FEMALE USER PERCEPTION TOWARD THE OVER-THE-TOP VIDEO STREAMING SERVICES

ABSTRACT

This study examines the over-the-top (OTT) video streaming services using the data derived from mixed-method research. Means–end chain (MEC) theory and Kano model are integrated to establish MEC–Kano hierarchical value maps for further analysis. A preliminary qualitative survey with 28 interviewees is used to establish the questionnaire items for data collection during the pre–COVID-19 and COVID-19 pandemic periods. The comparison of the MEC–Kano hierarchical value maps with the integrated e-leisure–MEC–Kano hierarchical value map for binge-watchers with high e-leisure attachment, constraints, and addiction groups reveal the differences in the importance and the structures of attribute–consequence–value linkages. All valid respondents (400 from pre–COVID-19 period and 377 from COVID-19 pandemic period) considered "copyright," "low interference from advertising," "quickly updating on programs," and "easy to retrieve the programs one often viewed," which are classified as Kano's attractive qualities, as important attributes that attract binge-watchers using an OTT service. However, binge-watchers with high e-leisure attachment, constraints, and addiction in different periods have different perspectives toward the rest of the attributes. By understanding the differences of the e-leisure–MEC–Kano hierarchical value maps, the academia and the practitioners can gain insights into formulating effective business strategies.

Keywords: E-leisure activity; Kano model; Means-end chain; Over-the-top service

INTRODUCTION

People can listen to music, watch videos, read novels, and even play games via over-the-top (OTT) media services. Today, binge-watching is a popular e-leisure activity. Binge-watching via the OTT service may bring physical and mental pleasure to viewers (Flayelle et al., 2019) and form an emotional bond between the person and OTT, namely attachment. On the other hand, binge-watching may result in addiction if viewers develop psychological or physical inability to stop watching videos (Michael, 2014). To receive OTT services, binge-watching requires hardware (e.g., smartphone, tablet, and computer) and software (e.g., app, WiFi, and others) and this need may impede viewers to binge-watch and thereby result in leisure constraints. Unfortunately, few studies (e.g., Flayelle et al., 2019; Pilipets, 2019) discuss the attachment, constraints, and addiction of binge-watchers and their perception toward using OTT video streaming services. Therefore, revealing the perceptions of binge-watchers with attachment, constraints, and addiction is essential for OTT service managers to formulate effective business strategies.

In this study, MEC theory is incorporated with Kano model and e-leisure concept to (1) understand the binge-watcher preferences toward experiencing OTT video streaming services by constructing MEC–Kano hierarchical value maps; (2) reveal the cognitive structure of binge-watchers with high e-leisure attachment, constraints, and addiction; (3) compare the difference of cognitive structures between the periods of pre–COVID-19 and COVID-19 pandemic; and (4) deduce and formulate effective service design and promotion strategies.

LITERATURE REVIEW

Over-the-top (OTT) service

Video on demand services provided by OTT increases the freedom of video choice and breaks the traditional concept that video watching should remain in the living room and watching television. The convenience and variety of choice increases the number of people watching videos via OTT service on their mobile devices and personal computers (Pedersen, 2015). Chen (2019) further claimed that the OTT video streaming service is superior to traditional cable television in Taiwan. Hence, using the OTT service to watch videos has become popular for the Taiwanese to spend their leisure time (Li, 2017).

Attachment, Constraints and Addiction of e-Leisure Activity

Attachment theory is a psychological, evolutionary, and ethological theory that depicts emotional bonds among humans (Bowlby, 1958). Hart et al. (2015) applied attachment concept into the cyber world and believed that Internet attachment might be indicated by individual online behavior and activity. Online binge-watching has recently become popular with the rise of video streaming services (e.g., Netflix, YouTube TV, and Amazon Prime). Thus, Pilipets (2019) suggested that attachment theory should be applied to investigate online binge-watching behaviors in the digitization of the entertainment industry. Therefore, the present study applies attachment theory to investigate binge-watching behaviors.

Jackson (1993, p. 279) defined leisure constraints as factors that “limit the formation of leisure preferences and to inhibit or prohibit participation in leisure activities.” Genoe et al. (2018) found that traditional leisure activities have gradually been replaced by e-leisure ones, which should now be the focus of recreational literature. Referring to Lin and Fu (2018, p. 357), e-leisure constraints can be considered “factors perceived or experienced by individuals to impede the formation of their willingness and preference to participate in e-leisure activities.” Thus, the present study extends the

application of e-leisure constraints to examine factors that inhibit or prohibit individual participation in binge-watching via OTT platforms.

Binge-watching has become an emerging e-leisure activity. Binge-watchers spend much leisure time watching movies, soap opera, anime, and any shows online (Rubenking et al., 2018). Michael (2014) claimed that binge-watching behavior should be considered as a type of addiction. Unfortunately, very few studies examine binge-watching addiction, especially for people using OTT video service to engage in leisure activities (Panda & Pandey, 2017; Riddle et al., 2018; Sung et al., 2018). Therefore, the present study examines addiction from people binge-watching via OTT video services.

Means-End Chain Theory

Means-end chain (MEC) theory assumes the existence of invisible perception ladders in consumer minds (Gutman, 1982). These ladders begin with object attributes (As) to connect consumer personal values (Vs) through consequences (Cs) of consuming these attributes (Kilwinger & van Dam, 2021; Lin et al., 2023). Such attribute-consequence-value (A–C–V) ladders are termed means-end chains, and represent the innermost thinking of a consumer regarding a certain product, activity, or event (Reynolds & Gutman, 1988; Wong & Jusan, 2017; Chen et al., 2018; Phan et al., 2019). Lin et al. (2023) claimed that MEC theory provides a proper model to understand mobile user behaviors. Thus, the present study adopted MEC theory to reveal the inner thoughts of online binge-watchers, thereby ascertaining the attributes of OTT video streaming services that they prefer, the consequences/feelings involved after using these attributes, and the values that can be achieved.

METHODS

This study adopted qualitative and quantitative approaches for data collection; the former was used to collect variables for the survey questionnaire design, whereas the latter was adopted to construct hierarchical value maps.

Variables

The variables for MEC and Kano analyses (Kano et al., 1984) were collected through one-on-one in-depth interviews. Given that female binge-watchers are heavy users of streaming video services based on the time streamed and the number of viewed web pages (Yang, 2018; Tan, 2016), 28 female participants with binge-watching experiences were invited. The variables were determined by three coders who are familiar with MEC theory. These coders were required to analyze transcript contents, extract important phrases from the transcripts, classify these phrases into MEC categories, and code

them as attribute (A), consequence (C), and value (V) variables. A total of 17 attribute, 11 consequence, and 9 value variables were obtained for questionnaire design as shown in Table 1.

Table 1 Variables

Attribute		Consequence	Value
A1 copyright	A11 comfortable film size	C1 unique	V1 self-respect
A2 previous episode summary	A12 accurate program information	C2 noble	V2 being well respected
A3 reasonable price	A13 easy to access	C3 joyful	V3 self-fulfillment
A4 ease of operation	A14 many interactive functions	C4 relaxed	V4 sense of belonging
A5 quality caption	A15 various newly released films	C5 delighted	V5 excitement
A6 quality picture	A16 clearly classified film type	C6 special	V6 fun and enjoyment of life
A7 quality signal	A17 easy to retrieve the programs one often views	C7 satisfied	V7 warm relationship with others
A8 low interference from advertising		C8 enriched	V8 sense of accomplishment
A9 various program choices		C9 peace of mind	V9 security
A10 quickly updating on programs		C10 feeling of freshness	
		C11 tie-up the relationship of each other	
Attachment of e-leisure activity (Binge-watching)			
1. Binge-watching means a lot to me.			
2. I am very attached to binge-watching.			
3. I identify strongly with binge-watching.			
4. Binge-watching offers me imaginary space.			
5. I feel more satisfied with binge-watching than doing other leisure activities.			
6. I will continue to binge-watch in the future.			
7. I would not substitute any other activities for binge-watching.			
8. Binge-watching reminds me a lot of fond memories.			
9. I have a special connection to those who are binge-watching.			
10. I would recommend the soap opera/show to my family and friends.			
E-leisure addiction			
1. I have difficulties in focusing on my (academic) work due to binge-watching.			
2. When I get up, the first thing in my mind is to follow the soap opera that I watched yesterday.			
3. Binge-watching makes me lose sleep.			
4. Binge-watching impedes my social activities.			
5. When I feel down, binge-watching makes me feel better.			
6. My family and friends think I spend too much time on binge-watching.			
7. I feel anxious if I cannot binge-watch.			
8. I have tried to reduce binge-watching but have not succeeded.			
E-leisure constraints			
1. I am concerned that binge-watching leads to fatigue and then result in other health problems.			
2. Binge-watching interrupts my daily schedule.			
3. I am not familiar with the film sources while binge-watching.			
4. The quality of my smartphone/app for binge-watching is poor.			
5. My friends do not like binge-watching.			
6. I am not interested in binge-watching.			
7. I lack resources to binge-watch.			

Questionnaire design

This study arranged 17 attributes, 11 consequences, and 9 values into 3 columns from left to right to design an MEC dot-connection questionnaire. All respondents were asked to choose which of the attributes in the first column were important to them and then draw lines to connect the dots from the attribute column to the dots in the consequence and value columns. These dots form the attribute-consequence-value (A–C–V) linkages for the construction of a hierarchical value map. For Kano analysis, functional/dysfunctional questions were asked, such as "What do you think if this attribute (i.e. A1, A2, …, and A17) is provided/not provided by the streaming video service?". Answers were designed as a 5-point scale from 5 to 1 for like, must-be, neutral, live with, and dislike, respectively. For the analyses of e-leisure attachment, addiction, and constraints, the questionnaire items (see Table 1) were adapted from Plunkett et al. (2019), Koc and Gulyagci (2013), and Alexandris et al. (2002), respectively. A 5-point Likert-type response format, ranging from 5 (strongly agree) to 1 (strongly disagree) was then designed.

Data Collection

This study adopted snowball sampling for data collection. Only the females with binge-watching experiences were eligible for this research. The data were gathered for more than 2 months through a paper-based questionnaire survey in the summer of 2019 before the COVID-19 pandemic. A total of 400 valid responses were used for further analysis by eliminating ineffective or missing data from 410 collected questionnaires. Given the circumstances brought by the COVID-19 pandemic, this study assumed that COVID-19 pandemic might have influenced binge-watcher perceptions toward OTT video streaming services. Therefore, this study distributed another 420 questionnaires from May 1, 2021 to June 25, 2021 (COVID-19 pandemic in Taiwan) and received 377 valid responses for further analysis.

Analysis of E-leisure Attachment, Constraints, and Addiction

Through cluster analysis, data collected from the e-leisure activity questionnaire for attachment, constraints, and addiction were grouped into high, medium, and low. The high-level group characteristics were more representative to behave as attachment, constraints, and addition of binge-watching via OTT video services. Hence, participants in the high level groups were adopted to examine their attribute preferences and organize them into Kano's quality classification.

MEC and Kano Analyses

Data collected from the MEC dot-connection questionnaire represented the A–C and C–V linkages and frequencies. All the linkages and frequencies were tabulated into a summary implication matrix, which comprised 286 (17 × 11 + 11 × 9) active cells derived from 17 attributes, 11 consequences, and 9 values. From the pre–COVID-19 data set, the total number of A–C and C–V linkages was 4690, which is impossible to display or be extremely complicated in a single hierarchical map. Therefore, setting a cut-off point was required before the map construction (as referred to Pieters et al., 1995). For the construction of pre–COVID-19 hierarchical map, the first cut-off point of 19 was set to build the hierarchical value map because using only 23% of all possible cells in the summary implication matrix can represent 71% of the total A–C and C–V linkages. In MEC theory, high linkage frequencies indicate high linkage importance (Lin et al., 2018). Consequently, this study set the other cut-off point at 52 to represent strong (important) linkages. For the construction of COVID-19 pandemic hierarchical map, this study set the cut-off points at 22 and 43 to represent weak and strong linkages, respectively.

Subsequently, Kano's five-level questionnaire (i.e., like, must-be that way, neutral, live-with it, and dislike) and evaluation table originally proposed by Matzler and Hinterhuber (1998) were used to categorize 17 attributes of OTT video service for binge-watching into attractive, indifferent, one-dimensional, must-be, and reverse qualities.

RESULTS AND DISCUSSION

Sample Description

In this study, the sample collected before and during the COVID-19 pandemic comprised 400 and 377 females. Approximately 69% of the respondents preferred romance films, and 56% loved to binge-watch Korean dramas. During the COVID-19 pandemic, 97.6% of them preferred watching videos on YouTube and most respondents (79.8%) preferred romance films, and 67.6% loved Korean dramas. Notably, 72.1% of respondents stated that they spent more than 6 hours per day online during the COVID-19 pandemic, and only 39.3% spent less than 2 hours per day binge-watching.

This study further used K-means clustering to determine the groups with high, medium, and low e-leisure attachment, constraints, and addiction. From the pre–COVID-19 data set, 31%, 35.3%, and 43.3% of the 400 respondents were inclined to have high e-leisure attachment, constraints, and addiction, respectively. During the COVID-19 pandemic, 41.9%, 22.8%, and 32.4% of 377 respondents were grouped into high e-leisure attachment, constraints, and addiction, respectively.

The Analysis of E-leisure Attachment, Constraints and Addiction

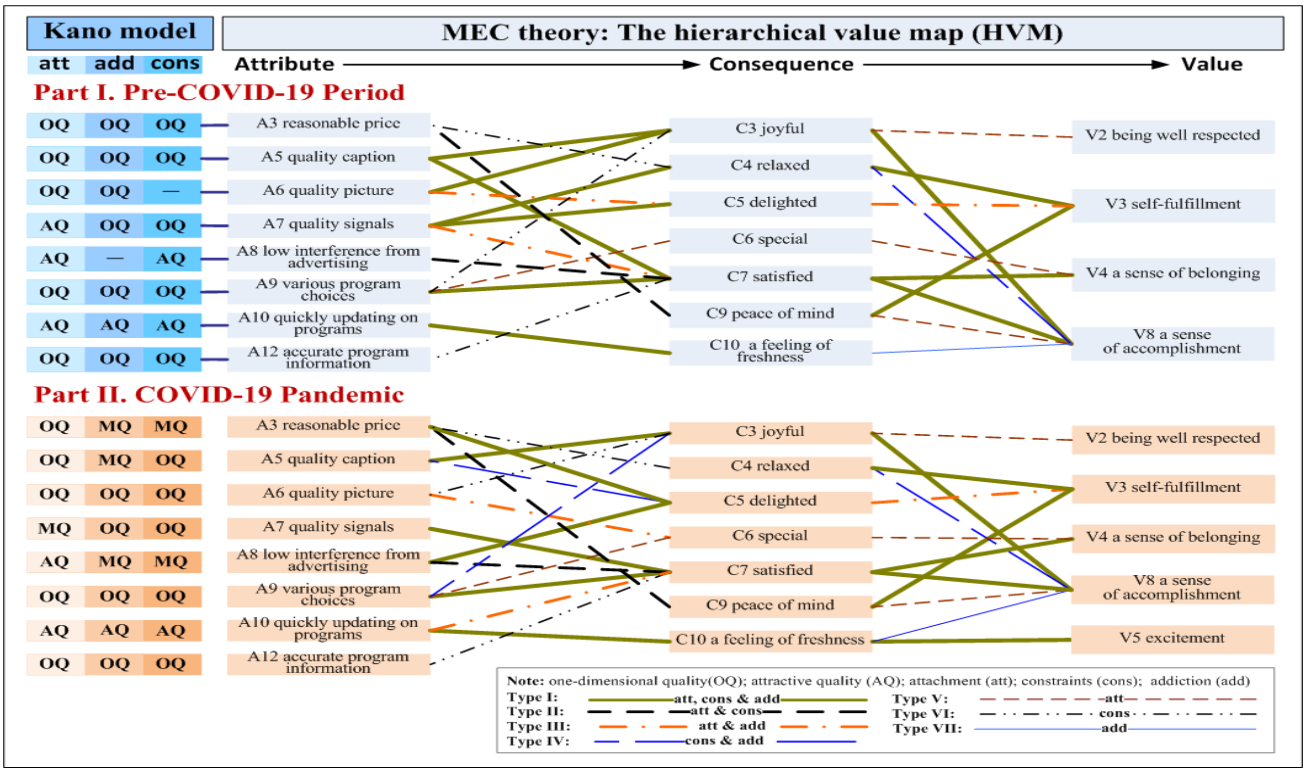
Table 2 lists Kano's must-be, attractive, and one-dimensional classifications for the groups with high e-leisure attachment, constraints, and addiction during pre–COVID-19 and COVID-19 pandemic periods. "Quickly updating on programs (A10)" attribute is the only attribute recognized as Kano's attractive quality by the groups with high e-leisure attachment, constraints, and addiction regardless of the data collection period. Hence, enhancing A10 performance can dramatically increase the satisfaction level of binge-watchers with high e-leisure attachment, constraints, and addiction. For groups with high attachment during both periods and high constraints during the pre–COVID-19 period, the "low interference from advertising (A8)" attribute was viewed to acquire an attractive quality; that is, such advertising interference can be viewed as e-leisure constraints. Thus, reducing them can increase consumer satisfaction. The "quality signals (A7)" attribute classified as must-be quality is essential for binge-watchers with high attachment during the COVID-19 pandemic period. Therefore, OTT video services must provide quality signals to binge-watchers with high attachment; otherwise, binge-watchers would think that the service is incomplete. Moreover, the groups with high addiction and constraints viewed "reasonable price (A3)" as one-dimensional quality in the pre–COVID-19 period but a must-be quality in the COVID-19 pandemic period. "Quality caption (A5)" was classified as one-dimensional quality for the groups with high addiction and constraints in the pre–COVID-19 period but a must-be and one-dimensional quality for groups with high addiction and constraints in the COVID-19 pandemic; that is, the high-addiction group during the COVID-19 pandemic care much about the price and caption quality that OTT services can provide. "Low interference from advertising (A8)" was also viewed as a must-be quality for groups with high addiction and constraints during the COVID-19 pandemic period. The remaining attributes (A6, A9, and A12) in Table 2 were classified as one-dimensional by binge-watchers with high e-leisure attachment, constraints, and addiction in both periods. These one-dimensional attributes were linearly correlated to the satisfaction/dissatisfaction of binge-watchers.

Table 2 Kano's classification of the high attachment, constraints and addiction groups

Classification / Group	Period	Must-be	One-dimensional	Attractive
High attachment	Pre-COVID-19	-	A3; A5; A6; A9; A12	A7; A8; A10
	COVID-19 pandemic	A7	A3; A5; A6; A9; A12	A8; A10
High addiction	Pre-COVID-19	-	A3; A5; A6; A7; A9; A12	A10
	COVID-19 pandemic	A3; A5; A8	A6; A7; A9; A12	A10
High constraints	Pre-COVID-19	-	A3; A5; A6; A7; A9; A12	A8; A10
	COVID-19 pandemic	A3; A8	A5; A6; A7; A9; A12	A10
All respondents	Pre-COVID-19	A2	A3; A5; A6; A7; A9; A12; A14	A1; A8; A10; A17
	COVID-19 pandemic	A2; A3	A5; A6; A7; A9; A12; A14	A1; A8; A10; A17

E-leisure-MEC–Kano Hierarchical Value Map of High Attachment, Constraints, and Addiction

This study integrated MEC theory and Kano model to construct an e-leisure–MEC–Kano hierarchical value map (see Figure 1) for binge-watchers with high e-leisure attachment, constraints, and addiction during the pre–COVID-19 and COVID-19 pandemic periods. As shown in Figure 1, the left-hand side shows Kano's classifications as evaluated by the three groups of binge-watchers, namely, high e-leisure attachment, constraints, and addiction. Parts I and II represent the binge-watchers' hierarchical value maps during the pre–COVID-19 and COVID-19 pandemic periods, respectively.



Note: AQ: attractive quality; IQ: indifferent quality; RQ: reverse quality; MQ: must-be quality; QQ: questionable quality; OQ: one-dimensional quality

Figure 1 The E-leisure-MEC-Kano hierarchical value map of high e-leisure attachment, constraints and addiction groups

Pre–COVID-19 period

In the pre–COVID-19 period (Part I of Figure 1), "reasonable price (A3)," "quality caption (A5)," "quality picture (A6)," "various program choices (A9)," and "accurate program information (A12)" attributes are classified as one-dimensional quality, indicating that the satisfaction levels of binge-watchers are linearly related to the attributes performance and quality. The "reasonable price (A3)" attribute can produce not only "relaxed (C4)" feelings in the high constraints group but also "peace of mind (C9)" in the high constraints and attachment groups, allowing respondents from all three groups

to attain "self-fulfillment (V3)." In addition, "relaxed (C4)" feelings can further strengthen their "sense of accomplishment (V8)" in the addiction and constraints groups, whereas the feelings of "peace of mind (C9)" can help them attain their "sense of accomplishment (V8)" only in the attachment group. Therefore, managers should offer reasonable prices for their services; otherwise, the risk of dissatisfaction in the high constraints and attachment groups may increase. Moreover, "quality caption (A5)" can provide "joyful (C3)" and "satisfied (C7)" feelings to binge-watchers with high attachment, constraints, and addiction, and their "sense of accomplishment (V8)" is strengthened further. "Joyful (C3)" feelings can help only those in the attachment group to attain their psychological state of "being well respected (V2)," but "satisfied (C7)" feelings can strengthen the "sense of belonging (V4)" and "sense of accomplishment (V8)" in all three groups. "Quality picture (A6)" provides "joyful (C3)" feelings to all three groups of binge-watchers, but it can produce "delighted (C5)" feelings only in the high attachment and addiction groups to achieve "self-fulfillment (V3)." In addition, "various program choices (A9)" can yield a "satisfied (C7)" feelings to all three groups, but it provides "joyful (C3)" and "special (C6)" feelings for the high constraints and attachment groups, respectively. OTT managers should provide various program choices to attract the high constraints binge-watchers and enable those in the high attachment group to feel that various program choices are designed specifically for them. Furthermore, the "accurate program information (A12)" attribute "satisfied (C7)" only the high constraint group and further lead to their "sense of belonging (V4)" and "sense of accomplishment (V8)." Therefore, providing accurate video program information for binge-watchers with high e-leisure constraints is essential to satisfy and increase their sense of belonging.

"Quality signals (A7)" are classified as an attractive attribute by the high attachment group but as one-dimensional quality by the other two groups. This attribute can produce "relaxed (C4)" and "delighted (C5)" feelings to all three groups of binge-watchers but can produce "satisfied (C7)" feeling only in the high attachment and addiction groups. Thus, binge-watchers with high attachment and addiction view the "quality of signals (A7)" as an important factor to judge OTT video quality. "Low interference from advertising (A8)" attribute is grouped as Kano's attractive quality for high attachment and constraints groups. This attribute further leads to their "satisfaction (C7)" and helps them attain their "sense of belonging (V4)" and "sense of accomplishment (V8)." For high attachment, constraints, and addiction groups, "quickly updating on programs (A10)" attribute can produce "a feeling of freshness (C10)," but only the high addiction group can attain a "sense of accomplishment (V8)."

Part II. COVID-19 pandemic

The comparison of the results from the COVID-19 pandemic period (Part II of Figure 1) with those from pre–COVID-19 period (Part I of Figure 1) indicates that the A–C linkage structures between the two hierarchical value maps are quite different, but their C–V linkage structures are similar. Therefore, this study focuses only on the differences of A–C–V linkages between Parts I and II of Figure 1. In the

COVID-19 pandemic period (Part II of Figure 1), "quality picture (A6)," "various program choices (A9)," and "accurate program information (A12)" attributes are classified as one-dimensional quality for all three groups, representing that the performance of these three attributes has a direct influence on binge-watchers' satisfaction/dissatisfaction. This finding is consistent with the viewpoints of binge-watchers with high attachment, constraints, and addiction in the pre–COVID-19 period (Part I of Figure 1). "Quality picture (A6)" can make the high constraints group feel "joyful (C3)."

"Reasonable price (A3)" is classified as a one-dimensional attribute by the high attachment group but a must-be quality by the other two groups. "Reasonable price (A3)" can provide "relaxed (C4)" feeling to the high constraints group, "peace of mind (C9)" to the high attachment and constraints groups, and "delighted (C5)" feeling to all three groups. "Low interference from advertising (A8)," classified as an attractive attribute by high attachment group but as a must-be quality by the other two groups, can make all three groups feel "delighted (C5)." However, it produces a "satisfied (C7)" feeling only in the high attachment and constraints groups. "Quality caption (A5)," classified as a must-be attribute by the addiction group but as a one-dimensional quality by the other two groups, can provide "joyful (C3)" feeling to all three groups and "delighted (C5)" feeling to the high constraints and addiction groups. Moreover, the high attachment group views "quality signals (A7)" as must-be quality, whereas the other two groups view this attribute as one-dimensional quality. This attribute can yield a "satisfied (C7)" feeling to all three groups, that is, binge-watchers with high attachment evaluate OTT video quality via signal quality. "Quickly updating on programs (A10)" attribute, classified as an attractive quality, can produce "a feeling of freshness (C10)" and lead to "excitement (V5)" value achievement for high attachment, constraints, and addiction groups. However, only the high addiction group can attain a "sense of accomplishment (V8)," that is, binge-watchers normally do not expect that the OTT video streaming services can provide this feature. Thus, marketers can emphasize such a feature provided by their system to retain their old customers and attract potential customers to use their service.

CONCLUSIONS

Theoretical Implications

Related literature confirms the effectiveness of MEC theory in revealing individual innermost thoughts toward product/service consumption (e.g., Richter & Bokelmann, 2018; Pezeshki et al., 2019; Wang et al., 2017; Lin et al., 2020; Lin & Fu, 2023). Traditional MEC approach adopts one-on-one in-depth interviews to reveal user preferences of product/service attributes, but cannot uncover the importance of each attribute positioning in the user cognitive hierarchies. The Kano model provides precise attribute positioning through five classifications (i.e., attractive, must-be, one-dimensional, indifferent,

and reverse qualities) from the user performance evaluation. Consequently, this study integrates MEC theory and the Kano model to complement the shortcomings of each approach. In addition, this study extends the application of MEC-Kano hierarchical value map to depict the perceptions of binge-watchers with high e-leisure attachment, constraints, and addiction toward accessing OTT platform to watch videos during the pre-COVID-19 and COVID-19 pandemic periods. Finally, the results enhance the theoretical applications of MEC and the Kano model.

Managerial Implications

The MEC-Kano hierarchical value map exhibits more comprehensive and complex cognitive structure than the integrated e-leisure-MEC-Kano one. If managers or marketers wish to discover the most commonly preferred attributes of OTT videos, they should carefully examine the A–C–V linkage outcomes. If managers or marketers only wish to identify the preferences and behavior of binge-watchers with high e-leisure attachment, constraints, and addiction, they should carefully examine the results in the integrated e-leisure-MEC-Kano hierarchical value map. The integrated e-leisure-MEC-Kano one provides simplified and precise A–C–V linkages with Kano's classification for the high attachment, constraints, and addiction groups. OTT managers, marketers, and designers may consider following the procedure in this study to construct the hierarchical value map of their target customers for formulating effective product design and promotion strategies.

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