group. However, not all the massively adopted products are fashionable. For instance, Huawei and Xiaomi are two local smartphone brands in China. They are extremely popular in the country for their low prices and decent performance. Globally, they have the third and fourth largest market shares among all the smartphone brands. [18] However, they are not considered fashionable as iPhones or Samsung phones. So was Khakis. Khaki pants were once worn in armies and later on became popular among normal people in the 1960s.[19] But they had nothing to do with fashion until a fashion brand Levi's introduced a product line with khaki pants and promoted them on runways and in fashion magazines in the 1980s (Farennikova and Prinz 2011). It's the fashion leaders, experts, and elite that made khakis fashionable.

During the process of IT fashion diffusion, the elite and the people with prestige in one's social group legitimize the fashionable technology by making it a social norm in this group. A technology is not fashionable without endorsement from the elite and prestigious people. Therefore, this study proposes social endorsement of IT as the second core characteristics of fashionable technologies.

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[18] IDC Press Release (January 29, 2015). "In a Near Tie, Apple Closes the Gap on Samsung in the Fourth Quarter as Worldwide Smartphone Shipments Top 1.3 Billion for 2014, According to IDC," http://www.idc.com/getdoc.jsp?containerId=prUS25407215

[19] Encyclopedia, "Women's Khaki Pants", http://encyclopedia.jrank.org/articles/pages/cm278kfq14/Women%27s-Khaki-Pants.html

Dean (1999) argues that endorsement is usually engaged with three actors: seller, endorser and target (e.g., consumers). The endorser needs to try out a product provided by the seller first, then evaluate the product and communicate his/her opinions to the target. The endorser also tries to convince the target of buying/using the product. Based on his delineation of endorsement, this study defines social endorsement of IT as *the degree to which a consumer perceives that people with prestige or social status use, appreciate and advocate an IT product*. In this definition, people with prestige or social status are not necessarily celebrities or the elite. They could be any prestigious people or opinion leaders from consumers' own social groups (Sproles 1979).

In the IS literature, there are a few constructs that conceptualize the social influence of information systems. The construct image in Moore and Benbasat (1991) was defined as "the degree to which the use of an innovation is perceived to enhance one's reputation or status in their social system" (p. 195). Similar constructs named social influence or subjective norm were proposed in TAM 2 (Venkatesh and Davis 2000) and UTAUT (Venkatesh et al. 2003) and defined it as "the degree to which an individual perceives that important others believe he or she should use the new system." (Venkatesh et al. 2003, p. 451). Although these constructs and social endorsement of IT are all related to the social influence of a technology, they are significantly different: Previous constructs such as image and subjective norm are beliefs about performing a certain behavior (in this case, using the technology), and they are anchored against the user himself. That is, they are about "me" performing a behavior. In contrast, the construct social endorsement in the current study is a belief about the technology and is anchored

against other people. That is, the construct is about "other people", which is not directly related to "me", the user himself/herself.

4.2.3 Novelty of IT

As discussed above, people have constant needs for novel stimulation and actively engage in novelty-seeking activities. Fashionable technologies serve to meet people's desire for novelty. Fashion is "the pursuit of novelty for its own sake" (Robinson 1958, p. 127). Wang (2010) believes that an IT fashion is "a transitory collective belief that an information technology is new, efficient, and at the forefront of practice" (p. 64). Novelty is particularly important for fashionable technologies in that technologies have always been moving forward, not backwards. People might chase after slick smartphones for now and then pursue bulky smartphones ten years later. That is, old styles could make a comeback later. However, non-smartphones would never make a comeback after smartphones, in that people need to give up all the capabilities that allow them to browse the Internet, play VR games and socialize online. All fashionable technologies should be novel, at least in the early stage of IT fashion. As IT fashion diffuses through a social system, more and more people have accepted the novel features. In this case, the novel features become prevailing in the market. They may be still considered novel at this point, but not as novel as in the early stage of IT fashion. As IT fashion begins to decline, the technology is not considered novel anymore. In the current dissertation, I propose the third core characteristics of fashionable technologies and name it the novelty of IT. The construct novelty has been studied in the IS, management and marketing disciplines. Table 7 summarizes the definitions and measures of these constructs.

Table 7 Definitions and Measures of Constructs related to Novelty			
Article	**Construct name**	**Definition of novelty**	**Measure**
Wells et al. (2010)	Perceived novelty of an IT innovation	The degree to which a user perceives an innovation to be a new and exciting alternative to an existing technology	I found using the hand-scanner to be a novel experience Using the hand-scanner is new and refreshing The hand-scanner represents a neat and novel way of making a [payment card brand] payment
Jeong et al. (2017)	Perceived novelty	The newness or freshness of an IT innovation	Using wearable devices is new Using wearable devices are novel and refreshing Wearable devices are unique Using wearable devices would provide an unusual experience I found using wearable devices to be a novel experience
Blijlevens et al. (2013)	Novelty	No definition	This is a novel lamp this design in innovative this design is original
Miron-Spektor and Beenen (2015)	Product novelty	No definition	The novelty measure included 4 items assessing the product's originality (e.g., ''Novelty'' – the extent to which the product is novel; ''Uniqueness'' – the extent to which the product is different from other products.
Berlyne (1960); Berlyne (1970)	Novelty	Novelty as encompassing a new or unusual combination Of attributes.	
Chakrabarti and Khadilkar (2003)	Product novelty	No definition	They measured novelty of a certain product by identifying the difference between this product and a reference product and calculating the

			novelty value of each difference.
Barclay and Dann (2000)	Product newness	No definition	They measure the percentage newness of product performance relative to the total number of performance criteria for that product. They also divide performance into quantifiable performance criteria and unquantifiable performance criteria (e.g. appearance, style, feel etc.).
Tatikonda and Montoya-Weiss (2001)	Product technology novelty and process technology novelty.	No definition	They ask project managers to rate the overall newness of the manufacturing technologies employed in the project and the newness of five aspects: product modules, product configuration, product technologies, individual manufacturing stages, and process layout.

Berlyne (1970) considers novelty as combinations of new or unusual attributes. What's more, novelty is relative to the objects that have been experienced before. Berlyne (1970) identifies two kinds of novelty: 1) absolute novelty - an object that has never been experienced before; 2) relative novelty - an object that consists of a new combination of previously experienced elements. When it comes to information technologies, there are mainly two types of IT innovations. One type of IT innovations has brand-new concepts and emerges as new product categories (such as smartwatches and smart glasses). Another type of IT innovations appears as new editions of older versions (such as iPhone 5 or 6). New features are added to the old ones. The current dissertation takes the two types of IT innovations into consideration and defines the

novelty of IT as *the degree to which the functional design features of an IT product (and possibly the aesthetic design) are new, original, or unusual compared to other existing products*. The definition of novelty in the current dissertation synthesizes the definitions of novelty by Jeong et al. (2017), Wells et al. (2010) and Berlyne (1970), excluding the word "exciting" from the definition by Wells et al. (2010) in that the feeling of excitement should belong to the domain of hedonics, not novelty. What's more, the current definition emphasizes that the novelty of fashionable technologies should come from the functional design of the technology.

Table 8 summarizes the definitions of the three characteristics and the difference between them and other related constructs.

Table 8. Summary of the Three Characteristics

Dimensions	**Definition**	**Related Constructs**	**Difference between the Dimensions and Related Constructs**
Collective adoption of IT	The degree to which a consumer perceives that a discernible proportion of people in a social group adopt the IT product.	Perceived critical mass (Yang and Hsu 2011)	The difference between perceived collective adoption of IT and perceived critical mass is: consumers could perceive collective adoption at any point of the fashion life cycle between the point of critical mass and the point of saturation.
		Perceived popularity (Rose et al. 2004)	Perceived popularity involves social desirability and social dominance while perceived collective adoption is a perception about collective behavior.
Social endorsement of IT	The degree to which a consumer perceives that people with prestige or social status use, appreciate and	Status gain (Brown and Venkatesh 2005), image (Moore and Benbasat 1991)	The constructs image or status gain are beliefs about using an IT while the latter is a belief about the characteristics of an IT. What's more, the former ones emphasize the result of social influence while the latter

	advocate this product.		emphasizes the source of social influence
		Subjective norm/social influence (Venkatesh and Davis 2000; Venkatesh et al. 2003)	The same as above.
Novelty of IT	The degree to which the functional design features of an IT product (and possibly the aesthetic design) are new, original, or unusual compared to other existing products	Perceived novelty of an IT innovation (Wells et al. 2010), perceived novelty (Jeong et al. 2017), novelty (Berlyne 1970)	The definition of novelty in the current dissertation incorporates the domains of novelty in the three previous definitions by (Wells et al. 2010), (Jeong et al. 2017) and (Berlyne 1970). What's more, the definition stresses the sources of novelty should come from the functional design of the technology.

4.2.4 Summary

Overall, I argue in the current dissertation that any fashionable technology should have these three characteristics: collective adoption, social endorsement, and novelty. As we know, fashion is a constantly evolving process which can be further divided into several stages – market development, rapid growth, maturity, saturation and decline, based on innovation diffusion theory by Rogers (1962). The magnitudes of the three characteristics should constantly evolve as IT fashion diffusion progresses. Specifically, at the beginning of an IT fashion life cycle, fashion leaders are attracted by the novel features of the technology. At this stage, novelty of IT is very high. These fashion leaders begin to endorse the product which makes more people to adopt the technology.

After the diffusion of the technology has reached the point of critical mass, collective adoption of IT greatly increases. What's more, symbolic meanings associated with the technology are constructed during the diffusion process, and people with social status and prestige from consumers' own social groups are endorsing the technology as well. Thus, people perceive greater social endorsement of IT. We can say that the technology is fashionable at this point. Furthermore, based on the definition of fashionable IT in the current study (i.e., *a technology with novel features which is temporarily adopted by a discernible proportion of members of a social group and delivers symbolic meanings for the time and situation*), I argue that a technology shouldn't be considered fashionable before this point. This point should appear after the point of critical mass. However, it's almost impossible to predict the exact time when this point appears because the diffusion of different IT fashions could have different speeds. What's more, as we discussed above, fashion is relative to social groups (Sproles 1979). What's fashionable in one social group might not be fashionable in another social group. According to Rogers (1962), the point of critical mass generally appears at the rapid growth stage but varies across different social groups. Thus, when a technology becomes fashionable in one social group with all the three salient characteristics, it might not be the case in another social group. Therefore, when we are trying to determine whether a technology is fashionable, we need to specify which social group we are referring to.

In addition, whether a technology is fashionable is also subject to one's personal experiences and feelings. It's up to one's own judgement whether a technology is adopted by a large number of people, whether it's endorsed by people with prestige, and whether

it's novel. Thus, whether a technology is fashionable or not could be determined at both the group level and individual level. At the group level, there could be objective criteria that we can use to assess the three characteristics of IT fashion, such as the number of adopters in a certain group. These criteria are out of the range of the current dissertation and won't be discussed. At the individual level, nevertheless, there are no objective standards for collective adoption, social endorsement, and novelty. Since the research model focuses on adoption at the individual level, it's more reasonable to use personal perceptions to evaluate the three characteristics of fashionable technologies instead of objective measures. Lastly, I argue that the magnitudes of all the three characteristics of fashionable technologies should remain relatively high before the diffusion has reached the saturation point. Fashion begins to decline after this point (Sproles 1979; Wasson 1968), and hence a technology shouldn't be considered fashionable anymore. Figure 7 below points out the time period during which a technology may be considered fashionable.

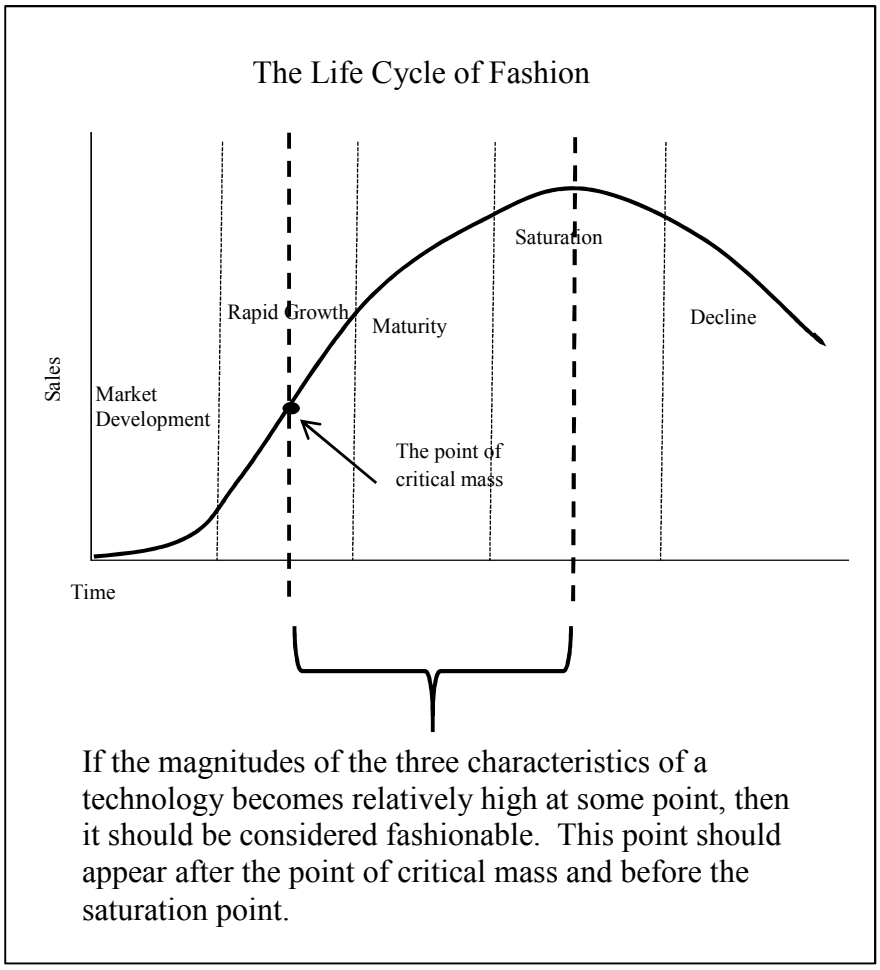

Figure 7. The Life Cycle of Fashion (Source: Wasson, 1968. p. 38)

4.3 Symbolic Meanings of Fashion IT and IT Congruity

As discussed in chapter 3, during the process of IT fashion diffusion, social influence takes effect in two forms: group conformity and individuality. People adopt fashionable technologies not only to obtain social distinction but also to use them for self-expression if they perceive the symbolic meanings of the technology and identify with them. According to Barthes (1983) and Barnard (2002), the symbolic meanings of a technology are constructed from the physical properties of the technology. Moreover, I further explained the distinction of feature-level IT fashion and product-level IT fashion

and argued that different fashionable technologies could feature different combinations of novel design, which attract different social groups. Over time, different symbolic meanings become associated with different fashionable technologies. To summarize, the commonality between different fashionable technologies is that they all have widely recognized and accepted symbolic meanings, but these symbolic meanings vary across different fashionable technologies. As shown in Figure 8, iPhones and Samsung Phones could have different sets of symbolic meanings. In general, iPhone users are usually well-educated, affluent and politically liberal while users of Samsung phones are less affluent and tend to work in technical jobs.[20] Despite the different symbolic meanings, all fashionable technologies should have the three core characteristics: collective adoption, social endorsement and novelty, as shown in Figure 8.

[20] Forbes, "What Kind Of Person Prefers An iPhone?", https://www.forbes.com/sites/toddhixon/2014/04/10/what-kind-of-person-prefers-an-iphone/#3af9db0fd1b0

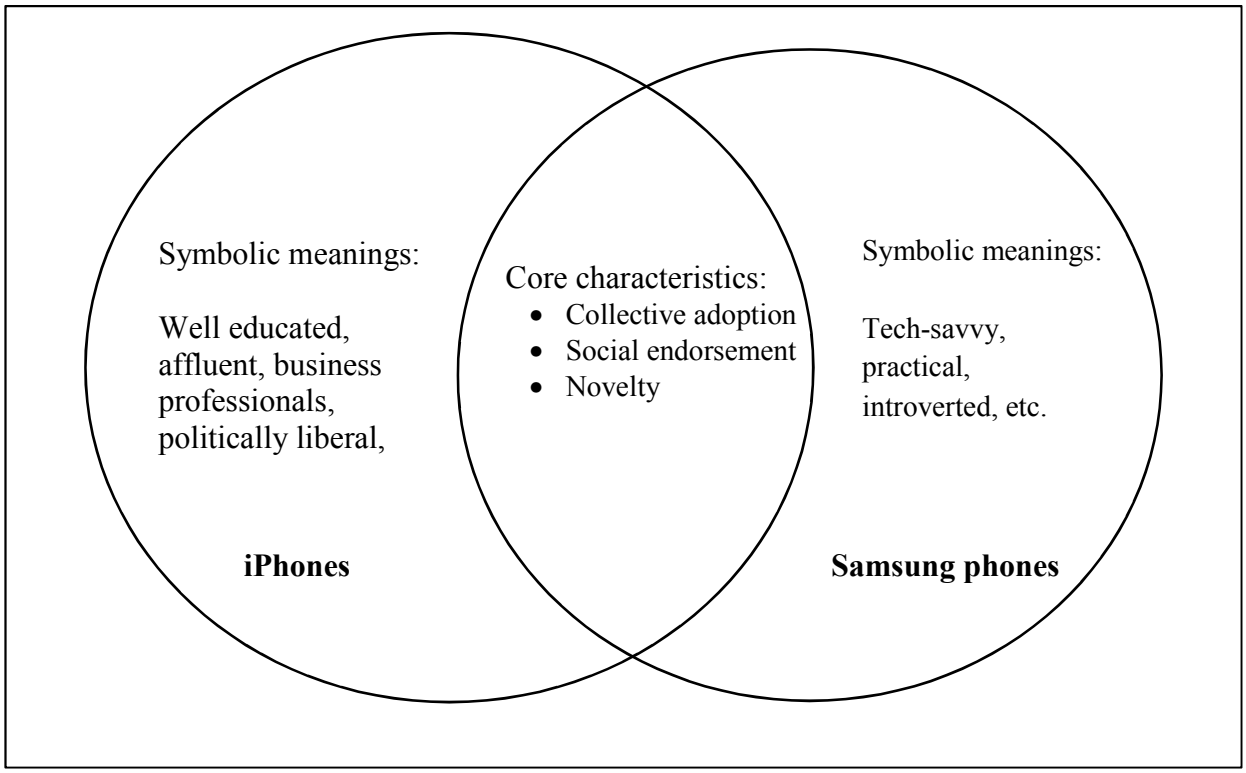

Figure 8. Characteristics of Fashion IT

According to self-verification theory, people have a constant tendency to behave consistently with their own person identities (Burke 2004). This tendency is referred to as self-consistency. Behaving consistently with their person identities can help people obtain feelings of coherence and self-respect (Burke 2004; Swann 1983). Instead, behaving inconsistently with their person identities could cause anxiety. Based on self-verification theory, Sirgy proposed the concept of self-congruity, which is defined as "a match between a product image and a person's actual self-image" (Sirgy 1985, p. 196). Driven by self-consistency motivation, self-congruity is expected to affect people's product preferences and behavioral intentions (Helgeson and Supphellen 2004; Sirgy 1982; Sirgy 1985; Sirgy et al. 1986; Sirgy and Samli 1985; Sirgy and Su 2000). Similarly, I argue that the congruence between the symbolic meanings of a fashionable technology

and one's self-identity is another important factor that could affect people's adoption intention. This construct is referred to as IT congruity and defined as *the degree to which a consumer believes that the symbolic meanings of an IT product are congruent with his/her self-image*. In this definition, self-image is synonymous with self-identity (Hecht 1993). Although there are three types of self-identity, self-identity in this definition mainly refers to person identity. Symbolic meanings refer to the characteristics of the typical users of a technology. Please notice the uniqueness of the construct IT congruity. We could consider it as a belief about the characteristics of fashionable technologies in that it is about the perceptions of the symbolic meanings of the technology. But it's not a pure object-based belief in that one's self-image is also incorporated in this construct and is compared with the symbolic meanings. Nevertheless, I still consider it commensurate with object-based beliefs that could affect behavioral beliefs.

The major distinction between the construct IT congruity and self-congruity in Sirgy's studies (Sirgy 1985) lies in the difference between product image and symbolic meanings of fashionable technologies. Although it's not explicitly specified, product image in the definition of self-congruity generally refers to "the personality of a typical user of a brand" (i.e., brand image) (Helgeson and Supphellen 2004, p. 206). There are many definitions of brand image. The broader definitions of brand image considered it as a combination of all kinds of impressions people have of a brand, and it consists of several dimensions: functional, economic, social, and psychological (Newman 1957). For instance, the brand image for a car could be spacious, luxurious, reliable, etc. With this definition, brand image and symbolic meanings are different concepts. However, there

are narrower definitions for brand image as well. In these definitions, brand image is also referred to as brand personality and is defined as "the set of human characteristics associated with a brand" (Aaker 1997, p. 347). Nöth (1988) even drew from semiotics and applied the concepts "signifier" and the "signified" to brand image. The connotational meanings are the "signified" and the material object is the "signifier". In this case, symbolic meanings of fashionable technologies and brand images are essentially both the connotational meanings of a product. The difference is that the symbolic meanings of fashionable technologies could be associated with either certain design features (such as the features of smartphones) or certain products (such as Apple Watch), while brand images are usually associated with a brand or a product. Moreover, the symbolic meanings of fashionable technologies are developed during the process of social negotiation, while brand image is usually developed over time through advertising campaigns (Echtner and Ritchie 1993)

4.4 Identifying Behavioral Beliefs

In this section I identify the major behavioral beliefs that are affected by the core characteristics of fashion IT proposed above.

4.4.1. External Symbolic Value and Internal Symbolic Value

Adopting fashionable products are expected to provide identities for the adopters relative to others and allow them to express their aesthetic tastes and personalities (Reynolds 1968). According to "trickle-down" theory by (Simmel 1957), fashionable products signify social status, and the lower class chases after the fashion in order to obtain higher social status. So are fashionable technologies. "iPhone users think because

they carry an iPhone they are better than everyone else", said the people on website BGR. [21] The symbolic value provided by using fashion technology is an important behavioral belief in the fashion context.

In order to enhance their self-esteem and achieve self-verification, people actively seek opportunities to display "identity cues" (Swann 1983; Swann and Read 1981). Fashionable technologies could serve as identity cues to help maintain people's social identity and person identity. On one hand, people adopt fashionable products to emulate the upper class in order to obtain higher social status and a sense of belonging in a social group, which can enhance their worth-based self-esteem; on the other hand, people express their tastes, personality, values and tastes by adopting fashionable products, in order to maintain their person identity. That is, adopting fashionable products provides two types of symbolic values – self-expression and impression of others. Accordingly, this dissertation proposes two new constructs: perceived external symbolic value and perceived internal symbolic value.

In the literature on luxury goods, the existence of external and internal motivations behinds goods consumption has been confirmed. In early days, studies on luxury goods mainly focused on the socially oriented consumption – buying to impress others (Berry 1994; Corneo and Jeanne 1994; Dittmar and Pepper 1994; O'Cass 2004; Vigneron and Johnson 1999). They argued that purchase of luxury products has two main motives: social salience – the luxury product signifies social prominence, and social identification – the luxury product serves as a symbol of group membership (Tsai 2005).

[21] Zach Epstein, 2016, BGR, "8 reasons I still can't leave the iPhone and switch to Android," http://bgr.com/2016/01/28/iphone-vs-android-apple-google-comparison/

Later on, scholars investigated another type of personal-oriented consumption (Wong and Ahuvia 1998) and proposed several internal motivations based on emotions, the state of mind and self-perception (Amatulli and Guido 2011; Vigneron and Johnson 1999; Wong and Ahuvia 1998). These internal motivations include self-directed pleasure by using the product, self-gift giving, self-verification by consuming the product that is congruity with self-image, etc. (Tsai 2005; Wong and Ahuvia 1998).

In the current study, perceived external symbolic value and perceived internal symbolic value are both beliefs about performing a behavior (i.e., behavioral beliefs), as opposed to object-based beliefs. Both constructs reflect the perceived value provided by using a technology. To be more specific, perceived external symbolic value includes both social salience and social identification. I believe these two motivations (i.e., status gain and belongingness to a social group) are two variants of the same motivation – gaining social approval in social situations (DeBono 1987; Smith et al. 1956). Therefore, it's reasonable to incorporate them in the same construct instead of modeling the construct as a multi-dimensional construct. Accordingly, perceived external symbolic value is defined as *the degree to which a consumer believes that using an IT product can display his/her social status and group membership in social situations*.

Perceived internal symbolic value is different from perceived external symbolic value in that it's not about adopting a product to show off. Instead, it's about expressing one's personality, values, and *modus vivendi*. Take fashionable clothes as an example. During the mid-1960s, the hippie fashion took place all over the world. Hippies kept long and fussy hair and wore loose clothes made from natural materials. These hair and

clothes styles were considered fashionable at that time and were used by hippies to express their political points and lifestyles – freedom, unconventional and nonconformist. [22] So are fashionable technologies. Some people adopt fashionable technologies because the trendy design of these technologies matches their tastes, while some other people believe that adopting fashionable technologies shows their fun, cool, and innovative personalities. A similar construct was used in the luxury brand consumption literature, and is referred to as self-expression attitude toward luxury brands, which is defined as "an orientation to respond toward luxury brands so as to display individual identity and underlying value and communicate central beliefs" (Bian and Forsythe 2012, p. 1444). The current study adapts this definition and defines perceived internal symbolic value as *the degree to which a consumer believes that using an IT product can display his/her personality, values and way of living as a person.* The conceptual difference between self-expression attitude toward luxury brands and perceived internal symbolic value lies in that the former is an attitude toward performing a behavior while the latter is a belief toward performing the behavior.

In addition, external symbolic value is about obtaining social recognition while internal symbolic value is about expressing oneself. These two seem to contradict with each other. However, as Farennikova and Prinz (2011) put, "Fashionistas are simultaneously conformists and individualists" (p. 23). When one is following the fashion, he/she is consciously making decisions about whether to follow it or not and which fashion to follow, and he/she deliberately selects a fashion product that matches

[22] Crystal Schwanke, "1960s Hippie Fashion", http://womens-fashion.lovetoknow.com/1960s_Hippie_Fashion

his/her person image (Farennikova and Prinz 2011). At the same time, since the fashion product is adopted by many other people, adopting the product can also help him/her obtain social recognition. That is, he/she is expressing himself/herself and conforming to the group at the same time. The relationship between external symbolic value and internal symbolic value will be further explained in chapter 5.

4.4.2 Related Concepts

In IS, social factors have been studied in the IT adoption literature. Moore and Benbasat (1991) introduced the construct “image” into the adoption literature and defined it as "the degree to which use of an innovation is perceived to enhance one's image or status in one's social system" (p. 195). Other labels have been used for the same construct, such as personal outcomes (Compeau et al. 1999) and status gain (Brown and Venkatesh 2005). Venkatesh and Davis (2000) included another social factor called subjective norm into the adoption model and defined it as “a person’s perception that most people who are important to him think he should or should not perform the behavior in question” (p. 187). Arbore et al. (2014b) systematically examined the symbolic value of information technologies from the perspective of self-identity and proposed a construct called self-identity, defined as “the symbolic meanings of an innovation” (p. 94). Carter and Grover (2015) studied self-identity from a different angle and proposed a new construct called IT identity, defined as “the extent to which a person views use of an IT as integral to his or her sense of self” (p. 938). IT identity significantly differs from other identity-related constructs in that IT identity is neither about the symbolic value itself nor the self-identity itself. Instead, it reflects the degree of one viewing the technology as part of

himself/herself. Lastly, the construct IT congruity proposed in the current dissertation is also another construct related to self-identity. External symbolic value and internal symbolic value differ from IT congruity in that they are behavioral beliefs but IT congruity is not. In other words, external symbolic value and internal symbolic value are about the outcomes of "me" using the technology, while IT congruity does not incorporate the behavioral aspect (i.e., using the technology). It simply refers to whether the symbolic meanings of a product match one's self-identity.

Table 9 and Figure 9 below summarizes the relationship between External and internal symbolic value and related constructs.

Table 9. The Relationship between External and Internal Symbolic Value and Related Constructs

Related constructs	Differences from the Constructs in this Study
Image by Moore and Benbasat (1991)	The construct image proposed by Moore and Benbasat (1991) focus on the social status provided the adopting information technologies, which is only one aspect of the external symbolic value in this study. In the current study, perceived external symbolic value incorporates both status gain and group identification.
Subjective norm by Venkatesh and Davis (2000), Venkatesh et al. (2003) and Venkatesh et al. (2012):	Subjective norm is related to external symbolic value in that they are both the results of social influence. However, external symbolic value is a form of social learning while subjective norm "act as external sanctions inducing negative emotional states when individuals do not conform" (Baddeley 2010, p. 285). Subjective norm affects individuals' behaviors by forcing them to change their intention in response to the social pressure (Venkatesh et al., 2003) and punishment may be executed if they don't obey.
Self-identity by Arbore et al. (2014)	By definition, the construct self-identity incorporates all the symbolic value provided by using a technology. Hence, it includes both external symbolic value and internal symbolic value.
Self-expression attitude toward luxury brands by Bian and	This construct is related to perceived internal symbolic value in that they are both about the self-

Forsythe (2012)	expression motivation behind people's behaviors. The difference is that self-expression attitude toward luxury brands is an attitude toward using a product, while perceived internal symbolic value is a belief about the symbolic benefit provided by using the product.
Self-presentation attitude toward luxury brands by Wilcox et al. (2009) and Bian and Forsythe (2012).	Self-presentation attitude toward luxury brands (also called social-adjustive function) is defined as a predisposition to use luxury brands to convey social image (Bian and Forsythe 2012; Wilcox et al. 2009). Likewise, this construct is similar to perceived external symbolic value but distinct from it in that the former is an attitude or inclination toward using a product, while the latter is a belief about the symbolic benefit provided by using the product.
IT identity by Carter and Grover (2015)	IT identity is not about the symbolic value provided by using a technology, but instead, it reflects the degree of one's expansion of self-identity to incorporate the technology. Hence, it's completely different from external and internal symbolic value.
IT congruity in the current dissertation	External and internal symbolic values differ from IT congruity in that the former two are about the outcomes of "me" using the technology while IT congruity does not conceptually include any behavioral aspect.

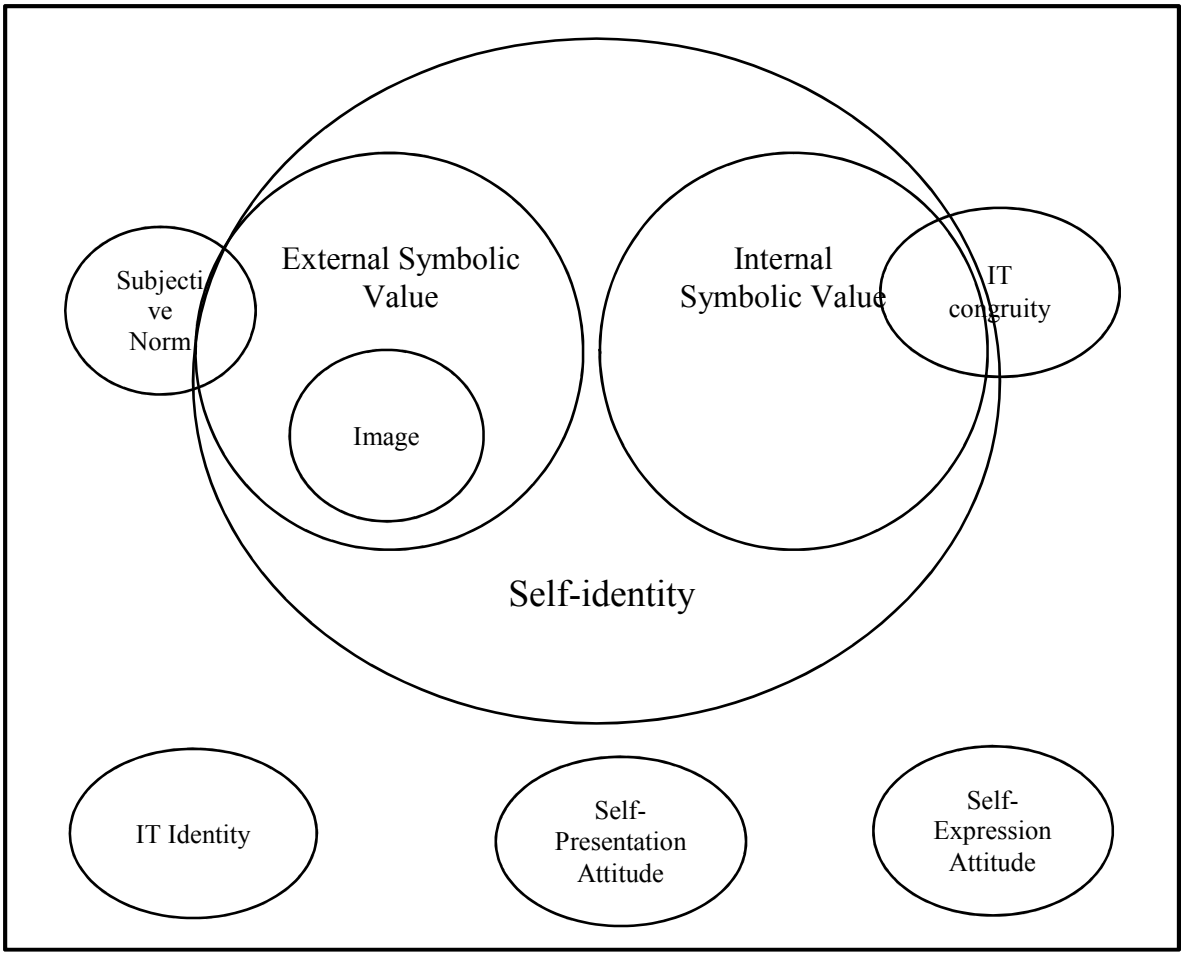

Figure 9. The Venn Diagram for External Symbolic Value, Internal Symbolic Value and Other Constructs

Overall, this dissertation extends the construct image by incorporating group membership into external symbolic value and decomposes the construct self-identity (Arbore et al. 2014a; Arbore et al. 2014b) by dividing it into two types of symbolic value: external symbolic value and internal symbolic value. In this way, it provides a more nuanced and systematic understanding of the symbolic values provided by using an information technology.

4.4.3 Hedonic Value and Utilitarian Value

As information technologies, fashion technologies are still expected to provide utility for people's daily lives. People expect to use cell phones to make phone calls and to use activity trackers to track steps. They make sure that the technology is useful for them before they adopt it. In the IT adoption literature, perceived usefulness is proved to be the most important determinant of IT adoption intention (Davis 1989; Davis et al. 1989; Venkatesh and Brown 2001; Venkatesh and Davis 2000; Venkatesh et al. 2003; Venkatesh et al. 2012). Hence, even in the fashion context, utilitarian value provided by using a fashion technology should still be an important behavior belief. Based on the construct perceived functional value in Arbore et al. (2014a), this study defines perceived utilitarian value as *the degree to which a consumer believes that the use of a given technology may enhance performance in her/his daily life*. Perceived utilitarian value is similar to the construct perceived usefulness in Davis (1989) or performance expectancy in Venkatesh et al. (2003) in that they are all about the utilitarian value provided by using a given technology. The difference is that perceived utilitarian value focuses more on the performance enhancement in consumers' daily lives while the latter two focus more on the workplace.

Lastly, as I argued in the above sections, desire for novelty is the most salient impetus in the early stage of IT fashion. IT innovators and early adopters do not chase after fashionable technologies for symbolic values or even utilitarian value. They chase after them simply because consuming the novel technology can meet their desire for novelty and bring them enjoyment and excitement. Therefore, hedonic value is another

important behavioral belief about fashionable technologies. In the IS literature, Venkatesh et al. (2012) defined hedonic motivation as "the fun or pleasure derived from using a technology" (p. 161). Hedonic value is considered an important determinant of technology adoption (Arbore et al. 2014a; Brown and Venkatesh 2005; Venkatesh et al. 2012). In the current dissertation, I define perceived hedonic value as *the emotional arousal and pleasure derived from using a technology*.

Overall, the research model in the current dissertation adopts the two-beliefs model by Wixom and Todd (2005) and distinguishes object-based beliefs and behavioral beliefs. Particularly, I identified three characteristics of fashionable technologies: collective adoption, social endorsement and novelty. I further argue that different fashionable technology should have a distinct set of symbolic meanings. These magnitudes of the three characteristics of a fashionable technology could change as IT fashion progresses: novelty of IT gradually decreases while collective adoption and social endorsement increase. When all the three characteristics become salient at some point, then we can say that the technology is fashionable. However, when it comes to individual experiences, different people in one social group could have different perceptions of the three characteristics. Since the current dissertation studies IT fashion adoption at the individual level, it's more reasonable to use perceptions to evaluate these characteristics. I also identified four behavioral beliefs: perceived utilitarian value, perceived external symbolic value, perceived internal symbolic value, and perceived hedonic value. In the next chapter, I will explain how the object-based beliefs affect behavioral beliefs, which

in turn affect adoption intention, based on four motivations. And a research model will be presented.

CHAPTER 5: RESEARCH MODEL

In the last chapter, I identified four object-based beliefs about fashionable technologies, including collective adoption, social endorsement, novelty, and IT congruity, and four behavioral beliefs, including perceived utilitarian value, perceived external symbolic value, perceived internal symbolic value and perceived hedonic value. These object-based beliefs and behavioral beliefs were derived from the extant fashion literature reviewed in chapter two and the IT fashion diffusion process proposed in chapter three. Specifically, collective adoption is based on the concept of the point of critical mass proposed by innovation diffusion theory by Rogers (1962). Previous fashion theories also support the notion that fashion items are usually adopted by a significant number of people in a social group (Blumer 1969; Simmel 1957; Sproles 1979). Previous fashion theories (such as the trickle-up theory and the trickle-down theory) also specify the important role played by fashion leaders who endorse a fashion item and legitimize it in social groups. The Current study also emphasizes the importance of novel technical features for fashionable technologies, which could meet people's constant desire for novelty (Berlyne 1970; Bianchi 2002; Robinson 1958). The forth object-based belief IT congruity is based on the symbolic meanings of fashionable technologies. During the process of social interaction and social negotiation, different symbolic meanings could be constructed out of the technological features or aesthetical features of a fashionable IT and could interact with people's self-identities to affect their behaviors (Barnard 2017; Barthes 1983; Blumer 1969). Lastly, the current dissertation proposes two types of symbolic values provided by using a fashionable technology, based

self-identity theories (Grubb and Grathwohl 1967; Sirgy 1982; Stets and Burke 2000; Swann 1983) and the two forms of social influence explicated in chapter 3 – conformity and individuality. Utilitarian value and hedonic value are also considered important in the IT fashion context.

Next, these constructs were defined based on related constructs in the literature, and their measurements were developed as well. Table 10 below lists all the constructs in the model and their definitions, as well as their theoretical bases and prior works upon which their definitions and measurements are based.

Based on TRA by Ajzen and Fishbein (1980), people's behavioral intentions are affected by their beliefs about performing this behavior (i.e. behavioral beliefs). In addition, Wixom and Todd (2005) believed that these behavioral beliefs are affected by people's beliefs and attitudes about the characteristics of the technology. I argue that there are four major reasons about how and why the four object-based beliefs affect behavioral beliefs which lead to adoption intention: desire for novelty, group conformity, self-expression/individuality and herd behavior. In other words, people's adoption intentions are driven by these four motivations when they perceive one or more characteristics of IT fashion. For instance, if one perceives social endorsement of a certain fashion IT from people with prestige or social status, then he/she may intend to use the technology in order to obtain social recognition. That is, I propose the following decision-making process of IT fashion adoption in Figure 10:

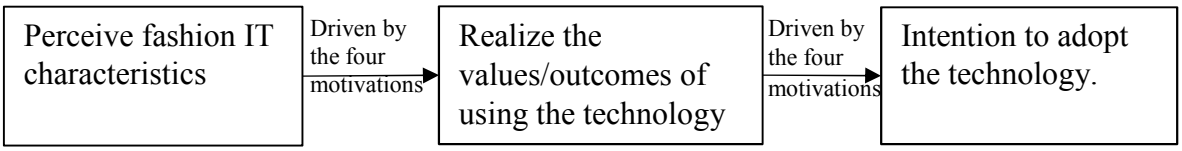

Figure 10. Decision-Making Process of IT Fashion Adoption

Table 10. List of Constructs in the Research Model			
Constructs	**Definitions**	**References for Definitions and Measures**	**Theoretical Bases**
Collective adoption of IT	The degree to which a consumer perceives that a discernible proportion of people in a social group adopt the IT product.	Sproles (1979)	Innovation diffusion theory (Rogers 1962), trickle-down theory (Simmel 1957), trick-up theory (Blumer 1969)
Social endorsement of IT	The degree to which a consumer perceives that people with prestige or social status use, appreciate and advocate this product.	Dean (1999)	Trickle-down theory (Simmel 1957), trick-up theory (Blumer 1969)
Novelty of IT	The degree to which the functional design features of an IT product (and possibly the aesthetic design) are new, original, or unusual, compared to other existing products	Wells et al. (2010); Jeong et al. (2017); Berlyne (1970)	Novelty literature (Berlyne 1970; Bianchi 2002; Robinson 1958)
IT congruity	The degree to which a consumer believes that the symbolic meanings of an IT product are congruent	Sirgy (1985)	Self-identity theories (Grubb and Grathwohl 1967; Sirgy 1982; Swann 1983),

	with his/her self-image		fashion as communication (Barnard 2002; Barthes 1983)
Perceived external symbolic value	The degree to which a consumer believes that using an IT product can display his/her social status and group membership in social situations	Bian and Forsythe (2012); Moore and Benbasat (1991); Wilcox et al. (2009)	Self-identity theories (Grubb and Grathwohl 1967; Sirgy 1982; Stets and Burke 2000; Swann 1983), trickle-down theory (Simmel 1957)
Perceived internal symbolic value	The degree to which a consumer believes that using an IT product can display his/her personality, value and way of living as a person	Bian and Forsythe (2012)	Self-identity theories (Grubb and Grathwohl 1967; Sirgy 1982; Swann 1983), fashion as communication (Barnard 2002; Barthes 1983)
Perceived utilitarian value	The degree to which a consumer believes that the use of a given technology may enhance performance in her/his daily life	Davis (1989); Venkatesh et al. (2003)	IT adoption literature (Davis 1989; Davis et al. 1989; Venkatesh and Brown 2001; Venkatesh and Davis 2000; Venkatesh et al. 2003; Venkatesh et al. 2012)
Perceived hedonic value	The emotional arousal and pleasure derived from using a technology	Arbore et al. (2014a); Brown and Venkatesh (2005); Venkatesh et al. (2012)	IT adoption literature (Arbore et al. 2014a; Brown and Venkatesh 2005; Venkatesh et al. 2012), novelty literature (Berlyne 1970; Bianchi 2002; Robinson 1958)
Adoption intention	Behavioral intention	Davis (1989);	

	to use a technology	Venkatesh et al. (2003)	

Figure 11 below presents the research model of the dissertation. The first section of this chapter explains how herd behaviors happen in IT fashion to maximize utility. The second section explains how people chase IT fashion to obtain symbolic values and how group conformity and individuality interact with each other. The last section explains the role of the desire for novelty in IT fashion adoption.

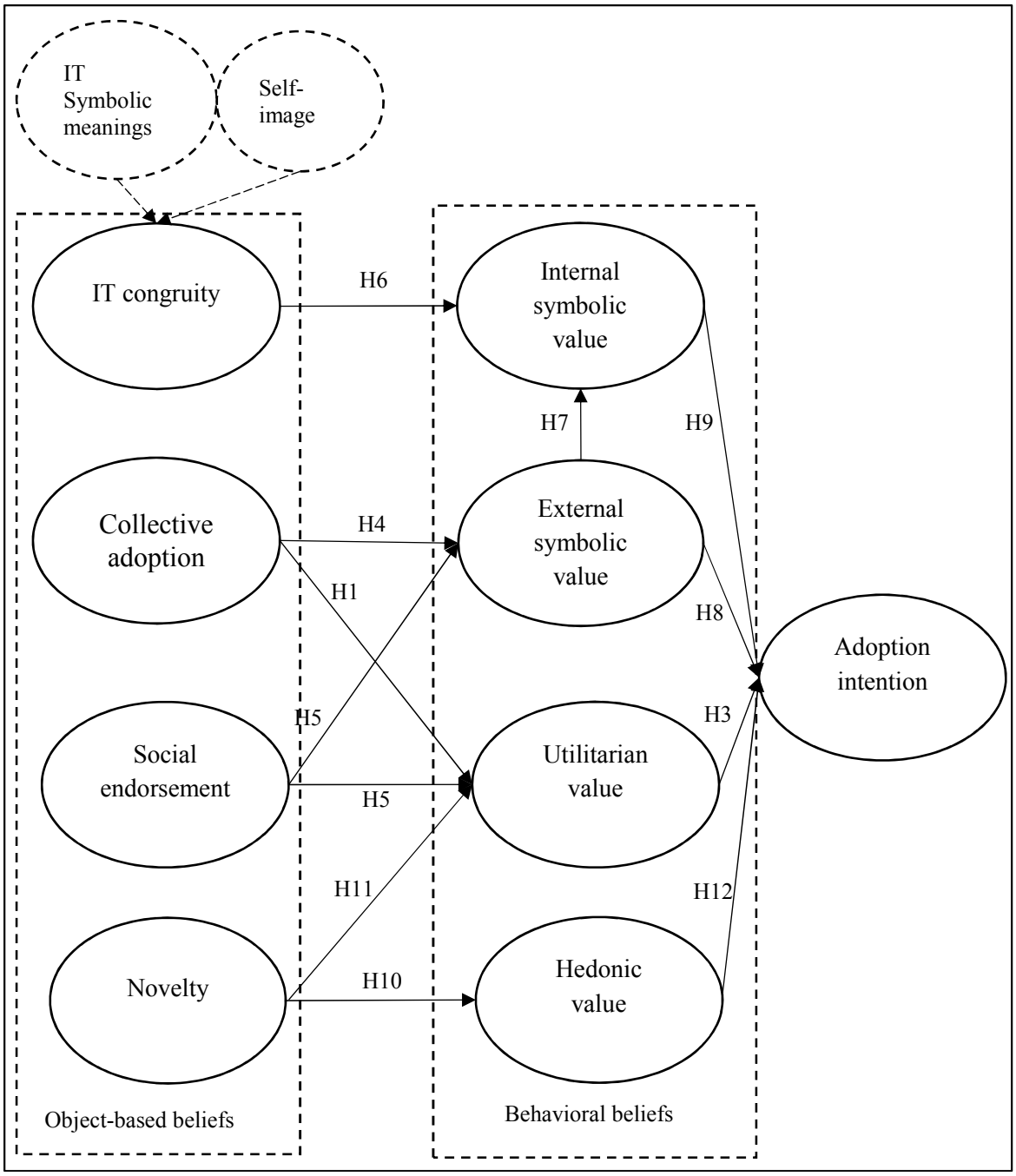

Figure 11. Research Model

5.1 Fashion and Utilitarian Value

Herd behavior happens when people have incomplete information about a product and have observed prior adoption of the product (Sun 2013). People observe the predecessors' decisions and the "utility" of the adoption. They follow the predecessor's actions because they believe that other people are better informed and following their decisions can maximize the utility of adoption (Banerjee 1992; Sun 2013). It's more likely for herd behavior to happen if there are a lot of adopters of the product and the adopters turn out to be market leaders or experts (Bikhchandani et al. 1992; Bikhchandani and Sharma 2000; Graham 1999). When people are trying to decide whether to adopt a technology, they need to decide whether the technology is useful for them (i.e., determining the utility of the technology) (Davis 1989; Davis et al. 1989). For example, when a jogger wants to purchase an activity tracker, he needs to decide whether the product can provide the functions he needs, such as monitoring the heart rate and tracking steps. Since he is unfamiliar with the activity tracker brands and doesn't want to spend much time on doing researches about them, he looks around to see what other people are using. From the media and his observation of other people, he realizes that a lot of people are using Fitbit. And more importantly, many prestigious people are endorsing the product. That is, perceived collective adoption and social endorsement of a fashionable technology are salient. In this case, the jogger may still be skeptical, but he chooses to believe that these adopters and especially the experts know more information than himself (Bandura 2002), so he makes the inference that the technology can provide better utility than other options. He chooses to rely on other people's judgment instead of his

own. By following the others, people reduce the cognitive effort needed for information searching and decision making (Rao et al. 2001). The higher collective adoption and social endorsement of a fashionable technology are, the more likely for consumers to rely on others' judgment and make the inference about the utilitarian value of the technology. Thus I hypothesize:

H1: Collective adoption of IT is positively associated with perceived utilitarian value.

H2: Social endorsement of IT is positively associated with perceived utilitarian value.

In the IT adoption literature, numerous studies have provided evidence showing that perceived usefulness and perceived ease of use are the two most important determinants of IT adoption intention (Davis 1989; Davis et al. 1989; Venkatesh and Brown 2001; Venkatesh and Davis 2000; Venkatesh et al. 2003; Venkatesh et al. 2012). In the current study, perceived utilitarian value and perceived usefulness in TAM are similar in that they are both perceptions or beliefs about performance enhancement from using a technology, but they differ in the context of usage: the former focuses on the consumer setting and the latter focuses on the workplace. As discussed above, I argue that fashionable technologies differ from fashionable clothes in that fashionable technologies are still expected to help people perform their daily tasks, such as making phone calls, connecting with other people online and so on. Such expectations of performance enhancement from fashionable technologies would lead to adoption intention (Davis 1989; Venkatesh et al. 2012). Hence, I hypothesize:

H3: Perceived utilitarian value is positively associated with adoption intention.

5.2 Fashion and Symbolic Value

When a technology is adopted by a significant number of people in one's own social groups (i.e., collective adoption of IT), using the technology becomes the in-group prototype or social norms in this group (Terry and Hogg 1996). What's more, endorsement from people with prestige in one's social groups (i.e., social endorsement of IT) can further legitimize the use of the technology which leads to group conformity (Sproles 1979). According to self-identity theories (Burke and Reitzes 1991; Gecas and Schwalbe 1983) and self-verification theory (Swann and Read 1981), in order to enhance their self-esteem and achieve self-verification, people actively seek opportunities to display "identity cues" (Swann 1983; Swann 2005; Swann and Read 1981). When one perceives collective adoption and social endorsement of a fashionable technology, he/she realizes the opportunity to display the identity cues by adopting the fashionable technology. That is, by behaving consistently with other group members, their worth-based self-esteem can be maintained (Burke and Stets 2009). In other words, when using a fashionable technology becomes social norms in one's own social groups, it's more likely for people to consider using the technology as an opportunity for themselves to obtain social recognition and group membership (Terry et al. 1999), which is the external symbolic value of the fashionable technology. Thus, I hypothesize:

H4: Collective adoption of IT is positively associated with perceived external symbolic value.

H5: Social endorsement of IT is positively associated with perceived external symbolic value.

Fashionable technologies could also serve as an opportunity to display one's person identity. Trickle-up theory asserts that fashion trends reflect the current modern developments in many social realms, such as fine art, architecture, and people's lifestyles (Blumer 1969). For example, bohemian clothes represent an unconventional lifestyle. When fashionable technologies are diffusing through a social system, symbolic meanings are constructed out of the aesthetic and functional features of the technology. Different fashionable technologies could be associated with different symbolic meanings. When people perceive the symbolic meanings of fashionable technologies, they decide whether these symbolic meanings are congruent with their own self-image (Sirgy 1982). Based on self-verification theory (Burke and Stets 2009; Swann 1983), people tend to behave in ways that are consistent with their own self-image. Self-congruity theory has the following hypotheses about the whole process (Grubb and Grathwohl 1967):

1. Some products deliver certain socially recognized symbolic meanings to consumers.
2. Consumers perceive that the products match their self-image.
3. Consumers use the products to convey the meanings to other people.

As we can see, perceiving the congruence between the product and one's self-image (IT congruity) is conceptually different from presenting the use of the product to other people to express oneself (internal symbolic value), largely because the former only perceives the congruence while the latter involves behavioral outcome/value of

presenting the socially recognized symbol (i.e., the technology) to other people. The latter always involves an audience while the former does not. In other words, perceiving the congruence does not always mean that people would like to deliver the symbolic meanings to other people, which makes the two different constructs. Nevertheless, it's more likely for it to happen when people actively seek opportunities to express who they are. In this situation, when they find congruence between the symbolic meanings of a fashionable technology and their own self-image (i.e., IT congruity), using the technology will be considered a means to present the symbol to other people and express themselves (Blumer 1969; Grubb and Grathwohl 1967; Simmel 1957; Sirgy 1982; Sproles 1979). Thus, I hypothesize:

H6: IT congruity is positively associated with perceived internal symbolic value.

I also argue that conforming to social norms and using a technology for self-expression usually come hand in hand. When a fashionable technology is adopted by most members in a certain social group and using the technology becomes social norms in this group, the members in this social group tend to use the technology to signify their identities and express their values, lifestyles, and tastes. According to self-categorization theory (Turner 1985; Turner et al. 1987), these shared attributes in a group can be considered the "prototype" of the group. Since members of a certain social group are generally in the same social fields, they tend to share very similar prototypes (Hogg et al. 1995). When people are trying to fit in with their social group by using a fashionable technology (i.e., they perceive external symbolic value of the technology), they tend to have strong identification with the group (Hogg and Hardie 1992). In this case, it's more

likely for them to find similarities between themselves and other group members. This process is referred to as depersonalization: "They are perceived as, are reacted to, and act as embodiments of the relevant in-group prototype rather than as unique individuals" (Hogg et al. 1995, p. 261). That is, they tend to identify with the other group members' values, lifestyles, tastes and consider them as their own person identities. However, it does not necessarily mean that these people lost their sense of self and uniqueness. But instead, "they shift from the personal to the social level of identification" (Reicher et al. 1995, p. 177). Thus, when they try to behave consistently with their group members to adopt the fashionable technology, they do not only consider it as a way to obtain group membership but also consider it as a way to express their personalities, values, and lifestyles which are shared with other group members. Thus, I hypothesize:

H7: Perceived external symbolic value is positively associated with perceived internal symbolic value.

Lastly, according to self-identity theories (Burke and Reitzes 1991; Gecas and Schwalbe 1983), people always seek opportunities to enhance worth-based self-esteem by obtaining identification with the other members in their social groups and sustain their authenticity-based self-esteem by being true to who they are as a person (Burke and Stets 2009; Gecas and Schwalbe 1983). Therefore, when consumers perceive the external symbolic value and internal symbolic value provided by adopting a fashionable technology, they will seize this opportunity by adopting this technology. In addition, according to the theory of reasoned action by Ajzen and Fishbein (1980), technology acceptance model (Davis 1989; Davis et al. 1989) and two-beliefs model by Wixom and

Todd (2005), behavioral beliefs are beliefs about the consequences of performing a certain behavior (i.e., adopting a fashionable technology in the current context), and these beliefs directly affect one's intention to perform the behavior. Both external symbolic value and internal symbolic value are salient behavioral beliefs in the fashion context. Thus, I hypothesize:

H8: Perceived external symbolic value is positively associated with adoption intention.

H9: Perceived internal symbolic value is positively associated with adoption intention.

5.3 Fashion and Novelty

Novelty is another defining characteristic of fashionable technologies. In psychology, novelty is expected to evoke strong affective reactions (Berlyne 1960; Berlyne 1970). In two laboratory experiments, Berlyne (1970) found that people's ratings of pleasingness and interestingness generally increased with novel sequences of colored shapes. Cox and Locander (1987) also confirmed that novel or unexpected stimuli increase the amount of arousal. In the context of fashionable technologies, novelty is the most salient feature in the early stage of IT fashion. At this stage, fashion innovators are attracted by the novel features of fashionable technologies, driven by the expectation of obtaining pleasure and excitement from adopting the technologies. After the diffusion of IT fashion has passed the point of critical mass and the technology has become massively adopted, the novel features of the technology become socially shared and prominent. At this stage, the social effects of fashion might have reduced the degree of novelty to some

extent but also have made them easier to appreciate and appropriate, which could even increase the level of pleasure from using and consuming them (Bianchi 2002). In the current dissertation, hedonic value is defined as the emotional arousal and pleasure derived from using a technology. I argue that before the IT fashion begins to decline, the novel features of fashionable technologies could lead to expectations of hedonic value from using the technologies. Thus, I hypothesize:

H10: Novelty of IT is positively associated with perceived hedonic value.

Novelty is usually considered an affective factor in terms of innovation adoption, especially in the context of clothing fashion (Robinson 1958; Wells et al. 2010). Nevertheless, based on the discussion about the differences between fashionable technologies and aesthetic fashion items in chapter 3, fashionable technologies differ from fashionable clothes in that both technological improvement and symbolic meanings are important to the diffusion and adoption of fashionable technologies. Technology innovations emerge with major technological breakthroughs. They "possess some tangible features never previously found in that product class" and "exhibit what was perceived to be a superiority in performance over its predecessors" (Hirschman 1982). In reality, novel IT products could always revolutionize people's ways of living and provide more convenience to their lives. For instance, the emergence of smartphones offers many brand-new features and capabilities, including the touchscreen, intelligent assistance, Internet service, various mobile apps, which significantly improved people's lives.

According to management fashion theory by Abrahamson (1996), fashionable management techniques (including organizational technologies) "must appear both

rational (efficient means to important ends) and progressive (new as well as improved relative to older management techniques)" (p. 255). Although consumer technologies are different from organizational technologies in many ways, their commonality lies in that people expect to obtain performance or convenience enhancement from using both types of technologies. In the current dissertation, novelty of IT is conceptualized as the degree of newness of technological features (and probably aesthetic features) compared to older products. The more novel features a fashionable technology provides, the more likely for people to expect enhanced utilitarian value of the technology. Thus:

H11: Novelty of IT is positively associated with perceived utilitarian value.

Lastly, based on motivation theory, people's behaviors are mostly driven by two motivators: extrinsic and intrinsic motivations (Vallerand 1997). Intrinsic motivation pertains to the enjoyment and pleasure from performing a certain behavior. In the current dissertation, perceived hedonic value could be considered intrinsic motivation and has been posited to affect adoption intention by previous IS researches at both the workplace setting and consumer technology setting (Arbore et al. 2014a; Brown and Venkatesh 2005; Davis et al. 1992; Venkatesh and Brown 2001; Venkatesh et al. 2012). What's more, perceived hedonic value is also a type of behavioral belief, which describes an individuals' belief that using the technology would result in certain consequences (i.e., obtaining pleasure and entertainment). According to the theory of reasoned action by Ajzen and Fishbein (1980), technology acceptance model (Davis 1989; Davis et al. 1989) and two-beliefs model by Wixom and Todd (2005), such a belief could directly lead to adoption intention. Thus, I hypothesize:

H12: Perceived hedonic value is positively associated with adoption intention.

Overall, in this chapter, I proposed four motivations that drive people to chase after IT fashion: desire for novelty, group conformity, individuality and herd behavior. Specifically, I argued that when a technology is adopted by a significant number of people in a social group and endorsed by people with prestige within and outside of this group, people tend to refer to other adopters' opinions and follow their actions to adopt the technology to maximize utility. They also adopt the technology in order to obtain social recognition and group membership. People could also adopt the technology when they consider the technology as having novel features, in that the novel features could meet their desire for novelty and bring them excitement and pleasure. Lastly, people may adopt the technology when they identify with the symbolic meanings associated with the technology and use the technology to express themselves. In the next chapter, the research model will be empirically tested with an online survey.

CHAPTER 6: METHOD AND EMPIRICAL TEST

In this chapter, I first explain the research design of the empirical study. Three target technologies were selected. Measurement items were developed based on related studies. For the new constructs proposed in the current study, the domain sampling method was used to develop the measurement items. A pretest and card-sorting exercises were conducted to examine the face validity and content validity of the constructs. Next, a pilot test with three data sets was conducted. The target technology for the full test was selected based on the results of the pilot test. The measurement items were further refined in the pilot test. Lastly, a full test was conducted. Reliability and construct validity were assessed first. Then the research model was tested, and the results of the empirical test were presented.

6.1 Research Design

To test the research model, an online survey was designed and administered. Three target technologies were tested in the pilot test: Apple Watch, iPhone X (the latest model of iPhone at the time of writing the dissertation) and iPhone 7. The three technologies were then compared based on the three core characteristics of fashionable technologies proposed in the dissertation, including collective adoption, social endorsement, and novelty. Then one of them was selected for the full test.

A professional survey service company, Qualtrics, was hired to collect responses for the pilot test and the full test. Qualtrics was recruited by other IS and management researchers to collect responses for online surveys (Long et al. 2011; Wang et al. 2016; Williams et al. 2016). In general, anyone can participate in surveys conducted by

Qualtrics as he/she wishes to. Qualtrics records their demographics before they take the surveys. Participants of a survey are sampled from a broad range of industries, and they receive monetary compensation after completing the survey. Hiring a professional survey company to collect survey responses provide several advantages: 1) since the population of interest of the dissertation is all potential users of iPhone X, iPhone 7 and Apple Watch in the US, hiring a survey company offers access to a broader demographic base from the US population, compared to recruiting student participants; 2) it allows me to set criteria for the participants based on the demographics of smartphone users and smartwatch users and administer the survey to the targeted population; 3) it allows me to receive the exact number of responses I need. According to new NPD Connected Intelligence Consumers and Wearables Report [23], 95% of smartwatch users are under the age of 55. There are more male (71%) users than female users (29%), and most users are under the income of $45,000 (48%) or above $100,000 (20%). In contrast, 77% of Americans own a smartphone, equally distributed among males and females and across different income groups, according to a report by Pew Research Center[24]. When it comes to age, only 46% of people over 65 years old own a smartphone. Based on the demographics of smartphone users and smartwatch users, I decided that the target population of the study are younger adults who are inclined to use the target technologies but are currently not. Accordingly, I asked Qualtrics to sample from individuals between

[23] NDP, "The Demographic Divide: Fitness Trackers and Smartwatches Attracting Very Different Segments of the Market, According to The NPD Group," https://www.npd.com/wps/portal/npd/us/news/press-releases/2015/the-demographic-divide-fitness-trackers-and-smartwatches-attracting-very-different-segments-of-the-market-according-to-the-npd-group/

[24] Pew Research Center, "Smartphone Ownership and Internet Usage Continues to Climb in Emerging Economies," http://www.pewglobal.org/2016/02/22/smartphone-ownership-and-internet-usage-continues-to-climb-in-emerging-economies/

the age of 18 and 55, equally distributed among males and females from various industries. What's more, participants who currently use or own the target technologies will be filtered out at the beginning of the survey.

At the beginning of the survey, the purpose of the study was explained to the participants. They were assured of the anonymity of the survey, and they were told that they can stop taking the survey anytime they don't feel like to. Then they were asked if they currently use or own the target technology in the survey. If they answered yes, then they were filtered out. After they answered the basic demographic questions, a description of the major features of the target technology was presented to them. Then they were asked to answer the survey questions based on the description and their own knowledge about the technology. Two verification items were included in the survey to make sure that the participants answered the questions carefully.

6.2 Measurement Development

Next, measurement items for the new and existing constructs were developed. Following the guidance by MacKenzie et al. (2011), related constructs in the literature were first examined, and then measures for the new constructs in the model were developed by using the domain sampling method. Items for existing constructs, including perceived utilitarian value, perceived hedonic value and adoption intention were adapted from Arbore et al. (2014a), TAM (Davis 1989) and its later versions.

For collective adoption of IT, three previous studies that defined and measured perceived critical mass were referred to (Premkumar et al. 2008; Van Slyke et al. 2007; Yang and Hsu 2011). Eleven preliminary items in total were generated (see Table 11).

For social endorsement of IT, no similar constructs were found in the literature. Hence, the domain sampling method was used to generate the items. Based on the definition of endorsement by Dean (1999), twelve items were generated in total. Perceived external symbolic value is conceptually pertaining to both social status and group identification, and hence the items need to include both aspects. For social status, several items were adopted from the measure of image by Moore and Benbasat (1991) and the measure of self-presentation attitude toward luxury brands by Bian and Forsythe (2012), Wilcox et al. (2009) and Grewal et al. (2004). For group identification, items were adopted from the measure of belongingness by Den Hartog et al. (2007) and the measure of social connectedness by Lee and Robbins (1995). Six initial items were generated. For perceived internal symbolic value, there are two related constructs in the literature, including the construct called self-expression attitude toward luxury brands or Value-Expressive Function by Wilcox et al. (2009) and Bian and Forsythe (2012) and the construct self-identity by Arbore et al. (2014b). The difference between perceived internal symbolic value and these two constructs has been explained in chapter 4. The items for these two constructs were adapted, and eight items were generated. All the items use the 5-point scales, ranging from strongly agree to strongly disagree.

Table 11 Initial Item Pool

Constructs	Definition	Preliminary Items
Collective adoption of IT (11 items) (Premkumar et al. 2008; Van Slyke et al. 2007; Yang and Hsu 2011)	The degree to which a consumer perceives that a discernible proportion of people in a social group adopt the IT product.	A significant number of people in society use this product.
		A significant portion of society uses this product.
		A large mass in society use this product
		Many people use this product.
		A large group of people I

		communicate with use this product.
		A large group of people I don't know use this product.
		Of the people I communicate with regularly, many use this product.
		Many people I communicate with use this product.
		A significant number of my friends use this product
		A significant number of my family members use this product.
		A significant number of my colleagues use this product.
Social endorsement of IT (12 items) (Dean 1999) and self-developed	The degree to which a consumer perceives that socially prominent people use, appreciate and advocate this product.	Prestigious people endorse this product.
		People with social status endorse this product.
		The people I look up to endorse this product.
		Prominent members in my social groups endorse this product.
		Famous people have said good things about this product.
		People with social status use this product.
		The people I look up to use this product.
		People with social status have said good things about this product.
		People with prestige advertise for this product.
		Prestigious people advocate this product.
		People with prestige in my social groups urge other people to buy this product.
		The people I look up to advocate this product.
Internal symbolic value (8 items) (Arbore et al. 2014b; Bian and Forsythe 2012;	The degree to which a consumer believes that using an IT product can display his/her personality, value and way of living as a	This IT product is consistent with the characteristics with which I describe myself.
		Using this IT product reflects who I am

Wilcox et al. 2009)	person.	Using this IT product expresses the personality that I want to communicate to others
		Using this IT product reflects the kind of person I see myself to be.
		Using this IT product helps me define myself.
		Using this IT product expresses my values
		Using this IT product expresses my tastes.
		Using this IT product expresses my lifestyle.
External symbolic value (6 items) (Bian and Forsythe 2012; Den Hartog et al. 2007; Grewal et al. 2004; Lee and Robbins 1995; Moore and Benbasat 1991; Wilcox et al. 2009)	The degree to which a consumer believes that using an IT product can display his/her social standing and group membership in social situations.	Using this IT product helps me fit into important social situations.
		I like to be seen using this IT product.
		Because of my use of this IT product, others in my social groups see me as a more valuable person.
		Using this IT product can strengthen my bond with other people.
		Using this IT product give me a sense of belongingness to my social group.
		Using this IT product improves my image in the social group with which I'm affiliated.
IT congruity (using Apple Watch as an example) (Sirgy 1985)	The degree of discrepancy between one's self-image and the symbolic image associated with an IT product.	
		Upper class
		Early adopter
		Trendy
		Active
		Business professional
		Politically liberal
		Well-educated
		Ostentatious/Like to Impress others
		Extroverted
		Loyal to Apple
Novelty of IT (Tatikonda and Montoya-Weiss	The degree to which the functional design features of an IT product (and possibly	Please rate the novelty (i.e., new and original, not like anything seen before) of the following features of

2001)	aesthetical design) are new, original, or unusual compared to other existing products.	this IT product compared to other products in the same category on the market:
		Aesthetic design (including color, material, frame shape, etc.)
		Applications (including apps, web browser, intelligent assistant, etc.)
		Operating system (i.e., watchOS)
		Display device/screen (including screen size, brightness, sensors (fingerprint ID or face scanners))
		Battery features of this product (such as battery life, power saving)
		Storage features
		Camera features
		Other features, like central processing unit, modem, SIM card
		The product overall
Adoption Intention (Arbore et al. 2014a; Venkatesh et al. 2012)	The strength of one's intention to use the IT product in the future.	I predict that I will adopt the IT product in the future
		I intend to adopt the IT product in the future
		I expect to adopt the IT product in the future.
Utilitarian value (Arbore et al. 2014a; Venkatesh et al. 2012)	The degree to which a consumer believes that the use of a given technology may enhance performance in her/his daily life	To me, the product is very functional.
		Overall, I think that the IT product is useful in my daily life
		Having this IT product increases my chances of achieving things that are important to me.
		Generally speaking, the product serves its purpose well.
Hedonic value (Arbore et al. 2014a; Venkatesh et al. 2012)	The emotional arousal and pleasure derived from using a technology.	I expect that using this product would be exciting
		I expect that using this product would be enjoyable.
		I expect that using this product would be interesting
		I expect that using this product would be pleasant

For novelty of IT, as shown in Table 7, both subjective and objective measures have been used to measure product/technology novelty. The former ones ask participants to rate the newness or novelty of a product/technology based on the participants' subjective opinions (Blijlevens et al. 2013; Jeong et al. 2017; Miron-Spektor and Beenen 2015; Tatikonda and Montoya-Weiss 2001; Wells et al. 2010), while the latter ones calculate the novelty value of a product by comparing the product with a reference product (Barclay and Dann 2000; Chakrabarti and Khadilkar 2003). According to Berlyne (1960), whether a stimulus is new depends on one's own experience. What's novel for one person might not be novel to another person. In addition, this dissertation studies how consumers' perceptions of IT products affect their behaviors, and consumers' perceptions of IT innovation novelty vary from person to person. Therefore, this dissertation chooses to use subjective measures instead of objective measures. Among the subjective measures, a few measured the overall novelty of a product/technology (Blijlevens et al. 2013; Jeong et al. 2017; Miron-Spektor and Beenen 2015; Wells et al. 2010), while Tatikonda and Montoya-Weiss (2001) measured the overall newness of a product and the newness of five aspects in product development. In the current study, I argue that the novelty of fashionable technologies could come from both the aesthetic design and functional design of the products, and hence it's more reasonable to decompose the overall novelty of a technology into several components. Eight design features of a smartphone were identified: aesthetic design, applications, operating system, display device/screen, battery features, storage features, camera features (not for Apple

Watch), and other features. [25][26] Participants were asked to rate the novelty of these aspects and the overall novelty of the product. The 5-point scale was used, ranging from not novel at all to extremely novel, and the meaning of novelty is explained in the question based on the definition of the construct (see Table 11).

Lastly, several steps were taken to create measurement items for IT congruity, as suggested by Sirgy (1985). The first step was to generate a highly consensual set of symbolic meanings associated with the chosen IT products. To do so, 30 students, IT professionals and IS scholars are recruited. They were asked to write down five characteristic images or stereotypes (including social status, personalities, tastes, lifestyles, political inclination etc.) that are generally associated with using each of the two IT products (Apple watch and iPhone). Their responses were then subject to content analysis. Ten symbolic meanings for Apple Watch and eleven symbolic meanings for iPhones were found to be highly consensual and hence were selected (see Table 12). After generating the symbolic meanings for each product, measurement for IT congruity was created based on the selected symbolic meanings. Please notice that IT congruity consists of two parts: symbolic meanings of the product and the corresponding self-image. More specifically, respondents were first asked to rate the likelihood of the specified symbolic meanings (the ones generated in the first step) to be associated with the use of an IT product. The following question is asked, adapted from Sirgy (1985):

[25] Fossbytes, "What's Inside My Smartphone? — An In-Depth Look At Different Components Of A Smartphone", https://fossbytes.com/whats-inside-smartphone-depth-look-parts-powering-everyday-gadget/

[26] Wikipedia: https://en.wikipedia.org/wiki/Mobile_phone_features

What kinds of people are usually associated with the use of an Apple Watch? Describe these kinds of people by checking the likelihood of each personal characteristic listed below. Using an Apple Watch elicits an image of being:

The 5-point scale was used for these items, ranging from very unlikely to very likely.

Next, they were asked to rate the extent to which they see themselves of having the same personal characteristics (i.e., the symbolic meanings). The following question is asked:

How do you see yourself? To what extent do you think of yourself as having the personal characteristics listed above? I see myself as being:

The 5-point scale was used for these items, ranging from very much dislike to very much like.

Table 12. Symbolic meanings for Apple Watch and iPhone

Symbolic meanings for Apple Watch	**Symbolic meanings for iPhones**
Active	Artistic
Business professional	Business professional
Early adopter	Young
Extroverted	Extroverted
Loyal to Apple	Loyal to Apple
Ostentatious/Like to Impress others	Ostentatious/Like to Impress others
Politically Liberal	Politically Liberal
Trendy	Trendy
Upper class	Middle and upper class
Well-Educated	Well-educated
	Non-tech savvy

6.3 Pretesting

6.3.1 Verbal Protocol

A verbal protocol was then conducted with four IT professionals and four IS scholars to provide an initial examination of the items' face and content validity (Churchill 1979). Specifically, clarity and ambiguity of the constructs definitions and the measurement items were assessed. They were also asked to suggest additional items if necessary. Based on the feedback from judges, a number of items were rephrased to improve clarity and accurately capture the domains of the related constructs. The definition of external symbolic value was changed to "the degree to which a consumer believes that using an IT product can enhance his/her social standing and group membership in social situations.", based on two judges' suggestions. No additional items were suggested and all the items for the nine constructs remained in the pool for further refinement.

6.3.2 Q-Sorting

To further examine the construct validity of the scales, three rounds of Q-sorting were conducted, following the procedures recommended by Moore and Benbasat (1991). Only the items of the new constructs, which include collective adoption, social endorsement, novelty, IT congruity, perceived external symbolic value and perceived internal symbolic value, were incorporated for the card-sorting exercises. Another construct subjective norm that could conceptually overlap with some of the new constructs was also added. The measurement items for subjective norm were adopted from Venkatesh et al. (2003). Each item was printed on a card and presented to the judges

in random order. Then the judges were asked to sort the items into categories. For the first round, two IS scholars and two IT professionals were asked to sort the items without the construct names and definitions. They were also asked to give each category a name by themselves and provide explanations about why they put the items in a certain category (Moore and Benbasat 1991). This study used the placement ratio of items within the target constructs (i.e., the percentage of placing the items within the intended construct) developed by Moore and Benbasat (1991) to measure inter-rater agreement and construct validity. Table 13 shows the percentages of placing the items under the right construct (the last column) and the overall placement ratio.

Table 13. Result of Round 1 Q-sorting[27]

	CA	SE	Novelty	Congruity	SN	ISV	ESV	NA/vague	Total	Percentages of Correct Placement
Collective adoption	42	2							44	95.45%
Social Endorsement		46			2				48	95.83%
Novelty			32						32	100.00%
IT congruity				40					40	100.00%
Sub Norm		6			3		3		12	25.00%
Internal symbolic						32			32	100.00%
External symbolic						2	22		24	91.67%
Overall Ratio										86.85%

CA: collective adoption ESV: external symbolic value SE: social endorsement
ISV: internal symbolic value SN: Subjective norms

From the result above we can tell that judges classified the items into 7 constructs, which is what I hoped. No additional construct was suggested. Specifically, we can tell

[27] Please notice that judges gave different names for the constructs that the items belong to. In this table I used my own construct names for clarity.

that there was overlap among the items of subject norms, social endorsement and external symbolic value. Items for collective adoption also have some overlap with social endorsement. Initial adjustment was made based on the results: I removed items in social endorsement that involved the meanings "urge other people to use it" to reduce overlap with subjective norm; I removed the item "I like to be seen using this IT product" from external symbolic value, which was placed in another category. No items were removed from subjective norm despite the overlap because there were already only three items for this construct. Thus, these items were kept for further observation. A second round of Q-sorting was then conducted, and another four judges were recruited. In this round of Q-sorting, the construct names and definitions were given to the judges. Below is the result of the second round Q-sorting.

Table 14. Result of Round 2 Q-sorting

	CA	SE	Novelty	Congruity	SN	ISV	ESV	NA/vague	Total	Percentages of Correct Placement
Collective adoption	37	2			5				44	84.09%
Social Endorsement		43						5	48	89.58%
Novelty			32						32	100.00%
IT congruity				40					40	100.00%
Sub Norm					11		1		12	91.67%
Internal symbolic						32			32	100.00%
External symbolic						1	23		24	95.83%
Overall Ratio										94.45%

CA: collective adoption ESV: external symbolic value SE: social endorsement
ISV: internal symbolic value SN: Subjective norms

As we can see, giving the judges the construct names and definitions increased the overall placement ratio, but similar problems were exposed. Items for collective adoption,

social endorsement and subjective norm still overlap. Some items for social endorsement didn't fit into any category. I obtained the judges' verbal explanation and made the following adjustment to the items.

- Removed the items in collective adoption that involved the words "my family or my friends" to reduce overlap with subjective norm.
- Avoid using the phrases "people I look up to", "people with prestige in my social groups" and "prominent people in my social groups" for social endorsement to avoid confusion.
- Dropped the ambiguous items for social endorsement that did not fit into any category.
- Dropped a few redundant items for collective adoption.
- One item "Because of my use of this IT product, others in my social groups see me as a more valuable person" in external symbolic value was reworded.

A third-round Q-sorting was conducted after the adjustment. The overall placement ratio was increased to 96.39% after I adjusted the measurement items, with all construct placement percentages above 90%, and no significant problems emerged in this round of Q-sorting. Thus, I believe that the items have demonstrated good construct validity (Moore and Benbasat 1991).

Table 15. Result of Round 3 Q-sorting

	CA	SE	Novelty	Congruity	SN	ISV	ESV	NA/vague	Total	Percentages of Correct Placement
Collective adoption	22				2				24	91.67%

Social Endorsement		27			1				28	96.43%
Novelty			32						32	100.00%
IT congruity				40					40	100.00%
Sub Norm					11		1		12	91.67%
Internal symbolic						32			32	100.00%
External symbolic						1	19		20	95.00%
Overall ratio										96.39%

CA: collective adoption ESV: external symbolic value SE: social endorsement
ISV: internal symbolic value SN: Subjective norms

Table 16 shows all the items after the Q-sorting exercises, including the ones that were not included in the Q-sorting.

Table 16 Items after Q-sorting		
Sub-dimensions	**Definition**	**Preliminary Items**
Perceived Collective adoption of IT (6 items)	The degree to which a consumer perceives that a discernible proportion of people in a social group adopt the IT product.	CA1: A significant number of people I don't know use this product. CA2: A significant number of people in society use this product. CA3: A large mass in society use this product CA4: Many people use this product. CA5: A large group of people I communicate with use this product. CA6: Many people I communicate with use this product.
Perceived Social endorsement of IT (7 items)	The degree to which a consumer perceives that socially prominent people use, appreciate and advocate this product.	SE1: People with social status use this product. SE2: Prestigious people endorse this product. SE 3: People with social status endorse this product. SE4: Famous people have said good things about this product. SE5: People with social status have said good things about this product. SE6: People with prestige advertise for this product.

		SE7: Prestigious people advocate this product.
Internal symbolic value (8 items)	The degree to which a consumer believes that using an IT product can display his/her personality, value and way of living as a person.	ISV1: This IT product is consistent with the characteristics with which I describe myself ISV2: Using this IT product reflects who I am ISV3: Using this IT product expresses the personality that I want to communicate to others ISV4: Using this IT product reflects the kind of person I see myself to be. Using this IT product helps me define myself. ISV5: Using this IT product expresses my values ISV6: Using this IT product expresses my tastes. ISV7: Using this IT product expresses my lifestyle.
External symbolic value (5 items)	The degree to which a consumer believes that using an IT product can enhance his/her social standing and group membership in social situations.	ESV1: Using this IT product helps me fit into important social situations. ESV2: If I use this product, others in my social groups will see me as a more valuable person. ESV3: Using this IT product can strengthen my bond with other people. ESV4: Using this IT product give me a sense of belongingness to my social group. ESV5: Using this IT product improves my image in the social group with which I'm affiliated.
Adoption Intention	The strength of one's intention to use the IT product in the future.	AI1: I predict that I would adopt the IT product in the future AI2: I intend to adopt the IT product in the future AI3: I expect to adopt the IT product in the future.

Utilitarian value	The degree to which a consumer believes that the use of a given technology may enhance performance in her/his daily life	PU1: To me, the product is very functional. PU2: Overall, I think that the IT product is useful in my daily life PU3: Having this IT product increases my chances of achieving things that are important to me. PU4: Generally speaking, the product serves its purpose well.
Hedonic value	The emotional arousal and pleasure derived from using a technology.	HV1: I expect that using this product would be exciting HV2: I expect that using this product would be enjoyable HV3: I expect that using this product would be interesting HV4: I expect that using this product would be pleasant
IT congruity (using Apple Watch as an example)	The degree of discrepancy between one's self-image and the symbolic image associated with an IT product.	Congruity 1: Upper class Congruity 2: Early adopter Congruity 3: Trendy Congruity 4: Active Congruity 5: Business professional Congruity 6: Politically liberal Congruity 7: Well-educated Congruity 8: Ostentatious/Like to Impress others Congruity 9: Extroverted Congruity 10: Loyal to Apple
Novelty of IT	The degree to which the design features of an IT product (both functionally and aesthetically) are original, unique, and unexpected.	Please rate the novelty (i.e., new and original, not like anything seen before) of the following features of this IT product compared to other products in the same category on the market: Novelty 1: Aesthetic design (including color, material, frame shape, etc.) Novelty 2: Applications (including apps, web browser, intelligent assistant, etc.) Novelty 3: Operating system (i.e., watchOS) Novelty 4: Display device/screen (including screen size, brightness,

		sensors (fingerprint ID or face scanners)) Novelty 5: Battery features of this product (such as battery life, power saving) Novelty 6: Storage features Novelty 7: Camera features[28] Novelty 8: Other features, like central processing unit, modem, SIM card Novelty 9: The product overall

6.4 Pilot Test

The purpose of the pilot test is to select the appropriate fashionable technology for the full test and to further refine the survey instrument. I argue in the current dissertation that fashionable technologies should have relatively high values for the three core constructs: collective adoption, social endorsement, and novelty of IT. Three IT products were chosen as the target technologies in the pilot test: Apple Watch, iPhone X and iPhone 7. The means of the three constructs for the three targeted technologies were compared with each other. The technology with relatively high values for all the three constructs was selected for the full test.

Responses were collected by the survey company Qualtrics. Roughly 1000 potential respondents were estimated to have received the initial solicitation from Qualtrics. 484 respondents were not eligible to complete the survey (only the people who are not using the three target technologies are eligible for the survey). Among the rest of the respondents, 154 respondents completed the survey. The response rate is 29.8%. After screening out invalid responses (such as responses with short duration and "straight-

[28] Please notice that this item does not exist for Apple Watch.

lining" responses), 149 responses remained, with 50 responses for Apple watch, 49 responses for iPhone X, 50 responses for iPhone 7.

Next, outliers, skewness and kurtosis were examined. Standardized residuals were used to identify potential univariate outliers. A cutoff of +/- 3.5 standard deviations was used (Tabachnick and Fidell 2007). Five outliers were found (two for iPhone 7, two for iPhone X, one for Apple Watch). Further, Mahalanobis distances were evaluated to identify potential multivariate outliers, and scores over 1 were considered problematic (Tabachnick and Fidell 1996). The results indicated no more outliers. After all, 144 cases were left after screening. Next, skewness and kurtosis of the data were tested (Cohen 1960). Scores over +/-2 are considered problematic (Tabachnick and Fidell 2007). Table 17, 18, and 19 demonstrate the descriptive statistics of the three data sets. No severe skewness or kurtosis was identified.

Table 17. Descriptive Statistics for Apple Watch

	N	Mean	Std. Deviation	Skewness	Kurtosis
IT congruity	49	1.1082	0.411	.500	.042
Internal symbolic value	49	2.737	0.850	.151	-.451
Adoption intention	49	3.075	1.175	-.230	-.949
Novelty	49	3.461	0.795	-.643	.079
Collective adoption	49	3.643	0.701	-.466	-.091
External symbolic value	49	2.694	0.993	.012	-.656
Hedonic value	49	3.872	0.557	-.074	-.101
Usefulness	49	3.296	0.803	-.401	.140
Social endorsement	49	3.588	0.662	-.747	1.018

Table 18. Descriptive Statistics for iPhone X

	N	Mean	Std. Deviation	Skewness	Kurtosis

IT congruity	47	1.041	0.484	.851	1.238
Internal symbolic value	47	2.632	0.799	.008	-.622
Novelty	47	3.214	1.006	-.190	-.813
Adoption intention	47	3.168	1.167	-.407	-.750
Collective adoption	47	3.540	0.878	-.433	-.274
External symbolic value	47	2.650	0.872	.011	-.383
Hedonic value	47	3.841	0.744	-.609	.890
Usefulness	47	3.545	0.731	-.387	.402
Social endorsement	47	3.621	0.640	-.352	.886

Table 19. Descriptive Statistics for iPhone 7

	N	**Mean**	**Std. Deviation**	**Skewness**	**Kurtosis**
IT congruity	48	1.012	0.395	-.048	-1.124
Novelty	48	3.330	0.779	-.261	.075
Adoption intention	48	3.344	1.186	-.886	-.151
Collective adoption	48	4.206	0.847	-1.231	1.275
External symbolic value	48	2.807	0.925	-.260	-.181
Hedonic	48	3.942	0.564	-.289	.929
Internal symbolic value	48	2.742	0.930	-.109	-1.108
Usefulness	48	3.783	0.739	-.019	-.835
Social endorsement	48	3.743	0.638	-.587	-.439

The means of the three constructs collective adoption, social endorsement, and novelty were computed, and the results are demonstrated in Table 20. As argued in previous chapters, the three constructs are the core characteristics of fashionable technologies, and consumers' perceptions of the three core characteristics for any fashionable technology should be relatively high. This argument is confirmed by the result below. All the three technologies have relatively high means for the three constructs, indicating that they are all relatively fashionable at the time when the test was conducted. Among the three technologies, we can tell that iPhone 7 has relatively higher

collective adoption (it's adopted by a large number of people) and higher social endorsement (it's endorsed by people with prestige) than the two other technologies. In contrast, Apple Watch has the lowest social endorsement but is also the most novel technology. Based on the IT fashion diffusion process postulated in chapter 3, the results indicate that the three technologies are all relatively fashionable, but they are at different stages of IT fashion life cycle: Apple Watch and iPhone X are still at the growth stage while iPhone 7 is at the maturity or even saturation stage.

Table 20. Means of Collective Adoption, Social Endorsement, and Novelty

	Collective Adoption	**Social Endorsement**	**Novelty**
Apple watch	3.643	3.588	3.461
iPhone X	3.540	3.621	3.214
iPhone 7	4.206	3.743	3.330

Overall, we can see from the results above that:

- iPhone 7 is used by the most people among the three, but it's about to go through the decline stage once it has reached saturation, based on the fashion life cycle by Rogers (1962).
- iPhone X is the newest model of iPhones at the time of writing the dissertation. However, both iPhone X and iPhone 7 are not considered novel as Apple Watch.

Based on the results, I chose Apple Watch as the target technology for the full test, because it has relatively high value for all the three constructs. What's more, the reasons for the adoption of iPhones could be confounded by many other factors. For instance,

iPhones release a new edition every year. Potential adopters may decide not to adopt iPhone X and iPhone 7 simply because they are waiting for the newer models.

Next, reliability and construct validity were assessed to further refine the items, using SmartPLS. Please notice that the constructs IT congruity and novelty have different items for the three technologies, and hence the reliability and validity tests cannot use the combination of all the three datasets. Instead, only the dataset about Apple Watch was used in the tests. What's more, according to Sirgy and Samli (1985), no internal consistency testing is necessary for the IT congruity items, in that such testing is theoretically meaningless. Sirgy argues that a product image is not "independently derived but is, rather, inferred from evoked self-image dimensions" (Sirgy 1982, p. 289). That is, self-image and product image/symbolic meanings are not two separate constructs or dimensions in this congruity construct. Rather, they depend on each other and are compared with each (Sirgy and Samli 1985). Theoretically, there is no internal consistency among the list of symbolic meanings (such as upper class, active, politically liberal) of a product. Therefore, the only criterion for reliability and validity is nomological validity (Sirgy and Samli 1985). "The validity of this measure rests primarily on the nomological testing of the model." (Sirgy and Samli 1985, p. 273). The empirical test of the research model would automatically demonstrate nomological validity of the measure for IT congruity.

First, reliability of the scales was assessed with Cronbach's Alpha and composite reliability. The cutoff of 0.8 for Cronbach's Alpha and the cutoff of 0.7 for composite reliability were recommended (Bagozzi and Yi 1988; Fornell and Larcker 1981;

Nunnally and Bernstein 1994). All the constructs' composite reliability values were over 0.7, and all the constructs' Cronbach's Alpha values were over 0.8, except perceived usefulness, which was very close to 0.8 (see Table 21), indicating that the scales are reliable.

Table 21 Reliability values and AVE

	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Adoption intention	0.982	0.988	0.966
Collective adoption	0.843	0.885	0.577
External symbolic value	0.914	0.936	0.746
Hedonic value	0.84	0.894	0.681
Internal symbolic value	0.917	0.933	0.635
Novelty	0.881	0.904	0.544
Social endorsement	0.869	0.899	0.563
Usefulness	0.785	0.857	0.599

Next, I used factor loadings and Average Variance Explained (AVE) to assess convergent validity. Items' factor loadings should be over 0.707 and AVEs should be greater than 0.5 (Barclay et al. 1995; Fornell and Larcker 1981). From Table 22 we can see that AVEs were all greater than 0.5. Then we check the item loading on their associated constructs. Three items' loadings were found to be lower than 0.707: item 6 for collective adoption "A significant number of people I don't know use this product" (loading = 0.351), item 1 for social endorsement "People with social status use this product" (loading = 0.574), item 1 for internal symbolic value "This IT product is consistent with the characteristics with which I describe myself" (loading = 0.671). Those items were carefully examined to make sure that content validity won't suffer if they were deleted. Then these items were dropped. Several other items' loadings were also

slightly lower than 0.707, including item 1 for hedonic value and three items for novelty. However, deleting these items might result in some areas of the construct domains not being covered. In addition, the low loadings might be caused by small sample size. Thus, these items were kept for further analysis.

Table 22 Factor Loadings in Pilot Test								
	Adoption Intention	Collective Adoption	External Symbolic Value	Hedonic Value	Internal Symbolic Value	Novelty	Social Endorsement	Utilitarian value
AI1	0.979							
AI2	0.984							
AI3	0.985							
CA1		0.724						
CA2		0.813						
CA3		0.775						
CA4		0.897						
CA5		0.866						
CA6		**0.351**						
ESV1			0.799					
ESV2			0.916					
ESV3			0.908					
ESV4			0.782					
ESV5			0.905					
HV1				**0.674**				
HV2				0.904				
HV3				0.840				
HV4				0.865				
ISV1					**0.671**			
ISV2					0.762			
ISV3					0.754			
ISV4					0.848			
ISV5					0.861			
ISV6					0.845			
ISV7					0.762			
ISV8					0.851			
Novelty 1						**0.656**		
Novelty 2						0.791		
Novelty 3						0.804		
Novelty 4						0.791		

Novelty 5						**0.648**		
Novelty 6						0.804		
Novelty 7						**0.653**		
Novelty 8						0.728		
PU1								0.761
PU2								0.797
PU3								0.779
PU4								0.759
SE1							**0.574**	
SE2							0.738	
SE3							0.733	
SE4							0.762	
SE5							0.857	
SE6							0.828	
SE7							0.726	

AI: adoption intention CA: collective adoption ESV: external symbolic value
HV: hedonic value PU: perceived utilitarian value SE: social endorsement
ISV: internal symbolic value

Lastly, discriminant validity was assessed using two criteria. The square roots of AVE for all the constructs should be greater than the correlations between the construct and other constructs (Chin 1998; Compeau et al. 1999). Second, items loadings on their associated constructs should be higher than their loadings on other factors. Table 23 demonstrated the comparison of square roots of AVEs and correlations. Table 24 shows loadings and cross-loadings. The results in the two tables met both criteria, indicating desired discriminant validity.

Table 23. Square Root of AVEs and Correlations in Pilot Test

	Adoption Intention	Collective Adoption	External Symbolic Value	Hedonic Value	Internal Symbolic Value	Novelty	Social Endorsement	Usefulness
Adoption Intention	0.983							
Collective Adoption	0.600	0.760						
External	0.640	0.592	0.864					

Symbolic Value								
Hedonic Value	0.569	0.484	0.525	0.825				
Internal Symbolic Value	0.650	0.477	0.798	0.582	0.797			
Novelty	0.403	0.443	0.435	0.531	0.532	0.737		
Social Endorsement	0.389	0.586	0.505	0.463	0.334	0.297	0.750	
Usefulness_	0.573	0.518	0.640	0.567	0.576	0.489	0.415	0.774

Table 24. Loadings and Cross Loadings in Pilot Test

	Adoption Intention	Collective Adoption	External Symbolic Value	Hedonic Value	Internal Symbolic Value	Novelty	Social Endorsement	Usefulness
AI1	**0.979**	0.574	0.637	0.565	0.637	0.424	0.396	0.554
AI2	**0.984**	0.611	0.602	0.566	0.625	0.411	0.378	0.570
AI3	**0.985**	0.585	0.647	0.547	0.654	0.353	0.373	0.564
CA1	0.364	**0.724**	0.307	0.323	0.268	0.375	0.390	0.291
CA2	0.471	**0.813**	0.574	0.394	0.482	0.309	0.420	0.495
CA3	0.575	**0.775**	0.584	0.458	0.461	0.331	0.478	0.457
CA4	0.498	**0.897**	0.471	0.392	0.353	0.416	0.535	0.428
CA5	0.540	**0.866**	0.389	0.356	0.294	0.362	0.573	0.401
CA6	0.106	**0.351**	0.183	0.225	0.206	0.270	0.191	0.127
ESV1	0.471	0.499	**0.799**	0.302	0.650	0.336	0.386	0.504
ESV2	0.614	0.637	**0.916**	0.521	0.756	0.376	0.509	0.673
ESV3	0.540	0.395	**0.908**	0.490	0.708	0.371	0.414	0.619
ESV4	0.473	0.421	**0.782**	0.454	0.565	0.319	0.363	0.375
ESV5	0.635	0.561	**0.905**	0.483	0.745	0.461	0.484	0.560
HV1	0.456	0.363	0.391	**0.674**	0.439	0.388	0.304	0.476
HV2	0.541	0.484	0.537	**0.904**	0.624	0.579	0.458	0.531
HV3	0.453	0.451	0.402	**0.840**	0.413	0.427	0.409	0.422
HV4	0.391	0.237	0.354	**0.865**	0.380	0.280	0.318	0.415
ISV1	0.547	0.433	0.470	0.649	**0.671**	0.500	0.317	0.483
ISV2	0.432	0.408	0.568	0.303	**0.762**	0.417	0.328	0.321
ISV3	0.446	0.326	0.574	0.257	**0.754**	0.303	0.208	0.346
ISV4	0.593	0.445	0.737	0.341	**0.848**	0.454	0.300	0.559
ISV5	0.490	0.358	0.712	0.477	**0.861**	0.428	0.283	0.404
ISV6	0.506	0.359	0.692	0.532	**0.845**	0.374	0.151	0.539
ISV7	0.562	0.311	0.571	0.560	**0.762**	0.460	0.217	0.458
ISV8	0.506	0.368	0.751	0.517	**0.851**	0.392	0.291	0.508

NOVELTY1	0.283	0.408	0.385	0.500	0.365	**0.656**	0.346	0.465
NOVELTY2	0.433	0.340	0.257	0.365	0.323	**0.791**	0.259	0.339
NOVELTY3	0.271	0.349	0.355	0.409	0.338	**0.804**	0.341	0.394
NOVELTY4	0.295	0.284	0.305	0.297	0.293	**0.791**	0.247	0.341
NOVELTY5	0.313	0.332	0.297	0.223	0.430	**0.648**	0.030	0.185
NOVELTY6	0.240	0.247	0.290	0.384	0.408	**0.804**	0.078	0.378
NOVELTY7	0.127	0.136	0.114	0.284	0.319	**0.653**	0.056	0.114
NOVELTY8	0.369	0.411	0.438	0.486	0.591	**0.728**	0.230	0.460
PU1	0.305	0.293	0.305	0.365	0.208	0.261	0.269	**0.761**
PU2	0.461	0.400	0.480	0.530	0.429	0.422	0.251	**0.797**
PU3	0.585	0.510	0.684	0.494	0.702	0.496	0.420	**0.779**
PU4	0.318	0.326	0.385	0.305	0.266	0.240	0.300	**0.759**
SE1	0.236	0.319	0.391	0.293	0.251	0.043	**0.574**	0.267
SE2	0.203	0.445	0.244	0.342	0.195	0.177	**0.738**	0.128
SE3	0.265	0.288	0.233	0.297	0.115	0.177	**0.733**	0.299
SE4	0.413	0.574	0.519	0.427	0.398	0.282	**0.762**	0.461
SE5	0.334	0.488	0.426	0.356	0.268	0.301	**0.857**	0.270
SE6	0.302	0.393	0.379	0.343	0.262	0.241	**0.828**	0.289
SE7	0.172	0.473	0.289	0.312	0.123	0.279	**0.726**	0.315

AI: adoption intention CA: collective adoption ESV: external symbolic value
HV: hedonic value PU: perceived utilitarian value SE: social endorsement
ISV: internal symbolic value

6.5 Full Test

6.5.1 Data Screening

After the scales were refined in the pilot test, a full test was conducted to test the research model. Apple Watch was chosen as the target fashionable technology. Qualtrics estimated that roughly 2000 respondents received the initial solicitation. 966 respondents were not eligible to take the survey (only the people who are not using Apple Watch are eligible). Among the rest of the respondents, 265 respondents completed the survey. The response rate is 25.6%. Nine invalid responses (e.g., short duration and "straight-lining") were eliminated, resulting in 256 responses.

Next, standardized residuals were used to identify univariate outliers, and Mahalanobis distances were assessed to identify multivariate outliers. Results showed no outliers, based on the cutoff of +/- 3.5 standard deviations and the cutoff of 1 for Mahalanobis distances. Next, skewness and kurtosis were assessed. Table 25 shows the descriptive statistics of the dataset. No severe skewness or kurtosis was identified.

Table 25. Descriptive Statistics for the Full Test

	N	Mean	Std. Deviation	Skewness	Kurtosis
IT Congruity	256	1.425	0.662	.143	-.440
Novelty	256	3.375	0.850	-.520	-.072
Adoption intention	256	2.850	1.191	-.044	-.929
Collective adoption	256	3.291	0.864	-.433	-.116
External symbolic value	256	2.403	0.901	.183	-.348
Hedonic value	256	3.636	0.840	-.821	1.137
Internal symbolic value	256	2.407	0.893	.304	-.262
Perceived usefulness	256	3.265	0.829	-.283	-.152
Social endorsement	256	3.458	0.730	-.435	.700

Table 26 shows the demographics of the sample which roughly match the demographics of Smartwatch users.

Table 26. Demographics of the Sample

	Value	Frequency	Percentage
Gender	1: Male	132	51.6%
	2: Female	124	48.4%
Age	1: Under 20	25	9.8%
	2: 20-30	79	30.9%
	3: 31-40	78	30.5%
	4: 41-50	67	26.2%
	5: 51 or over	7	2.7%
Education	1: Did not attend school	0	0.0%
	2: Less than high school	2	0.8%
	3: High school	118	46.1%
	4: College	117	45.7%

	5: Master	17	6.6%
	6: Doctoral degree	2	0.8%
Income	1: Less than 25,000	46	18.0%
	2: $25,000 to $49,999	119	46.5%
	3: $50,000 to $74,999	55	21.5%
	4: $75,000 to $99,999	29	11.3%
	5: $100,000 to 124,999	7	2.7%
	6: 125,000 or more	0	0.0%

Next, wave analysis was conducted to examine non-response bias, which could exist if non-respondents' answers are significantly different from respondents' answers. Considering the difficulty of obtaining non-respondents' answers, I followed the guidance from Armstrong and Overton (1977) and compared the answers given by early respondents with the ones given by late respondents, while the latter answers could be considered a proxy for non-respondents' answers. Since data collection lasted for five days, I used one-way ANOVA to compare the differences in age, gender, income and education between the early respondents who responded in the first two days and late respondents who responded in the last two days. The results are shown in Table 27. No differences were found between early and late respondents in age, education and income. A slight difference exists in gender between early respondents (1.57) and late respondents (1.44), indicating that there were slightly more female respondents in the early stage of data collection and slightly more male respondents in the late stage of data collection. The difference is not significant at the significance level of 0.05 but is significant at the significance level of 0.1. Overall, non-response bias is a severe problem in the dataset.

Table 27. Tests of Non-Response Bias			
	Mean	**S. D**	**p-value**
Gender			

Early respondents	1.570	.497	.082
Late respondents	1.440	.500	
Age			
Early respondents	3.051	.770	.105
Late respondents	3.242	.778	
Education			
Early respondents	3.703	.652	.343
Late respondents	3.611	.683	
Income			
Early respondents	2.570	.750	.546
Late respondents	2.502	.692	

Common method bias refers to the situation in which a data collection method causes the majority of the relationships between the constructs (Bagozzi and Yi 1988; MacKenzie et al. 2011). As suggested by MacKenzie et al. (2011) and Podsakoff et al. (2003), preventative actions were taken to minimize common method bias. Specifically, respondents were assured of the anonymity of the results, and they were told that there are no right or wrong answers. Items of the same constructs were put in different parts of the questionnaire to prevent psychological associations.

After the data collection, two methods were used to examine the common method bias - Harman's single-factor test and marker variable method. First, I loaded all the items on an unmeasured latent factor. No general factor emerged in the unrotated factor structure, which is supposed to account for over 20% of the variance (Podsakoff et al. 2003). Next, a marker variable ("Music is important to my life"), which is supposed to be theoretically unrelated to the constructs in the model, was used, as suggested by Lindell and Whitney (2001). Correlations between the marker variable and the research constructs were assessed. The average correlation between the marker variable and the

other constructs was 0.07. Based on Podsakoff et al. (2003), there is no indication of the common method bias.

6.5.2 Measurement Model

Next, I used SmartPLS to examine the reliability and construct validity of the scales. Table 28 demonstrates Cronbach's Alpha scores and composite reliability scores. All the constructs' Cronbach's Alpha scores were above 0.8, while all the composite reliability scores were above the recommended cutoff of 0.7 (Bagozzi and Yi 1988; Fornell and Larcker 1981; Nunnally and Bernstein 1994), indicating internal consistency of the scales.

Table 28. Reliability and AVE for the Measurement Model

	Cronbach's Alpha	**Composite Reliability**	**AVE**
Adoption Intention	0.967	0.978	0.938
Collective adoption	0.876	0.909	0.666
External Symbolic Value	0.908	0.931	0.731
Internal Symbolic Value	0.924	0.939	0.687
Novelty	0.920	0.934	0.641
Perceived Hedonic Value	0.915	0.940	0.797
Perceived utilitarian value	0.812	0.876	0.639
Social Endorsement	0.898	0.921	0.661

For convergent validity, factor loadings and Average Variance Explained (AVE) were used, as shown in Table 28 and Table 29. AVEs for all the constructs were greater than 0.5. Loadings of the items on the associated constructs were over 0.7, indicating that convergent validity for some constructs has increased after the adjustment of the instrument in the pilot test. A few items had loadings less than 0.7 in the pilot test, but they were kept in order to avoid the loss of construct domain coverage.

Table 29. Loadings of the Items on the Constructs for Measurement Model								
	Adoption Intention	Collective adoption	External Symbolic Value	Internal Symbolic Value	Novelty	Perceived Hedonic Value	Perceived utilitarian value	Social Endorsement
AI1	0.961							
AI2	0.978							
AI3	0.966							
CA1		0.798						
CA2		0.838						
CA3		0.806						
CA4		0.837						
CA5		0.801						
ESV1			0.825					
ESV2			0.881					
ESV3			0.894					
ESV4			0.789					
ESV5			0.882					
HV1						0.868		
HV2						0.921		
HV3						0.895		
HV4						0.887		
ISV2				0.818				
ISV3				0.782				
ISV4				0.854				
ISV5				0.839				
ISV6				0.858				
ISV7				0.826				
ISV8				0.825				
NOVELTY1					0.736			
NOVELTY2					0.844			
NOVELTY3					0.762			
NOVELTY4					0.843			
NOVELTY5					0.781			
NOVELTY6					0.800			
NOVELTY7					0.792			
NOVELTY8					0.838			
PU1							0.815	
PU2							0.867	
PU3							0.742	
PU4							0.769	
SE2								0.788

SE3								0.833
SE4								0.78
SE5								0.867
SE6								0.844
SE7								0.760

AI: adoption intention CA: collective adoption ESV: external symbolic value
HV: hedonic value PU: perceived utilitarian value SE: social endorsement
ISV: internal symbolic value

Next discriminant validity was assessed. First, the square roots of the AVEs for all the constructs were greater than the correlations between the construct and other constructs (Chin 1998; Compeau et al. 1999), as shown in Table 30. Second, measurement items loaded more highly on their associated constructs than on other constructs, as shown in Table 31. Please notice that the square root of AVE for external symbolic value is very close to the correlation between external symbolic value and internal symbolic value, indicating possible multicollinearity. However, in the research model, external symbolic value is theorized to affect internal symbolic value, so it's understandable that the two constructs were highly correlated. What's more, if we look at the cross-loadings in Table 31, items for external symbolic value loaded more highly on their associated factors than on internal symbolic value, indicating that they are still two different constructs.

Table 30. Square Root of AVEs and Correlations for the Measurement Model								
	Adoption Intention	Collective adoption	External Symbolic Value	Internal Symbolic Value	Novelty	Hedonic Value	Utilitarian value	Social Endorsement
Adoption Intention	**0.968**							
Collective adoption	0.532	**0.816**						
External Symbolic Value	0.576	0.462	**0.855**					
Internal Symbolic Value	0.606	0.454	0.812	**0.829**				
Novelty	0.462	0.389	0.384	0.419	**0.800**			
Perceived Hedonic Value	0.671	0.459	0.473	0.556	0.595	**0.893**		
Perceived utilitarian value	0.710	0.478	0.596	0.634	0.534	0.752	**0.800**	
Social Endorsement	0.316	0.488	0.443	0.404	0.37	0.397	0.399	0.813

Table 31. Loadings and Cross Loadings for the Measurement Model								
	Adoption Intention	Collective adoption	External Symbolic Value	Internal Symbolic Value	Novelty	Perceived Hedonic Value	Perceived usefulness	Social Endorsement
AI1	**0.961**	0.534	0.578	0.644	0.471	0.674	0.713	0.288
AI2	**0.978**	0.526	0.552	0.638	0.456	0.663	0.692	0.342
AI3	**0.966**	0.483	0.542	0.634	0.414	0.611	0.654	0.286
CD1	0.354	**0.799**	0.304	0.250	0.319	0.329	0.325	0.409
CD2	0.498	**0.838**	0.470	0.470	0.323	0.392	0.433	0.374
CD3	0.495	**0.806**	0.426	0.470	0.311	0.381	0.409	0.280
CD4	0.386	**0.837**	0.347	0.316	0.324	0.384	0.392	0.474
CD5	0.404	**0.801**	0.298	0.288	0.312	0.381	0.370	0.490
ESV1	0.512	0.453	**0.825**	0.748	0.358	0.462	0.551	0.400
ESV2	0.510	0.451	**0.881**	0.734	0.346	0.404	0.532	0.416
ESV3	0.500	0.358	**0.894**	0.695	0.311	0.394	0.527	0.365
ESV4	0.441	0.329	**0.790**	0.584	0.289	0.359	0.413	0.291
ESV5	0.493	0.371	**0.882**	0.691	0.329	0.396	0.509	0.407
HV1	0.600	0.415	0.416	0.505	0.535	**0.868**	0.683	0.336
HV2	0.634	0.463	0.486	0.538	0.568	**0.921**	0.691	0.410
HV3	0.572	0.410	0.385	0.454	0.518	**0.895**	0.648	0.325
HV4	0.589	0.348	0.398	0.486	0.499	**0.887**	0.663	0.344
ISV2	0.540	0.415	0.637	**0.818**	0.431	0.475	0.491	0.365
ISV3	0.540	0.412	0.637	**0.782**	0.422	0.482	0.566	0.419

ISV4	0.588	0.448	0.749	**0.854**	0.379	0.467	0.559	0.345
ISV5	0.456	0.317	0.741	**0.839**	0.331	0.425	0.477	0.288
ISV6	0.548	0.352	0.688	**0.858**	0.280	0.475	0.517	0.277
ISV7	0.598	0.375	0.614	**0.826**	0.330	0.491	0.565	0.350
ISV8	0.551	0.307	0.642	**0.825**	0.262	0.413	0.497	0.301
NOVELTY1	0.322	0.312	0.327	0.320	**0.736**	0.485	0.397	0.263
NOVELTY2	0.428	0.321	0.344	0.348	**0.844**	0.490	0.451	0.312
NOVELTY3	0.347	0.263	0.285	0.306	**0.762**	0.472	0.403	0.319
NOVELTY4	0.414	0.335	0.315	0.361	**0.843**	0.508	0.494	0.316
NOVELTY5	0.343	0.300	0.262	0.303	**0.781**	0.405	0.349	0.274
NOVELTY6	0.308	0.279	0.308	0.309	**0.800**	0.394	0.345	0.245
NOVELTY7	0.330	0.290	0.216	0.274	**0.792**	0.414	0.382	0.231
NOVELTY8	0.433	0.367	0.368	0.428	**0.838**	0.586	0.542	0.371
PU1	0.511	0.376	0.380	0.430	0.481	0.653	**0.815**	0.316
PU2	0.646	0.394	0.488	0.584	0.442	0.631	**0.868**	0.275
PU3	0.590	0.426	0.631	0.591	0.325	0.529	**0.742**	0.362
PU4	0.492	0.315	0.362	0.375	0.485	0.602	**0.769**	0.328
SE2	0.187	0.418	0.278	0.273	0.314	0.285	0.242	**0.788**
SE3	0.191	0.339	0.302	0.284	0.251	0.280	0.279	**0.833**
SE4	0.332	0.450	0.452	0.453	0.282	0.352	0.415	**0.780**
SE5	0.323	0.424	0.412	0.350	0.330	0.402	0.329	**0.867**
SE6	0.216	0.342	0.352	0.310	0.303	0.300	0.297	**0.844**
SE7	0.231	0.383	0.302	0.236	0.320	0.285	0.332	**0.760**

AI: adoption intention CA: collective adoption ESV: external symbolic value
HV: hedonic value PU: perceived utilitarian value SE: social endorsement
ISV: internal symbolic value

6.5.3 Structural Model

I included the basic demographics of the participants as control variables, including age, gender, education and income. Age and gender have been shown to affect technology acceptance intention by Venkatesh et al. (2003). In addition, Venkatesh et al. (2012) (i.e., UTAUT 2) proposed seven antecedents of adoption intention, two of which including utilitarian value and hedonic value were incorporated in the current model. The rest of the four constructs, including effort expectancy, subjective norm, facilitating

conditions, and price, were also incorporated as control variables. Habit was not included, in that the target population of the current study is potential adopters of the target fashionable technology which don't have prior use experience with the technology. The measurement items for these constructs used in Venkatesh et al. (2012) were adopted in the study.[29]

Before I conducted the analysis, IT congruity was calculated using the formula from (Sirgy 1985):

$$IC_k = (\sum_{i=1}^{m} |SM_{ik} - ASI_{ik}|)/n$$

Where IC_k is the IT congruity score for consumer (k); n=number of symbolic meanings (i); i=symbolic meaning (1,2, 3,..n); SM_{ik} = symbolic meaning score of symbolic meaning (i) of consumer (k); ASIik = actual self-image score of symbolic meaning (i) of consumer (k);

From Figure 12 and Table 32 we can tell that all the relationships were significant except the relationship between external symbolic value and adoption intention.

[29] Please notice that I didn't control for the effect of brand. In the empirical test, I focused on product-level fashion (i.e., specific IT products). When we focus on product-level fashion, brand effect falls into the realm of fashion. The reason is: the symbolic values/meanings are created during the social interaction when IT fashion is being diffused; At the same time, since the symbolic values/meanings are about the products of a certain brand, then brand effect is created during this fashion process as well. Brand effect is part of fashion effect.

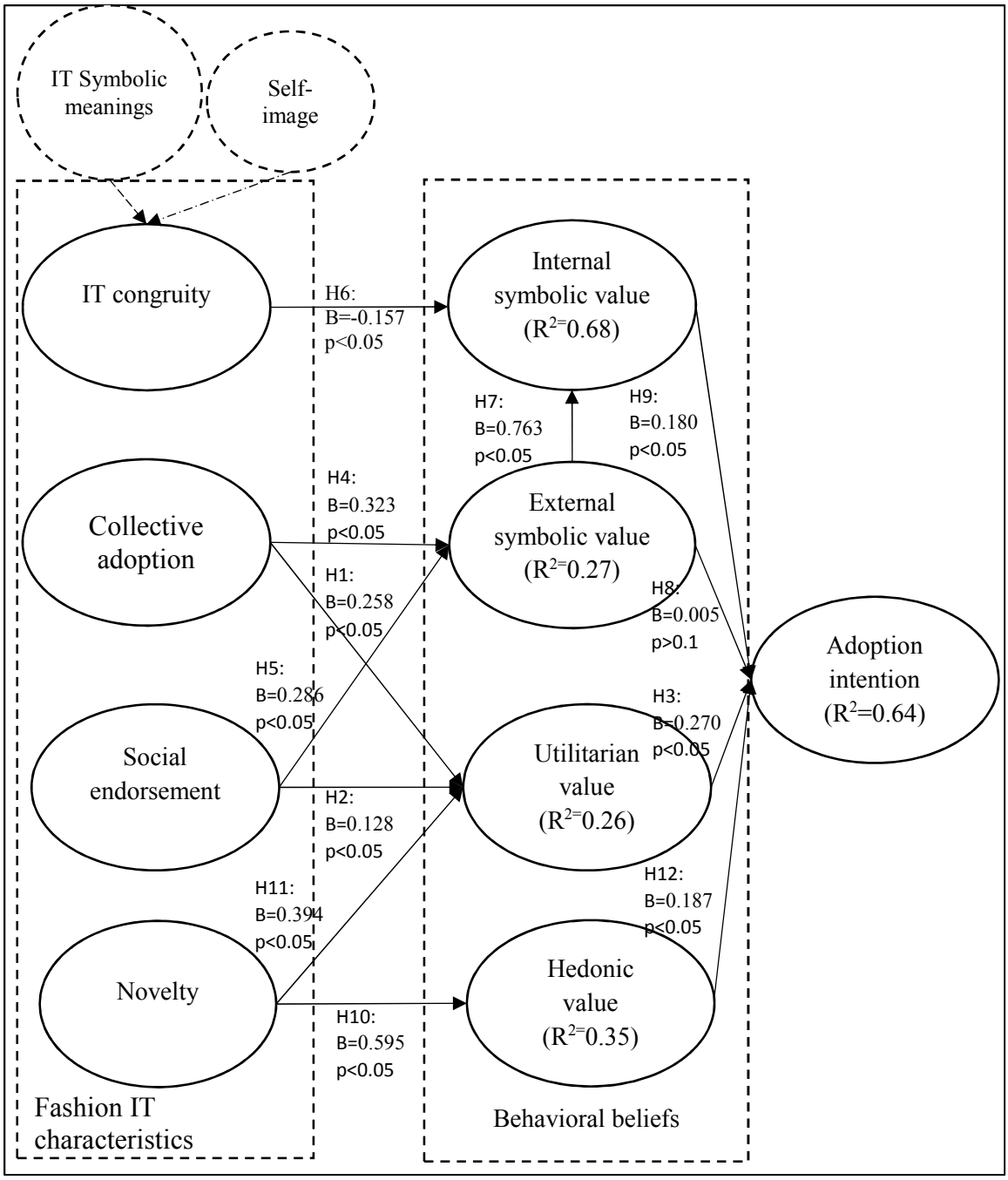

Figure 12. Results of Hypotheses Test

Table 32. Result of the Structural Model				
Hypotheses	**Path Coefficient**	**T Statistics**	**P Values**	**Hypothesis confirmed?**
H1: Collective adoption ->	0.258	4.511	0.000	Yes

perceived utilitarian value				
H2: Social endorsement -> perceived utilitarian value	0.128	2.146	0.032	Yes
H3: Perceived utilitarian value -> adoption intention	0.270	3.998	0.000	Yes
H4: Collective adoption -> external symbolic value	0.323	5.495	0.000	Yes
H5: Social endorsement -> external symbolic value	0.286	4.558	0.000	Yes
H6: IT congruity -> internal symbolic value	-0.157	4.030	0.000	Yes
H7: External symbolic value -> internal symbolic value	0.763	23.527	0.000	Yes
H8: External symbolic value -> adoption intention	0.005	0.055	0.956	No
H9: Internal symbolic value -> adoption intention	0.180	2.263	0.024	Yes
H10: Novelty -> perceived hedonic value	0.595	15.104	0.000	Yes
H11: Novelty -> perceived utilitarian value	0.394	7.621	0.000	Yes
H12: Perceived hedonic value -> adoption intention	0.187	2.950	0.003	Yes

Specifically, hypotheses 1, 2 and 3 are about herd behaviors in IT fashion. The results show that collective adoption of IT had a significant effect on perceived utilitarian value ($B=0.258$, $t=4.511$, $p<0.05$), and social endorsement had a significant effect on perceived utilitarian value as well ($B=0.128$, $t=2.146$, $p<0.05$). Thus, hypotheses 1 and 2 were supported. The results also indicate that the effect of perceived utilitarian value on adoption intention was significant ($B=0.270$, $t=3.998$, $p<0.05$). Hypothesis 3 was also supported.

Hypotheses 4 and 5 are about the external symbolic value of fashionable technologies. The results show that the effects of collective adoption and social

endorsement on perceived external symbolic value were both significant (B=0.323, t=5.495, p<0.05; B=0.286, t=4.558, p<0.05), supporting hypotheses 4 and 5. Hypothesis 6 theorizes the relationship between IT congruity and perceived internal symbolic value. The results show that this relationship was significant (B=-0.157, t=4.030, p<0.05). Please notice that the coefficient of the relationship is negative, in that the formula to calculate the value of IT congruity evaluates the difference/ incongruence instead of congruence between symbolic meanings of the fashionable technology and self-image, which makes the relationship between IT congruity and perceived internal symbolic value negative. The negative coefficient means that the more incongruence between symbolic meanings of the fashionable technology and self-image, the fewer people perceive internal symbolic value, which still supports the hypothesis.

Hypothesis 7 posits that perceived external symbolic value is positively associated with perceived internal symbolic value, which was supported (B=0.763, t=23.527, p<0.05). Hypotheses 8 and 9 are about effects of symbolic values on adoption intention. The results show that perceived internal symbolic value had a significant effect on adoption intention (B=0.180, t=2.263, p<0.05), supporting hypothesis 9. However, the effect of perceived external symbolic value on adoption intention was not significant (B=0.005, t=0.055, p>0.1). Since perceived external symbolic value was hypothesized to positively affect perceived internal symbolic value, which in turn affects adoption intention, and both paths were significant, it is possible that the effect of perceived external symbolic value on adoption intention was fully mediated by perceived internal symbolic value.

Following the method recommended by Preacher and Hayes (2008), I further examined the mediating effect of perceived internal symbolic value on the relationship between perceived external symbolic value and adoption intention. The results are shown in Figure 13. In this model with only three constructs, the relationship between perceived external symbolic value and perceived internal symbolic value was significant ($B=0.800$, $t=21.882$, $p<0.05$). Before perceived internal symbolic value was incorporated as a mediator, the effect of perceived external symbolic value on adoption intention was significant ($B=0.760$, $t=11.198$, $p<0.05$). After perceived internal symbolic value was incorporated as a mediator, the relationship became insignificant ($B=0.157$, $t=1.490$, $p>0.1$). The indirect effect of perceived external symbolic value on adoption was 0.602 with a 95 percent bootstrap confidence interval (CI) of 0.433 and 0.776. Since zero was not in this interval, the indirect effect was significant. Thus, this supplemental analysis shows that the effect of perceived external symbolic value on adoption intention was fully mediated by perceived internal symbolic.

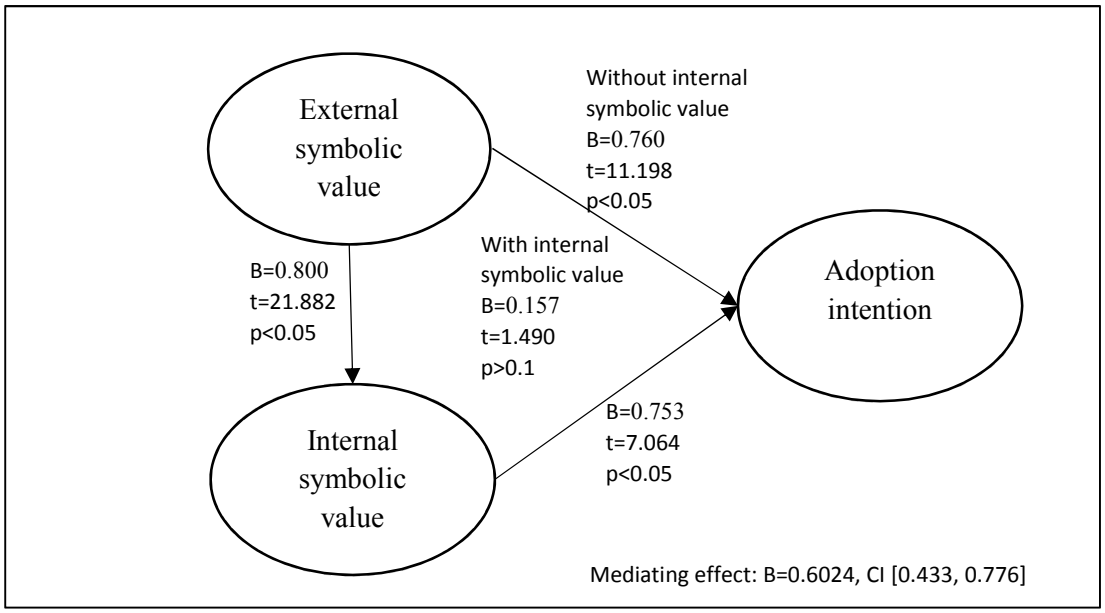

Figure 13. Supplemental Analysis for Mediating Effect

The full mediation effect of perceived internal symbolic shows that when it comes to Apple Watch, people tend to internalize the symbolic meanings of the fashionable technology for the group (i.e., the group's values, tastes, lifestyles and so on associated with using the target technology). In other words, they might unconsciously consider the group's values, tastes, lifestyles as their own. They consider using the technology as a way to express themselves (i.e., perceive internal symbolic value) instead of fitting in or showing off. However, they may not realize that their self-expression behaviors are caused by group pressure and internalization of group values. What's more, the insignificant effect of external symbolic value on adoption intention could be attributed to the fact that the target technology Apple Watch is still at the early stages of IT fashion life cycle. The users of the technology can be largely considered early adopters and fashion leaders. According to Sproles (1979), fashion leaders and early adopters tend to

be more innovative than late adopters, and they tend to have a stronger desire for uniqueness instead of conformity.

Hypotheses 10, 11 and 12 are about the novelty effect of fashionable technologies. The results show the novelty of IT had a significant effect on perceived hedonic value ($B=0.595$, $t=15.104$, $p<0.05$). The effect of perceived hedonic value on adoption intention was also significant ($B=0.187$, $t=2.950$, $p<0.05$). Novelty of IT also had a significant effect on perceived utilitarian value ($B=0.394$, $t=7.621$, $p<0.05$). Thus, hypotheses 10, 11 and 12 were supported.

6.5.4 Post-Hoc Tests

The insignificant effect of perceived external symbolic value on adoption intention and the full mediating effect of perceived internal symbolic value were not expected initially. Thus, in order to further confirm this discovery, I conducted post-hoc tests to decide if this discovery could be generalized to different groups of fashionable technology users. Specifically, previous studies have shown variance in self-identities and symbolic meanings of fashion items across different genders (Crane 2012; Gould and Stern 1989). Thus, I tested the mediating effect of perceived internal symbolic value on the relationship between perceived external symbolic value and adoption intention for different genders. Figure 14 shows the results of the test for females while Figure 15 shows the results of the test for males. As we can see, for male adopters of Apple Watch, the effect of perceived external symbolic value on adoption intention became insignificant after perceived internal symbolic value was incorporated in the model ($B=-0.046$, $t=-0.339$, $p>0.1$). The indirect effect was 0.734 with a 95 percent bootstrap

confidence interval CI of 0.486 and 1.006, which was significant. It means that for males, perceived internal symbolic value still fully mediates the relationship between perceived external symbolic value and adoption intention. However, for female adopters, the effect of perceived external symbolic value on adoption intention was still significant after perceived internal symbolic value was incorporated (B=0.394, t=2.433, p<0.05). The indirect effect was also significant (B=0.461, CI [0.209, 0.701]). Thus, for female adopters, perceived internal symbolic value only partially mediated the relationship between perceived external symbolic value and adoption intention. The discrepancy between females and males could be attributed to the fact that women tend to "score higher on vanity physical concern, vanity achievement concern, vanity achievement view and public self-consciousness than men" (Workman and Lee 2011, p. 307), and hence external symbolic value plays a more significant role in female users' decision making process about IT fashion adoption.

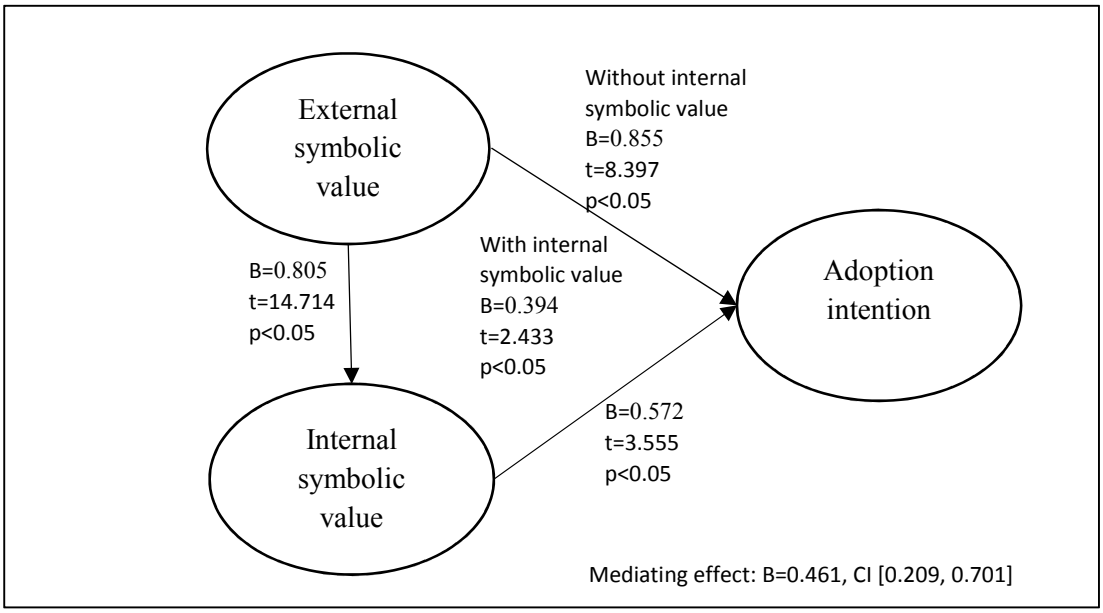

Figure 14. Mediating Effect Test Result for Females

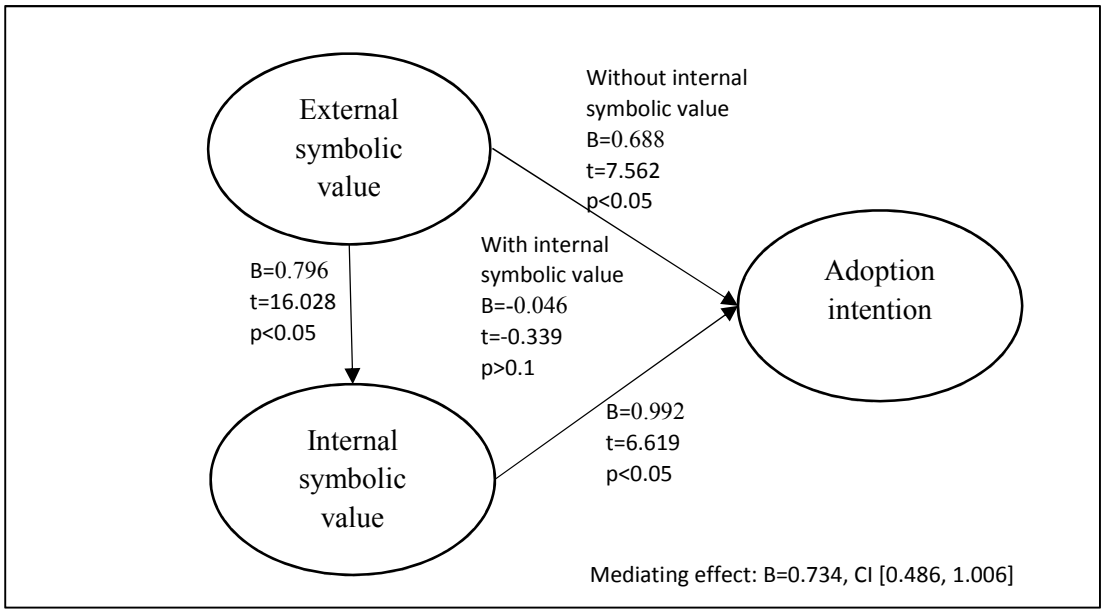

Figure 15. Mediating Effect Test Result for Males

The literature on novelty and hedonic value suggests that the relationship between novelty and hedonic value might diminish once novelty has reached an extreme level (Berlyne 1960; Berlyne 1970; Bianchi 2002; Hung and Chen 2012). Specifically, these studies show that pleasure and interestingness generally increase with novelty, but they might show a decline or levelling off once novelty reaches a peak. A similar relationship between novelty and utilitarian values was also suggested by a few studies (Bianchi 2002; Zhou and Nakamoto 2007). Zhou and Nakamoto (2007) asserted that it's easier for people to recall and perceive the new features of a novel product when they are familiar with similar products. The curved relationship between novelty and hedonic value and the curved relationship between novelty and utilitarian value could be explained by the same reason:

When a new product is too novel and too different from the products that people are familiar with, "they lack the rules of decodification and transferability that would

have made them comparable" (Bianchi 2002, p. 10). The unique attributes might be highly incongruent with the knowledge people currently possess, which makes it hard for people to comprehend and appreciate them (Zhou and Nakamoto 2007). In addition, people might feel incompetent with the new product and be uncertain about the performance of the new and unique features (Zhou and Nakamoto 2007).

Therefore, in the post-hoc analysis, the supposedly curved relationship between novelty and hedonic value and the supposedly curved relationship between novelty and utilitarian value were tested. First of all, a quadratic model for novelty and utilitarian value was tested in SPSS. The results are shown in Table 33. Based on the results, the Beta for the quadratic term was -.066, which suggests that the curve opens downwards. Figure 16 below shows the scatter plot for the relationship between novelty and utilitarian value. As we can see, perceived utilitarian value generally increases with novelty, but the positive impact of novelty on utilitarian value decreases slightly as novelty goes up. However, the non-linear effect was not significant (B=-.066, t=-1.383, p>0.1).

Table 33. Results of the Quadratic Regression

Relationship	Path Coefficient	T Statistics	P Values	Significant?
Novelty and utilitarian value	-.066	-1.383	.168	No
Novelty and hedonic value	.002	.035	.972	No

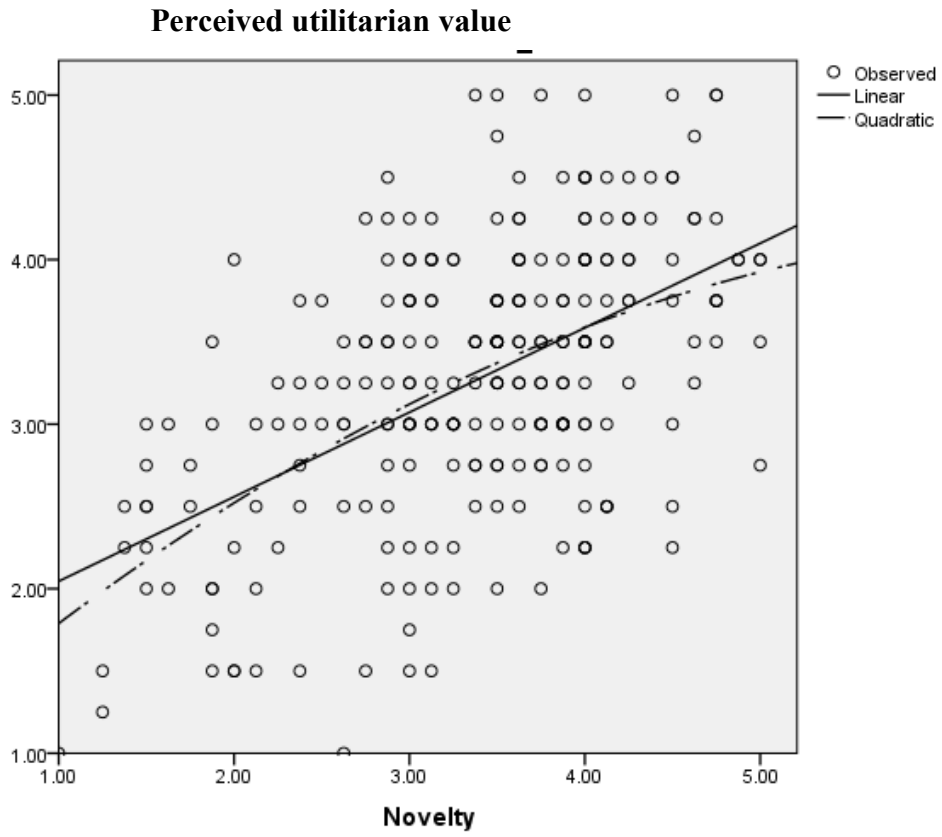

Figure 16. Scatter Plot for Novelty and Utilitarian Value

Next, I tested the quadratic model for novelty and hedonic value. The results and the scatter plot (see Table 33 and Figure 17) show that there was no non-linear relationship between novelty and hedonic value (B=.002, t=.035, p>0.1).

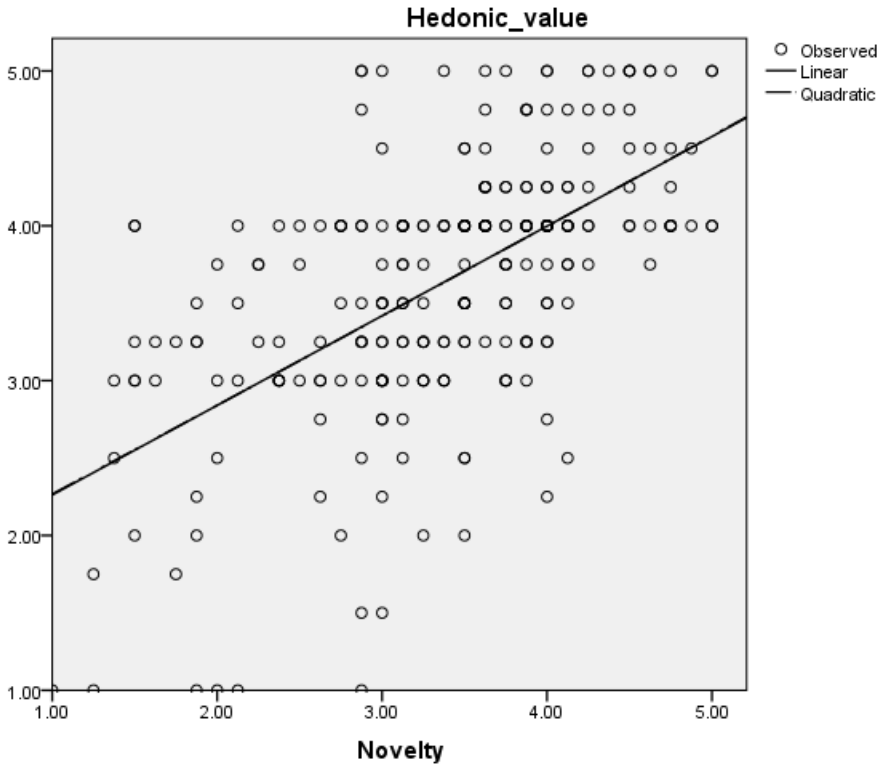

Figure 17. Scatter Plot for Novelty and Hedonic Value

Overall, the post-hoc analysis confirmed that utilitarian value and hedonic value generally increase as novelty increase. The non-linear relationship between novelty and utilitarian value and the non-linear relationships between novelty and hedonic value suggested by previous studies were not significant. The insignificant results could be attributed to the fact that Apple Watch is not considered too novel. People are still somewhat familiar with the concept of the smartwatch to comprehend and appreciate it. Nevertheless, the p value for the non-linear effect of novelty on utilitarian value was slightly greater than 0.1, which suggests that the non-linear relationship between novelty and utilitarian value could be significant with larger sample size.

CHAPTER 7: DISCUSSION

7.1 Summary of the Findings

The intent of the research was to investigate the IT fashion diffusion process and the reasons why people chase after fashionable technologies. The research model was based on the IT fashion diffusion process explicated in chapter 2 and previous fashion theories. The research model identified four object-based beliefs about fashionable technologies, which were expected to affect behavioral beliefs about the technologies. That is, the research model asserted that behavioral beliefs have direct influences on adoption intention of fashionable technologies while object-based beliefs have more distal influences on adoption intention. An online survey about Apple Watch was conducted to test the research model, and 256 responses were collected. All the hypotheses were supported except one.

Specifically, the results show that herd behaviors happened when a fashionable technology was adopted by a significant number of people in social groups and endorsed by people with prestige or social status. Perceptions of these characteristics of the technology led to a higher evaluation of the utilitarian values of the technology because people deferred their judgement to other people. They also considered using the technology as a way of obtaining social recognition and group membership (i.e., external symbolic value), which affected behavioral intentions as well. The results also confirmed the impact of novel design features of fashionable technologies on hedonic values. Lastly, the research model conceptualized the influence of symbolic meanings associated with different fashionable technologies as a construct called IT congruity. The results

demonstrated that the match between the symbolic meanings of a technology and one's self-identities led to behavioral intention to use the technology as a way to express oneself.

The only hypothesis that was not supported is the relationship between external symbolic value and adoption intention. A supplemental analysis was conducted to test the mediation effect of internal symbolic value on this relationship. The results showed internal symbolic value fully mediated the relationship between external symbolic value and adoption intention. In the post-hoc analysis, the mediation effect was tested for male and female respondents. The results showed the internal symbolic value fully mediated the relationship between external symbolic value and adoption intention for male respondents, but only partially mediated this relationship for female respondents. In addition, the post-hoc analysis also shows that the novelty effect on utilitarian value gradually went down as novelty increased. However, the non-linear effect was not significant in the current study.

Overall, the current dissertation lays the foundation for IT fashion researches by elucidating the formation and diffusion of IT fashion and identifying the core characteristics of fashionable technologies and their consequences, which potentially breaks new theoretical grounds for the IS field. Although the dynamic process of IT fashion diffusion was not fully captured by the research model, the new understandings derived out of the IT fashion diffusion process proposed in this dissertation still have significant theoretical implications and contributions. The following sections first discuss the conceptual contribution of the new IT fashion constructs and their implications. Then

I discuss the theoretical contribution and implications of the research model. Lastly, the practical implications of the current dissertation are discussed. These discussions are summarized in Table 34.

Table 34. Theoretical and Practical Implications

Key Arguments and Findings	Theoretical Implications	Practical Implications
Three core characteristics of fashionable technologies were identified by the research model: collective adoption, social endorsement and novelty of IT, as well as a set of symbolic meanings associated with the technologies. Consumers' perceptions of the characteristics and the symbolic meanings of a fashionable technology could change at different IT fashion stages.	Integrates the previous definitions of fashion and provides a clearer understanding of what constitutes fashionable technologies.	Determining if a technology is currently fashionable could be vital to the survival of some organizations or industries. Fashionable technologies could bring opportunities and challenges for more organizations and industries.
Beliefs about fashionable technologies were divided into object-based beliefs and behavioral beliefs. Object-based beliefs led to different behavioral beliefs, which in turn affected adoption intention. Their relationships were driven by four different motivations: desire for novelty, conformity, individuality and herd behavior.	Integrates extant studies on fashion diffusion and adoption and provides a more nuanced and systematic understanding of the motivations behind people's behaviors in IT fashion.	Different people could chase after fashionable technologies for different reasons
The match between the symbolic meanings of a technology and one's own self-identity was conceptualized as IT congruity in the research model. IT congruity affected	It's not the aesthetics of fashionable technologies that affects the adoption of the technology, but the symbolic meanings constructed out of aesthetic design and functional design of the	On one hand, IT manufacturers should devote themselves to making major technological improvement to their products in order to

internal symbolic value, which in turn led to adoption intention.	technology. What's more, different technologies could have different symbolic meanings. Both symbolic meanings and technological improvement are important to IT fashion diffusion and adoption.	make their products fashionable. On the other hand, they can also try to manipulate the symbolic meanings associated with their products to make their product appear different from other products.
The effects of self-identity on IT adoption was decomposed into external symbolic value and internal symbolic value. In the case of Apple Watch, internal symbolic value fully mediated the relationship between external symbolic value and adoption intention for male users, but only partially mediated the relationship for female users.	Conformity and individuality in the fashion context seem to contradict with each other, but they usually come hand in hand. Future IT researches should be aware that IT users might internalize external social influences.	IT practitioners should carefully distinguish different technologies and find out what symbolic purpose people use them for. And they should use appropriate marketing strategies accordingly.
Collective adoption and social endorsement affected perceived utilitarian value, which in turn, led to adoption intention.	Extends our understanding of herd behavior and provides novel insights about the roles played by technological improvement in IT fashion.	

7.2 Conceptual Contributions and Implications of New IT Fashion Constructs

7.2.1 Conceptual Contribution of New IT Fashion Constructs

There are numerous definitions of fashion in the extant fashion literature. Wang (2010) defined IT fashion in the organizational context, but there is no definition of fashionable technologies at the individual level, despite the prevalence of IT fashion in the context of consumer technologies. Moreover, previous definitions did not reach a consensual conclusion about what makes a product/technology fashionable. In previous definitions of fashion, some considered fashion as a form of collective behavior (King

1963; Lang and Lang 1961; Sproles 1979), some believed that fashion is meaningful dress or style that signifies social norms (Barber and Lobel 1952; Barnard 2002; Barnard 2007; Daniels 1951; Davis 1992; Sproles 1979), and some other studies defined fashion as a novel style or a new IT product (King 1963; Robinson 1958; Wang 2010). Answering the question "what makes a technology fashionable" has important theoretical and practical implications. However, we cannot get a clear answer from previous studies.

The current dissertation contributes to the IT fashion literature by defining fashionable technologies and identifying the three core characteristics of fashionable IT, including collective adoption, social endorsement, and novelty of IT:

The current study argues that the reason why previous studies have divergent understandings of fashion lies in the fact that fashionable products have multiple distinct characteristics. Previous studies tried to understand fashion from different angles, which caused their discrepant points of view about fashion. Thus, to reach a consensual understanding of IT fashion, the current dissertation extracts and captures the core characteristics of IT fashion from the perspective of consumer perceptions, which integrates the previous definitions of fashion and provides a clearer understanding of what constitutes fashionable technologies.

Moreover, the current dissertation further contributes to the IT fashion literature by describing how the core characteristics of fashion IT change during different IT fashion stages:

I argue that being fashionable is a relative status and that there is no clear cutoff for when a technology becomes fashionable. Fashion is an ever-changing process. What's

fashionable today may not be fashionable tomorrow. According to Rogers (1962) and Wasson (1968), a fashion life cycle consists of five stages: market development, rapid growth, maturity, saturation and decline. Some technologies might quickly go through the stages of market development and rapid growth and dissipate before reaching the point of critical mass. These technologies can only be considered a fad, not fashion (Wasson 1968). Even if a technology becomes fashionable later, they still can't be called fashionable in the early stages. Previous studies failed to provide an answer about when a technology/product becomes fashionable during the fashion life cycle. The current study answers this question by providing a novel explanation for how and when a technology becomes fashionable. Specifically, the current study argues that the three core characteristics of fashionable technologies have different magnitudes at different stages of a fashion life cycle. At a certain point after the point of critical mass, the magnitudes of all the three core characteristics of fashionable technologies become relatively large. At this point, we can say that a technology is fashionable. Please notice there are no clear cutoffs for the magnitudes of the three characteristics, but rather, consumers should be able to strongly perceive these characteristics of a certain technology. The results of the pilot test about the three target technologies – Apple Watch, iPhone X and iPhone 7 provided preliminary support for this argument. The results of the pilot test showed that for Apple Watch, as a relatively new fashionable product, people's perception of novelty was relatively higher than iPhones (the mean of perceived novelty was 3.46 for Apple Watch, which was higher than the means for iPhone X and iPhone 7). Meanwhile, respondents' perception of collective adoption and social endorsement of Apple Watch

was relatively lower than iPhones (the means for Apple watch were 3.64 and 3.59 respectively, compared to 4.2 and 3.74 for iPhone 7), indicating that they were at different fashion stages. Nevertheless, all the characteristics for the three technologies were relatively salient, indicating that these technologies were fashionable to some extent.

7.2.2 Theoretical Implications of the New IT Constructs

By defining fashionable technologies and delineating the characteristics of fashionable technologies, the current dissertation has the following theoretical implications:

Considering the tremendous influence of IT fashion on consumer behaviors, future studies can be conducted from many research angles, such as investigating the influence of IT fashion at the post-adoption stage or comparing fashionable technologies with non-fashionable technologies. New research methods such as data mining can also be utilized. In order to conduct those studies, we need to have a basic understanding of what fashionable technologies are. What's more, when future studies are choosing target technologies for their researches, an effective and consensual way to determine if a technology is fashionable is needed. The current dissertation provides a novel solution to these issues. Future studies could measure the three core characteristics of fashionable technologies from either individual level or group level, depending on the nature of the study. If any of the characteristics of the technology has a relatively low value, then the technology shouldn't be considered fashionable.

The current dissertation also delimits the scope of fashionable technologies. With the advances in information technologies, new IT products emerge on a daily basis. It's

possible that these new IT products become fashionable one day. If researchers plan to devote themselves to predicting IT fashion, they should be aware of the preconditions of fashionable technologies proposed in the current dissertation. Specifically, I argue that only socially visible or consumed technologies with the ability of communicating symbolic meanings can be fashionable. The meaning of being socially visible in the online environment and the other four preconditions were further discussed in chapter 3. Thus, when future researches are conducted to predict IT fashion, researchers should make sure that the technology meets these conditions. Overall, the definition and scope of fashionable technologies proposed in the current dissertation define the scope for future researches and point out the directions that future researches could take.

7.3 Theoretical Contributions and Implications of the IT fashion Diffusion Process

7.3.1 Theoretical Contribution of the IT fashion Diffusion Process

By delineating the perceptions of fashionable technologies, the current dissertation provides a more nuanced understanding of the motivations behind people's behaviors in IT fashion. The new understandings of IT fashion process integrate and extend previous fashion theories and IS studies on fashion.

The extant understanding of fashion diffusion is fragmented, scattered in different fashion theories and studies. From these fashion theories and studies, we know that the behavior of chasing after fashionable technologies could be driven by different motivations, such as identity (Sproles 1979), social influence (Nystrom 1928; Simmel 1904; Veblen 1899), symbolic meanings (Barnard 2002; Barthes 1983), or informational signals they received (Bikhchandani et al. 1992). A few IS studies also adopted TAM to

explain the adoption of fashionable technologies. In these studies, all the fashion-related constructs such as aesthetics, perceived critical mass, or image as well as traditional TAM antecedents (including perceived usefulness and perceived ease of use) were all treated as direct antecedents of adoption intention (Jeong et al. 2017; Tzou and Lu 2009; Yang and Hsu 2011). However, we do not know how these different factors interact with each other to facilitate IT fashion diffusion. In addition, IT fashion is different from clothing fashion, and hence the fashion theories in other fields need to be adapted to fit the focal context. The current study synthesizes previous fashion theories to provides a holistic understanding of IT fashion diffusion process by delineating consumers' perceptions of fashionable technologies.

Specifically, the current dissertation divided the fashion-related constructs into object-based beliefs and behavioral beliefs. I proposed three core characteristics of fashionable technologies, as well as the symbolic meanings of fashion IT, and then argues that the perceptions of these characteristics and symbolic meanings could lead to different perceived outcomes, driven by various motivations. I argue that the perception of collective adoption and social endorsement could lead to herd behaviors and social imitation behaviors to obtain social distinction. What's more, the congruence between the symbolic meanings of a fashionable technology and one's self-identity could meet the needs for self-expression, which also leads to adoption intention. Lastly, I argue that the novel aesthetic and functional features of fashionable technologies could meet people's desire for novelty, which drives them to always chase after the hottest fashion IT.

In addition, the process of IT fashion diffusion process further asserted that the magnitudes of the fashion IT characteristics vary across different fashion diffusion stages. Therefore, the impact of these factors also varies at different fashion stages. For instance, when novelty of IT is the most salient characteristic of fashion IT in the early stages, the effect of the factor desire for novelty is also very prominent at these stages. In the later stages when the magnitude of novelty decreases, the impact of the desire for novelty also decreases, while other factors begin to take over, such as herd behavior and social imitation. Although the change of different fashion factors was not hypothesized in the research model, the results in the pilot tests about the three chosen technologies provided preliminary support for these arguments. The differences in the means of the three characteristics among Apple Watch, iPhone 7 and iPhone X are consistent with my argument about fashion stages in the process of IT fashion diffusion.

7.3.2 Theoretical Implication of the IT fashion Diffusion Process

Overall, the IT fashion diffusion process and the research model on the adoption of fashionable technologies have the following theoretical implications:

First of all, the IT fashion diffusion process proposed in the current dissertation extends the extant literature on fashion diffusion in other disciplines. Our current understanding of fashion diffusion is largely based on innovation diffusion theory by Rogers (1962), which was applied to the fashion context by Sproles (1979) and Wasson (1968). Rogers divided the process of innovation diffusion into five stages. He also proposed five attributes of an innovation that could affect the adoption rate of the innovation, including relative advantage, compatibility, complexity, trialability and

observability. However, the role played by symbolic meanings/symbolic values in innovation diffusion was mostly neglected. The current dissertation argues that the endorsement of fashion leaders and the congruence between the symbolic meanings of a technology and one's self-identity largely affect whether a technology innovation could successfully diffuse through a social system. In addition, the current dissertation combined the herd behavior literature with innovation diffusion theory to explain the roles played by herd behaviors at different stages of IT fashion diffusion. Previously, Bikhchandani et al. (1992) used informational cascades to explain why people herd in fashion or fad. Nevertheless, they did not specify when herd behaviors might happen during a fashion life cycle. The current dissertation argues that herd behaviors could happen at any stage of a fashion life cycle and become particularly salient once the point of critical mass has been reached. Overall, the current dissertation combined social influence/symbolic values, herd behaviors and novelty effect with innovation diffusion theory and explicated which factors play larger roles at different fashion stages, which provides a more holistic picture of IT fashion diffusion.

Second, the research model provides a new way to understand IT fashion adoption. In previous IS studies on fashion IT adoption, all the fashion-related constructs were hypothesized to directly affect adoption intention (Jeong et al. 2017; Tzou and Lu 2009; Yang and Hsu 2011). However, the findings of the research showed that when we are studying the adoption of fashionable technologies, it's necessary to distinguish object-based beliefs and behavioral beliefs about the technology. Object-based beliefs tell us how people perceive the characteristics of the technology, while behavioral beliefs tell us

how people perceive the outcomes of using the technology. By dividing the perceptions of the technology into these two types of beliefs, we can have a better understanding of how these factors interact with each other from a more systematic point of view.

Third, based on the two-beliefs model by Wixom and Todd (2005), the current study extends UTAUT 2 by Venkatesh et al. (2012) by identifying the antecedents of the key behavioral beliefs in the fashion context. According to the two-beliefs model by Wixom and Todd (2005), perceived utilitarian value, perceived hedonic value and perceived symbolic values that were proposed in the current study should be considered behavioral beliefs. However, TAM and the subsequent studies failed to identify object-based beliefs that affect behavioral beliefs. That is, they did not provide answers about what kinds of technologies could provide utilitarian value, symbolic value and hedonic value in the fashion context. The current study fills up this gap and identifies four object-based beliefs that could affect the behavioral beliefs. The research model explains why people chase after the fashion and what characteristics of fashionable technologies could lead to the adoption of fashion IT.

Lastly, the current dissertation also accentuates the importance of fashion stages on IT fashion adoption. In extant IT adoption literature, all the behavioral beliefs, including utilitarian value, symbolic value and hedonic value were considered equally important (Arbore et al. 2014a; Arbore et al. 2014b; Venkatesh et al. 2003; Venkatesh et al. 2012). However, the process of IT fashion diffusion implies that some of the behavioral beliefs may not be salient at all at some stages of IT fashion. For instance, in the early stage of IT fashion diffusion when the technology is only adopted by early

adopters/innovators, endorsement from people with prestige in one's own social group is almost non-existent, and symbolic meanings haven't been widely socially recognized. In this case, external symbolic value and internal symbolic value of the technology are not salient. Overall, the process of IT fashion diffusion highlights the importance of adding fashion stages into the current adoption literature.

7.4 Decomposing Symbolic Values: Theoretical Contributions and Implications

The current dissertation contributes to the IT adoption literature and IT identity literature by dividing self-identity into external symbolic value and internal symbolic value and proposing them as two important determinants of IT adoption intention.

The current study proposes that symbolic values play a major role in user adoption of fashionable technologies, which challenges the extant IT adoption literature that has traditionally focused on usefulness, ease of use and hedonic value. Specifically, TAM by Davis et al. (1989) considered perceived usefulness and perceived ease of use the most important determinants of IT adoption intention. Later on, hedonic value was added to the model (Venkatesh et al. 2012). Subjective norm was always considered an important determinant of IT adoption intention (Venkatesh and Davis 2000; Venkatesh et al. 2003; Venkatesh et al. 2012). However, subjective norm reflects only one form of social influence. The current dissertation argues that there are two other forms of social influence, including external symbolic value and internal symbolic value. Subjective norm differs from external symbolic value in that external symbolic value is a form of social learning/social imitation while subjective norm "act as external sanctions inducing negative emotional states when individuals do not conform" (Baddeley 2010, p. 285).

The construct self-identity was proposed by a few studies (Arbore et al. 2014a; Arbore et al. 2014b; Carter and Grover 2015) and is related to external symbolic value and internal symbolic value in that they are all based on self-identities. However, these studies did not distinguish between person identity and social identity. The current study further divides self-identity into two types of symbolic values based on person identity and social identity and argues that the adoption of fashionable technologies could be motivated by the two different self-identities.

In addition, there are mixed results regarding the impact of subjective norm on adoption intention (Sun and Zhang 2006). Among the studies that have tested the relationship between social influence/subjective norm and adoption intention, only three out of thirteen studies had significant results (Sun and Zhang 2006). The mixed results could be attributed to some situational factors. But the current dissertation argues that social influence has much broader meanings. It's possible that the construct subject norm does not fully capture the various forms of social influence. Thus, by incorporating the two forms of social influence external symbolic value and internal symbolic value, we could have more significant results.

The study further contributes to the literature by delineating the relationship between external symbolic value, internal symbolic value and adoption intention:

The study argues that both external symbolic value and internal symbolic value lead to the intention to adopt fashionable technologies, and external symbolic value could affect internal symbolic value in some situations. The results of the empirical tests supported these hypotheses. Moreover, the results show that internal symbolic value fully

mediated the relationship between external symbolic value and adoption intention. It means that when it comes to Apple Watch, people tend to internalize the symbolic meanings of the technology for their social groups and consider using the technology a way to express themselves, instead of showing off and obtaining social recognition. They may not realize that their intention to express themselves was caused by group pressure. That is, being true to "themselves" is essentially being just like other people in their social groups, and people might not realize it. In the post-hoc analysis, I found out that the mediating effect was more obvious for males than females. For female users, they intentionally use the fashionable technology for both self-expression and impression of others, while for male users, they tend to consider using the technology a way of self-expression (i.e., being themselves), although they are still trying to impress others without noticing it.

The results solved the mystery about the seemingly contradictory relationship between conformity and individuality in the fashion context and provide a deeper understanding of their relationship. The implication of these findings for IS researches is that in some situations, consumers might internalize external social influence. In extant IS research, the constructs image, subjective norms and social influence could all be considered external social influence. The effects of these external social influence might be mediated by internal symbolic value. That is, consumers might not acknowledge that they are going with the flow, but instead, they are just being themselves.

7.5 Relationship between Aesthetics, Novelty, Symbolic meanings and Fashion IT: Theoretical Contributions and Implications

7.5.1 Theoretical Contributions of the New Relationships

The current dissertation contributes to the adoption literature by conceptualizing the symbolic meanings associated with a certain IT product – IT congruity – and explaining how IT congruity impacts internal symbolic value. The current study also contributes to the fashion literature by highlighting the importance of novel functional features of fashionable technologies and their influence on hedonic value, symbolic value and utilitarian value:

In previous fashion studies in other disciplines, fashion was usually associated with styles which deliver certain symbolic meanings (Barber and Lobel 1952; Barnard 2017; Blumer 1969; Davis 1984; Simmel 1904; Sproles 1979). In the IS studies on fashion at the individual level, aesthetics/beauty and image were both considered important for fashion IT adoption (Tzou and Lu 2009; Yang and Hsu 2011). However, from these studies, we cannot tell the essential differences between fashionable technologies and fashionable clothes. We are not sure if aesthetics is necessary for fashionable technologies and what roles symbolic values play in fashion IT adoption. I argue that the difference between fashionable technologies and fashionable clothes lies in the importance of symbolic meanings to perceived innovativeness of the product. For fashionable clothes, symbolic meanings are completely constructed out of the styles. New symbolic meanings assigned to an old style could make the style a new fashion innovation. However, for fashionable technologies, technological improvement and

symbolic meanings both contribute to the innovativeness of the technologies. In the current study, the effect of symbolic meanings is captured by the construct IT congruity and the relationship between IT congruity and internal symbolic value. By distinguishing feature-level fashion and product-level fashion and conceptualizing IT congruity, I argue that different fashion IT could have a different set of symbolic meanings and hence form their own fashion waves. People are attracted by the symbolic meanings associated with different technologies. The importance of technological improvement is captured by the construct novelty of IT and perceived utilitarian value. The relationships between novelty of IT, hedonic value, utilitarian value and adoption intention demonstrate the importance of novel functional design for fashionable technologies. The relationship between utilitarian value and adoption of fashionable IT further demonstrates the importance of performance improvement to fashionable technologies.

7.5.2 Theoretical Implications of the New Relationships

The empirical test supported these hypotheses and the findings have the following theoretical implications:

First, for fashionable clothes, style is important in that symbolic meanings are completely constructed out of different combinations of styles (Barnard 2002) and that symbolic meanings solely contribute to the innovativeness of fashionable clothes (Hirschman 1982). However, for fashionable technologies, symbolic meanings are associated with the design features that are capable of delivering symbolic meanings. These design features could be aesthetic design features and functional features. That is to say, it's possible that for some technologies, symbolic meanings are completely

constructed out of functional features, such as Nintendo Wii. Thus, the implication for us is that aesthetics is somewhat important to fashionable technologies, but not necessary. Whenever we are trying to define fashionable technologies or study the adoption of fashionable technologies, we should not consider aesthetics the necessary aspect of fashionable technologies. Instead, whether aesthetics is important to a fashionable technology should be determined based on whether symbolic meanings are constructed out of the aesthetic design of the technology. Previous studies on fashion IT adoption all considered aesthetics an important determinant of adoption intention (Tzou and Lu 2009; Yang and Hsu 2011). However, the current dissertation extends these studies by arguing that it's not the aesthetics that affects the adoption of the fashionable technology, but the symbolic meanings associated with the aesthetic features.

The findings also accentuate the importance of novel functional features to fashionable technologies. Novel functional features do not only meet people's desire for novelty but also generate symbolic meanings and social influence, which is the major distinction between fashionable technologies and fashionable clothes. This new understanding of fashion necessitates more researches about the relationship between the functional features of fashionable technologies and symbolic meanings. In addition, novel features of fashionable technologies could increase people's expectations for performance enhancement from using the technology. Furthermore, I explored the non-linear relationship between novelty and utilitarian value. In previous studies, novelty was considered a direct determinant of adoption intention or attitude towards adoption (Jeong et al. 2017; Wells et al. 2010). The current study extends previous studies by suggesting a

possible curved relationship between novelty and utilitarian value. That is, the effect of novelty on utilitarian value might decrease as novelty goes up. Although the non-linear relationship was not statistically significant in the current study, it could become significant with larger sample size, and future researches should be conducted to further confirm it.

7.6 Fashion Influence on Utility and Herd Behavior: Theoretical Contributions and Implications

The current dissertation contributes to herd behavior literature in the IS field by explaining why a massive amount of herd behaviors happen particularly in IT fashion phenomenon. Specifically, hypothesis 1 and hypothesis 2 indicated that it's more likely for herd behaviors to happen when there are a large number of adopters and the adoption from fashion leaders send out stronger information signals which could cause more biased decisions made by followers (Bikhchandani et al. 1992; Graham 1999).

A few studies in the IS field have been conducted to investigate herd behavior in the IS context (Li 2004; Sun 2013; Walden and Browne 2009). Particularly, Sun (2013) studied the cognitive process that individuals go through when they are herding in the context of IS adoption and post-adoption. Specifically, the study argues that the uncertainty of adoption and observation of prior adoption could lead to imitation of others and discount of one's own information, which could adjust one's initial beliefs. The results of this study have implications for IT fashion as well. Nevertheless, although this study explains why herd behavior happens in IT fashion and any other situations, it did not explain why a massive amount of herd behaviors happen in IT fashion

particularly. The current study explains the reason why herd behaviors are particularly prominent in IT fashion: 1) collective adoption of the technology usually happens in IT fashion 2) fashion leaders endorse the technology, which are the two characteristics of fashionable technologies.

Thus, the current study extended our understanding of herd behavior. What's more, it accentuates the role played by utility in IT fashion. In the above discussions, I mentioned that technological improvement is important to perceived innovativeness of fashionable technologies. The IT fashion diffusion process proposed in the dissertation further argues that novel technological improvement (and possibly novel aesthetic design) is the major impetus of IT fashion in the early stages. However, the relationships between collective adoption, social endorsement and perceived utilitarian value demonstrate that perceived performance improvement of the technology could be conversely affected the tremendous social influence generated by IT fashion in the later stages, which is generally considered herd behavior.

7.7 Practical Implications

Fashion phenomena are ubiquitous in today's world. IT fashion could generate an overwhelming influence on user and consumer behaviors. However, not all technologies are fashionable. Thus, it's relevant to practitioners' interests as to what kinds of technologies can be fashionable. More importantly, why do people chase after fashionable technologies? The current study argues that for a technology to become fashionable, it first needs to meet the condition of being socially visible. Next, the current study contends that technologies cannot be considered fashionable unless they have the

following characteristics: having novel function design, being adopted by a significant number of people in the society, being endorsed by people with prestige within and outside consumers' own social groups and being associated with a set of widely recognized symbolic meanings. These arguments have the following implications for IT practitioners:

First, they need to make sure that the IT products are socially visible, which means that people have the needs to use the technology on social occasions and could make the usage visible. For physical devices, they need to make sure that the product is portable and visible. At the same time, people use them when other people are present. Only being portable and visible is not enough. For instance, keys are portable and visible, but people do not need to use them on most social occasions. Thus, keys are not capable of communicating symbolic meanings. The requirement of being socially visible poses greater challenges to IT practitioners if the technology is software, a website or an application. They need to find answers for the question "how to make a virtual/digital technology socially visible in an online or offline environment?" Specifically, they need to answer these two questions:

1) What social occasions in the online or offline environment do consumers have?
2) How could people use the technology in these social occasions and present the usage of the technology to other people?

This dissertation does not try to provide answers to these questions but urges IT practitioners to find their own solutions. Nevertheless, the current dissertation suggests that even if a technology is not normally used in social occasions, IT vendors and

marketers could still add socialization functions to the technology to create social occasions in which people can present their usage of the technology to each other.

Second, predicting IT fashion and determining if a technology is currently fashionable could be vital to the survival of an organization or a whole industry. Nowadays, consumer fashionable technologies are usually "smart" technologies which integrate various functions provided separately by previous IT products. For instance, smartwatches are equipped with capabilities that were previously provided by watches, computers and phones. What's more, smart technologies can usually serve as platforms for more technologies (such as apps) to be added on later. The emergence of smartphones provided opportunities for many mobile applications to become popular and significantly change the industries. What's more, IT fashions usually have a much longer lifetime than IT fads, as suggested by Wasson (1968), which means that fashionable technologies could have long-lasting effects. Thus, by knowing if a technology is currently fashionable or is going to be fashionable, organizations could determine if significant changes to the industries will be brought by the popularity of the technology, and they can take appropriate actions in advance to respond to these changes. Overall, fashionable technologies could bring more opportunities for organizations, but could also pose severe challenges to these organizations.

The findings of the dissertation also suggest that symbolic meanings and technological improvement are both important to the perceived innovativeness and adoption intention of fashionable technologies. These findings have the following implications to IT practitioners:

The first implication to IT practitioners is that old fashionable technologies can never make a comeback by simply assigning them new symbolic meanings. Since technological improvement is vital to the perceived innovativeness of the technology, new technologies always emerge with major technological breakthroughs. Non-smart phones that were fashionable twenty years ago will never be fashionable again in the future. Therefore, IT manufacturers should devote themselves to making major technological improvement to their products in order to make their products fashionable.

Although I stress the importance of technological improvement to fashionable technologies, the significance of the symbolic meanings of fashionable technologies should not be neglected. Symbolic meanings do not require major technological breakthroughs, and hence they are easier to create and manipulate (Hirschman 1982). Symbolic meanings are constructed during the process of social interaction (Barnard 2002; Sproles 1979), which is not completely controlled by IT manufacturers. However, IT manufacturers can still utilize advertising activities to try to associate their products with distinct symbolic meanings. Two IT products with similar features could be perceived as two different products because of different symbolic meanings (Hirschman 1982). IT manufacturers could differentiate their products by associating different symbolic meanings to their product without providing actual different functional features (assuming they both have the latest design features).

In addition, when designing a new IT product, IT manufacturers should make sure that the design of the product is not against the current fashion trends. I argue in the current dissertation that the aesthetic design and functional design of fashionable

technologies could be associated with different symbolic meanings. For instance, the current trend in smartphone design is that they are getting bigger and thinner. Particularly, thinness is associated with being modern and contemporary. According to trickle-up theory by Blumer (1969), fashion trends reflect the changes in many social realms, including arts, people's lifestyles, architecture, etc. Thus. They cannot be easily challenged and reversed unless serious changes are happening in the society. In the cases of smartphones, it means that the association between thinness and modernity cannot be easily changed. Thus, if a new smartphone product (such as Samsung's new foldable phones[30]) goes against the thinness trend for being bulky, then it's very likely that the product will be considered not modern enough, even if the concept of the product is new.

What's more, according to the snob effect (Leibenstein 1950), people are willing to pay a premium for social distinction provided by fashionable technologies. However, the results of the current dissertation suggest that IT manufacturers should make sure that the product is endorsed by people with social status or prestige to signify social distinction. More importantly, the symbolic meanings of the product should be widely recognized and accepted during social interaction. If the product does not meet these two conditions, then it will not signify social distinction, and snob effect will not happen. In this case, IT manufacturers might fail to charge a premium for the product.

Lastly, the research model suggests four motivations that drive people to chase after fashionable technologies: desire for novelty, conformity, individuality and herd

[30] The Verge, "The foldable phones are coming," https://www.theverge.com/2018/11/8/18074838/samsung-foldable-phone-infinity-flex-display-technology-report

behavior. These findings also suggest that different consumers could chase fashionable technologies for different reasons. Particularly, the findings of the dissertation reveal that both external symbolic value and internal symbolic value affected the adoption intention of fashionable technologies. That is to say, people could use the technology for both self-expression and impression of others. However, for some technologies, obviously self-expression is more important than the impression of others, such as the target technology in the current study – Apple Watch. The implication for IT practitioners is that they should carefully distinguish different technologies and find out what symbolic purpose people use them for. For instance, the results in the current study show that people tend to convince themselves that they are just being themselves by using Apple Watch, instead of going with the flow and showing off. Thus, the design and marketing strategies of this kind of products should focus more on how the technology could fit people's personalities and make people look different and unique. In contrast, people could use some other fashionable technologies for the purpose of showing off. In this case, the design and marketing strategies of these technologies should focus more on how these technologies signify social status. Companies should be aware that if they use the wrong marketing strategies for certain technologies (e.g., try to emphasize social status for the technologies that people use for self-expression), it could result in reverse effects. Lastly, I argue that the marketing efforts and promotions for fashionable technologies should treat females and males differently. The results of the empirical tests show that female users consciously use the technology to obtain social distinction and express themselves while male users tend to use the technology only for the second purpose. Thus,

companies should emphasize different symbolic values for females and males, or else their marketing efforts could be fruitless.

CHAPTER 8: CONCLUSION, LIMITATIONS AND DIRECTIONS FOR FUTURE RESEARCH

8.1 Limitations

The first limitation of the research model is that it investigates the fashion process in a static way and does not capture the dynamic evolvement of IT fashion. Specifically, the research model only focuses on the fashion stage after the point of critical mass and before declination. That is to say, the research model assumes that the technology has already become fashionable and that the symbolic meanings of the technology have already been socially constructed and accepted. Thus, the research model explains how different factors work together at this stage to affect people's behaviors but does not capture the dynamic process of IT fashion, which was explained in chapter 3. Although the results of the pilot test provided preliminary support for the dynamic process of IT fashion diffusion, future researches can further confirm these arguments and investigate this phenomenon.

The second limitation of the current study is that only one IT product – Apple Watch – was selected to test the hypotheses. Although most of the hypotheses were supported, it's unclear whether the results of the empirical test could be generalized to other fashionable technologies.

Lastly, the current study discovered that internal symbolic value fully mediates the relationship between external symbolic value and adoption intention, which means that people tend to internalize external symbolic value and convince themselves that they are using the technology to express themselves instead of showing off. Although it's an

interesting discovery, it's likely that it only applies to the target technology Apple Watch in the current study. It's not clear if this discovery can be generalized to all other fashionable technologies.

8.2 Future Research

Based on the limitations and implications of the current dissertation, I suggest that future researches on IT fashion can be conducted in three broad areas: technology design, IT fashion diffusion, and post-adoption of fashion IT.

First of all, the current dissertation conceptualizes fashionable technologies as technologies that are capable of delivering symbolic meanings. Moreover, symbolic meanings can be constructed out of the functional features of IT products. This notion expands our understanding of fashion and information technologies and has inspiration for the literature on technology design. That is, we do not only need to study the technological features (such as system quality and information quality by DeLone and McLean (1992)) that affect utilitarian value or effectiveness of information technologies, but also need to study the technological features that affect symbolic values of the technologies, in that symbolic values are also important to the diffusion and adoption of fashionable technologies. Future researches can further delineate the relationship between design features of fashion IT and symbolic meanings.

For instance, future researches can be conducted to find out what kinds of design features can deliver symbolic messages and what kinds of messages can be delivered. I suggest that social signal processing techniques (Pentland 2005; Vinciarelli et al. 2009) can be utilized to conduct these researches. Social signal processing refers to the research

domain that utilizes computers to analyze and understand human social signals during social interactions (Vinciarelli et al. 2009). The techniques allow us to detect and code visual attributes of a person (such as physical appearance, clothes) and to analyze the social signals sent out by these visual attributes (such as attractiveness, social status). I suggest that IS researchers can utilize these techniques to code and categorize design features of fashionable technologies and analyze the messages sent out by different design features.

Moreover, IS researchers can also study the relationship between design features, perceived novelty of fashion IT and perceived hedonic value. I argued in the dissertation that novel features of a technology are the major impetus of IT fashion in the early stages and that IT manufacturers need to keep making technological improvement to their products to meet people's desire for novelty. However, we are not clear what kinds of upgrades IT manufacturers need to make to meet people's expectations for novelty. Bianchi (2002) suggested that there are different ways to assess the novelty of a certain product, including the characteristics of the product (core properties and peripheral aspects), the internal order, and the set of interconnections with other products. Bianchi (2002) believed that simply changing the peripheral aspects of a product or the interconnections with other products could make the product appear to be novel and provide hedonics to consumers. Future researches can accordingly classify design features of fashionable technologies and determine the types of upgrades IT manufacturers need to make to meet the desire for novelty.

Second, future researches can be conducted to study the post-adoption of fashionable technologies. The current dissertation proves the overwhelming influence of fashion on IT adoption. Nevertheless, the effect of IT fashion is long-lasting and can further transcend the realm of IT adoption and extend to the stage of post-adoption of IT. The reason why the fashion effects can last into the post-adoption stage lies in the symbolic values of the technology and the novelty effect. The current dissertation proposes that people use fashionable technologies to deliver symbolic meanings to other people. People should continue to do so after they have adopted the technology. However, as the diffusion of IT fashion progresses, the symbolic values of the technology should change accordingly (for instance, they might diminish as IT fashion life cycle declines), which might affect people's intention to continue using the technology. Moreover, the novelty effect could also diminish as time goes by. Future researches should take IT fashion life cycle into consideration when studying post-adoption of IT.

I propose a new dependent variable called intention to upgrade. Nowadays, many fashionable technology manufacturers release new editions of their products almost every year, and consumers face the decision about whether they should upgrade to the newest edition or not. Intention to upgrade differs from intention to adopt a new technology in that people form beliefs and expectations about the new editions of a product based on the older editions. In this case, technology acceptance model (TAM) (Davis 1989; Davis et al. 1989) might not be sufficient to explain people's decisions. It also differs from continued use in that it's not about continuing using an already owned technology. Thus, the findings from the expectation-confirmation model (Bhattacherjee 2001) might not be

applicable as well. I also suggest that the unique characteristics of fashionable technologies need to be considered when we are studying intention to upgrade. Specifically, the findings of this dissertation suggest that people chase after new fashionable technologies to meet their desire for novelty. The stronger the desire for novelty, the more likely for people to always upgrade to the newest technologies (Berlyne 1970). Moreover, the symbolic values provided by fashionable technologies should be considered as well. In the current dissertation, I distinguish between feature-level IT fashion and product-level IT fashion. Different fashionable technologies could have different sets of symbolic meanings. People who identify with the symbolic meanings of the technology would not switch to other fashionable technologies with different symbolic meanings when they are upgrading. Moreover, future researches can further investigate whether owners of the older versions of a fashionable technology would experience reduced symbolic values when a new edition is released, which might urge the owners of the older versions to upgrade.

Lastly, future researches can further investigate IT innovation diffusion by incorporating the effect of symbolic values. The innovation diffusion theory by Rogers (1962) proposed five attributes of innovations that might impact the adoption rate of the innovation in a social system, including relative advantage, compatibility, complexity, observability and trialability. Moore and Benbasat (1991) later incorporated these five attributes in a study on IT innovation diffusion and adoption. Nevertheless, the current dissertation proved that symbolic values or symbolic meanings play an important role in IT fashion diffusion, and thus should be taken into consideration in future researches on

IT innovation diffusion. Different from innovation diffusion theory, symbolic values/meanings were conceptualized at the individual level in the current study, while the five attributes of innovations were conceptualized at the group/society level. Future researches should consider how to conceptualize symbolic values/meanings at the group/society level and how this factor impacts the diffusion rate of IT innovation in a social system.

In addition, longitudinal studies can be conducted to track the IT fashion diffusion process from the beginning stage to the declining stage. The current study postulates that the magnitudes of the factors that affect people's behaviors in IT fashion vary at different stages of IT fashion. Future researches could further verify and expand the postulates in the current study. What's more, the current dissertation suggests that future researches could test the arguments in the current study with different types of technologies, especially with software, websites or applications. Different data sources could be utilized as well, such as social media data and online product reviews. Triangulation of the empirical tests could further generalize and expand the results in the current study.

8.3 Conclusion

Overall, the current dissertation aims to provide a holistic understanding of IT fashion diffusion and the reasons why people chase after IT fashion. It first provides a definition of fashionable technologies and then proposes the preconditions that fashionable technologies should meet. Then it elucidates how IT fashion is usually formed and diffused based on fashion life cycle proposed by Rogers (1962) and Wasson (1968). Next a research model is proposed based on the two-beliefs system by Wixom

and Todd (2005). Three core characteristics of fashionable technologies are identified: collective adoption, social endorsement and novelty, as well as a set of symbolic meanings associated with the technologies. These object-based beliefs are hypothesized to affect four behavioral beliefs: utilitarian value, external symbolic value, internal symbolic value and hedonic value, explained by four mechanisms – herd behavior, social imitation associated with social identity, self-expression associated with person identity and desire for novelty. The current study contributes to the fashion literature in the IS field and other fields mainly in three ways: 1) it integrates previous studies by proposing the core characteristics of fashionable technologies, which helps reach a consensual understanding of what fashionable IT is; 2) it delineates the perceptions of fashionable technologies and proposes four factors that affect people's behaviors in fashion: herd behavior, social imitation, self-expression, desire for novelty, which provides a deeper understanding of the motivations behind people's behaviors in IT fashion; 3) it elucidates the differences between IT fashion and clothing fashion and the intertwining relationship between fashion and utility. 3) it also contributes to the IT adoption literature by extending herd behavior, identifying antecedents of behavioral beliefs and explaining the distinction and connection between external symbolic value and internal symbolic value.

The current dissertation also has significant practical implications: 1) The dissertation provides suggestions to IT manufacturers and marketers about how to make their products fashionable; 2) It suggests to IT manufacturers that technologies cannot be fashionable without significant technological improvement. At the same time, manipulating the symbolic meanings associated with their products could distinguish

them from other products; 3) It also suggests that people could chase fashionable technologies for different reasons. Hence IT practitioners should distinguish different motivations and customize their sales promotions and marketing strategies accordingly; 4) it reveals that people could use different fashionable IT products for different symbolic purposes (i.e., external symbolic value versus internal symbolic value), and hence IT marketers should match their marketing strategies with these symbolic purposes.

Lastly, I discussed the limitations of the current dissertation and then suggested three broad streams for future researches on IT fashion: technology design, post-adoption of IT fashion and IT innovation diffusion. This research potentially opens new research grounds about fashionable technologies.

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