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Towards an inductive model of customer experience in fitness clubs: a structural topic modeling approach

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ABSTRACT

Research question: A significant advancement in marketing studies has been the use of big data analytics to explore and derive customer experience (CX) insights. With fitness businesses' pivoting towards managing CX along the entire customer journey, this study aimed to understand CX in the commercial fitness industry.

Research methods: A textual corpus of three million words was extracted from a total of 24,231 Yelp reviews on 1,045 fitness clubs in the United States. Structural Topic Modeling (STM), content analysis, and topic network analysis were performed to identify CX themes and their inter-relationships. We then inductively identified topics and themes germane to CX in fitness clubs and derived a general CX model.

Results and findings: Sixty-eight relevant topics were identified through an iterative STM and content analysis process and were subsequently interpreted using the CX paradigm and experience design framework (Funk, 2017; Voss et al., 2008). Our final model integrates experience design elements (i.e. stageware, orgware, customerware), customer journey (i.e. pre-usage, usage, post-usage) and CX (i.e. subjective and internal responses) and shows the interrelationships among them.

Implications: Our model offers an integrative and coherent theoretical framework to examine CX in commercial fitness clubs. Our model and methodology allow researchers and organizations not only to capture CX and the relative salience of CX topics, but also to track CX trends over time, compare the experience design elements of an organization, measure CX performance against competitors, and link CX topics to other criterion variables (e.g. retention rate, financial performance, business survivability).

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Introduction

Fitness clubs and gyms are an important supporting sector of the sport industry (Eschenfelder & Li, 2007). In 2022, the industry had 113,000 business establishments employing 960,000 people in the U.S., with a total revenue of \$36.6 billion (Le, 2022). According to

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the International Health, Racquet & Sportsclub Association, U.S. fitness club membership reached 71.5 million consumers in 2019, and about 20 percent of Americans belong to at least one fitness club or gym. In addition, 9.1 million non-members exercised at clubs in 2018. Overall, nearly 1 in 4 Americans used a fitness club to pursue fitness and wellness goals in 2018 (Rodriguez, 2019).

The fitness club industry is extremely competitive, with a high customer attrition rate. Based on a study by MobileFit, 53.5% of all new members terminate their membership within 12 months (MobileFit, 2017). The high deflection rate in the industry has created managerial issues for business operators, as they rely heavily on membership fees, which represents approximately 2/3 of their total revenues (Le, 2022). The reliance on retaining and developing members compels business operators to compete on both price and non-price factors. Thus, customer service and its quality remain crucial for fitness club operators. Meanwhile, businesses have increasingly relied on providing a high-quality customer experience (CX) in an effort to recruit and retain members, which can be confirmed by perusing the Form 10-K annual reports of leading fitness firms. For instance, Planet Fitness aims to foster a welcoming, non-intimidating environment by discouraging what they call 'Lunk' behavior, such as grunting and dropping weights (Planet Fitness, Inc., 2021). Life Time Fitness highlights the importance of payment flexibility to CX and does not require long-term contracts (Life Time Fitness, Inc., 2015).

CX is renewed strategic thinking rooted in multiple established marketing concepts, such as customer satisfaction, consumer loyalty, service quality, relationship marketing, and customer equity (Lemon & Verhoef, 2016). Even though various conceptualizations of CX exist in the business literature, leading CX scholars generally accept the notion that CX is consumers' internal and subjective reactions arising from their direct and indirect interactions throughout the entire customer journey (De Keyser et al., 2020; Homburg et al., 2017). Compared with service quality, which is evaluative in nature, CX focuses on non-deliberate and spontaneous responses (Becker & Jaakkola, 2020). Fundamentally, the CX paradigm shifts businesses' attention from managing discrete touchpoints (e.g. service quality elements) to managing the entire customer journey (Verhoef et al., 2009).

Meanwhile, a significant advancement in marketing studies has been the use of big data analytics to derive CX insights (Berger et al., 2019; Holmlund et al., 2020) with open-ended feedback and user-generated content becoming excellent sources to better understand CX and gain insight into key managerial points along the customer journey (McColl-Kennedy et al., 2019). Online reviews are an integral part of the voice-of-the-customer analysis (Aguwa et al., 2012), providing valuable information to inductively identify central constructs that are grounded in the service context and are potentially leading to uncovering theories (Zeithaml et al., 2020).

From the CX management perspective, we investigated the commercial fitness industry, where fitness club customers have numerous interaction points with the service provider (e.g. personal trainer, fitness supervisor, front desk staff, club manager) and other touch points that are not controlled by the service provider (e.g. public parking facility, social media providers, and other business partners). It is the accumulated holistic experience from various interactions, ranging from trying out the fitness club to interacting with sales staff, to signing up for membership, to using the facility and equipment, to exercising under the supervision and guidance of fitness staff and personal trainers, to dealing with other club members, to communicating with the managers, that determines customers' future engagement behavior. Given that many customers of fitness clubs typically have prolonged and repetitive encounters with their clubs, the customer journey matters greatly to the fitness club industry, and CX is a crucial concept for the operation of any commercial fitness club.

A plethora of studies have focused on service quality of the fitness industry, with research ranging from direct applications of the SERVQUAL model (e.g. Crompton & Mackay, 1989), to re-conceptualization of service in the fitness industry (e.g. Chelladurai et al., 1987), to the development of industry-specific service quality models (e.g. Ko & Pastore, 2005; Lam et al., 2005), to the dissemination of fitness service quality models to a wider variety of contexts and cultures (e.g. Peitzika et al., 2020; Sima & Ruda, 2019). More recently, a much smaller amount of literature emerged on the value co-creation aspect of the industry (Behnam et al., 2021; Chiu et al., 2019). Yet, despite the conceptual advancement of CX in sport management research (Funk, 2017; Yoshida, 2017) and practical relevance to the commercial fitness industry, research on CX in fitness settings remains scarce. This study aimed to develop a general CX model in commercial fitness clubs by text-mining online reviews posted on Yelp.com. Specifically, we used Structural Topic Modeling (STM; Roberts et al., 2014, 2019) to identify salient themes of CX associated with fitness clubs. Based on the identified themes and their interrelations, we developed an inductive model of CX to be tested in future investigations. STM, providing a solution to analyzing unsolicited responses, is complementary to the existing psychometric methods in understanding CX. It also offers a cost-effective procedure for practitioners to monitor consumers' experiences and satisfaction.

Relevant literature

Customer experience

The management of human experience is deemed a core marketing capability in the contemporary service economy (Lieberman, 2021). Scholars in consumer behavior (Holbrook & Hirschman, 1982; Janiszewski, 2009), service marketing (Bueno et al., 2019), branding (Brakus et al., 2009), retailing (Lemon & Verhoef, 2016; Verhoef et al., 2009), and other fields (Bouchet et al., 2004; Otto & Ritchie, 1996) have written about experience and developed a voluminous literature on consumer experience. They approach experience from different perspectives and have different levels of granularity, resulting in various approaches to studying customer experience (Helkkula, 2011; Schmitt & Zarantonello, 2013). Based on a literature search in the domain of service marketing, Helkkula (2011) found little consistency across various nominal definitions of the concept; and experience may be understood as a phenomenology, a process, or an outcome.

Among the various approaches is the CX paradigm, which has primarily grown from the retailing and experiential marketing literature (Meyer & Schwager, 2007; Verhoef et al., 2009) and has gradually become an integrative framework (Becker & Jaakkola, 2020; De Keyser et al., 2020; Homburg et al., 2017). Scholars within the CX paradigm generally construe CX as customers' internal and subjective responses, which differs from evaluative concepts (e.g. service quality) and motivational concepts (e.g.

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engagement; De Keyser et al., 2020). In this study, we follow Lemon and Verhoef's definition (2016) and consider CX as 'a multidimensional construct focusing on a customer's cognitive, emotional, behavioral, sensorial, and social responses to a firm's offerings during the customer's entire purchase journey' (p. 71). Compared with service quality, CX allows for a more holistic understanding of consumers and has been found to have a stronger influence on satisfaction, perceived value, loyalty, and word of mouth (Roy & Bhatia, 2019). Since CX is a complex social phenomenon, it is more arduous for companies to stage and control. Therefore, companies need to internally cooperate among departments and create unity in developing positive CX (Lemon & Verhoef, 2016). In implementing CX strategy, Voss et al. (2008) advocated for a systematic approach to experience design, which also laid the foundation for the Sport Experience Design (SX) framework (Funk, 2017).

Experience design framework

Voss et al. (2008) advocated for a system design approach, consisting of four design elements, namely stageware, orgware, customerware, and linkware, to choreograph experience-centric service. Inspired by Voss et al. (2008), Funk (2017) proposed the SX framework to address the 'theoretical limitations' (p.145) in sport management research. The SX framework suggests sport organizations consider the interactions (linkware) of Sport User (customerware), Sport Context (stageware), and Sport Organization (orgware). The stageware element represents the tangible and intangible attributes (e.g. facility layout, equipment, and process technology) that are important to build CX. The orgware element represents an organizational management system and policies that create an environment and culture for fostering positive customer experiences (e.g. staffing, leadership, and management structure). The customerware elements represent the identification and management of unique customer touchpoints and interactions, including customer-employee and customer-to-customer interactions. The linkware element represents the integration of service processes through a communication system that filters information across various units of the sport organization. These four elements represent structure (stageware), infrastructure (orgware), delivery (customerware), and integration (linkware) to create experience-centric services (Voss et al., 2008).

Experience research in sport management

Experience is a phenomenon, a process, and an outcome. of sport consumption. Yet, there has been no common framework to examine experience in sport management. Earlier studies on experience often took experience as a primitive concept needing no formal definition and focused more on service quality and customer satisfaction (Clemes et al., 2011; Greenwell et al., 2002). Some scholars approached experience from a postmodern consumption culture perspective with an emphasis on the meaning and construction of experience (Bouchet et al., 2004), while others were interested in the effect of experiential marketing on fan behavior (Chanavat & Bodet, 2014; Yazıcı et al., 2017). In recent years, sport management scholars have started to examine certain aspects of experience, including flow (Kim & Ko, 2019) and emotional

experience (Jeon et al., 2021) from a positive psychology perspective, and retrospective evaluation of experience based on theories of information processing (Jang et al., 2017).

To advance sport experience research, Funk (2017) proposed the SX framework. In the same year, Yoshida (2017), focusing on touchpoints and interactions along a sport consumer's journey, proposed the Consumer Experience Quality model. Despite these advancements, empirical research on CX in sport management remains sporadic. The few sport-related CX studies have considered the effect of CX on customer satisfaction and behavioral intentions (Baena-Arroyo et al., 2020; Happ et al., 2021) or how specific technology impacts CX (Pizzo et al., 2020). To the best of our knowledge, no study has focused on CX itself. Yet, a study on CX itself will help researchers have a more coherent conceptualization of CX and lay a foundation for future CX studies in the sport field.

Service quality research in the fitness industry

As mentioned in the introduction, the fitness club industry has received much scholarly attention in the past (e.g. Chelladurai et al., 1987; Crompton & Mackay, 1989; Ko & Pastore, 2005; Lam et al., 2005; Peitzika et al., 2020; Sima & Ruda, 2019). One of the most fruitful areas of research has been the development of service quality models specific to the fitness industry, including the Quality Excellence of Sports Centers Scale (QUESC; Kim & Kim, 1995), the Scale of Quality in Fitness Services (SQFS; Chang & Chelladurai, 2003), the Scale of Service Quality in Recreational Sport (SSQRS; Ko & Pastore, 2005), and the Service Quality Assessment Scale (SQAS; Lam et al., 2005). Vieira and Ferreira (2018) provide a comprehensive table summarizing major studies on service quality dimensions related to fitness club service.

It is worth noting that existing literature does not agree on the dimensionalities of service quality. First, scholars often do not differentiate antecedents of service quality (i.e. service attributes, such as programs offered, social opportunities, price) from service quality (i.e. dimensions of service quality, such as reliability, responsiveness, empathy). For instance, Kim and Kim (1995) conceptualized service quality as an attitudinal construct and focused on intangible benefits. Their QUESC model included such dimensions as Ease of Mind, and Convenience, elements often found in the later CX literature (Klaus & Maklan, 2012). In contrast, The SQAS (Lam et al., 2005) focused more on the tangible service attributes, which may be better considered as antecedents of service quality. Second, scholars sometimes broaden the concept of service quality in order to accommodate the dynamic and complex process of fitness club services. In developing the SQFS model, Chang and Chelladurai (2003) conceptualized service quality as an input-throughput-output, three-stage process to capture the touchpoints along the customer journey. The SSQRS model (Ko & Pastore, 2005) considered outcome as a quality dimension. Both studies in retrospect would align more with the CX paradigm. Finally, the contexts (e.g. recreational centers in US, hotel gyms in Greece) of the investigations were not comparable. Because of these reasons, it is often not meaningful to compare results from previous studies.

In summary, given the paucity of empirical research on CX in sport marketing, this study aimed to develop an inductive CX model in commercial fitness clubs. Specifically, the research questions for this study were: (a) how do customers construe CX during

their entire customer journey? and (b) what are the common factors that shape customers' experience of using fitness club services?

Methodology

Text mining and STM

Open-ended feedback and user-generated content have become excellent sources to better understand CX and gain more insight into key managerial points along the customer journey (McColl-Kennedy et al., 2019). However, with increasingly large volumes of consumer review data, researchers often encounter the problem of having excessive information and struggle to sort out issues and identify topics of inquiries. To address this problem, text mining has gradually become a viable research method (Berger et al., 2019). This approach enables researchers to extract structured information from large datasets with objectivity and capture semantical nuances that might be difficult to detect with manual coding (Roberts et al., 2014). Notably, text mining is epistemologically compatible with grounded theory and content analysis (Nelson, 2020; Yu et al., 2011).

Topic modeling is particularly useful for analyzing online reviews (Korfiatis et al., 2019; Mao, 2021). Among several types of topic modeling methods, STM is a relatively new addition and was originally developed in political science for analyzing unstructured texts (Roberts et al., 2014, 2019). STM treats a document as an expression that has associated metadata (e.g. observer's party affiliations in political science research, satisfaction in consumer research), and researchers can use these metadata as priori information (i.e. document covariates) to estimate the prevalence of each topic. Another feature of STM is the explicit estimation of correlations among topics, which provides a more realistic representation of documents.

STM has been increasingly applied in various fields. For instance, based on TripAdvisor's passenger reviews, Korfiatis et al. (2019) constructed an STM to better understand service quality in the airline industry. They demonstrated that STM explains a greater variation in customer satisfaction when combining the numerical and textual features in the review data. Hu et al. (2019), by contrast, focused on dissatisfaction and only used 1-star and 2-star reviews from TripAdvisor to understand the causes of customers' complaints in the hospitality industry. In these applications, STM was employed as an alternative to traditional survey methods.

Data source

This study utilized reviews from the Yelp Academic Dataset (Yelp, 2019) to understand CX in fitness clubs. Founded in 2004, Yelp is an American company that specializes in crowd-sourced reviews for local businesses. Yelp reviews have been extensively used for marketing and consumer behavior research (e.g. Lester et al. 2019; Matti, 2021; Luca and Luca 2017) and the usefulness and limitations of using this dataset have been noted in Mao (2021, 2022). According to Yelp (2023), Yelp users tend to be younger than the general population. The largest age group of users on the platform is 18–34-year-olds. Users tend to have higher incomes and higher levels of education than the general population. Arguably, the demographic profile of Yelp users fit the target markets of many commercial fitness clubs.

Using the self-identified business category, the resulting dataset included 1,045 fitness clubs in eight U.S. states, including Arizona, Illinois, North Carolina, Nevada, Ohio, Pennsylvania, South Carolina, and Wisconsin. Consumer reviews for respective businesses were then identified by linking the businesses file to the reviews file through the unique business_id identifier; and the users file was then linked to the reviews file through the unique user_id identifier. We identified a total of 24,231 reviews, which were posted by 20,334 users on yelp.com between March 14, 2005, and November 14, 2018. The review count per user ranged from 1 to 22 with 17,722 (about 87%) of users having one review, 1,945 (about 10%) two reviews, and 399 (2%) three reviews. Of the 2,612 users who had multiple posts, 1,063 (about 40%) users had follow-up reviews on the clubs they used. After removing seven reviews containing only stop-words, the remaining 24,224 reviews ranged from 5 to 1,003 words, with a mean length of 122 words and a standard deviation of 112 words. The total corpus for subsequent topic modeling was 2,965,958 words.

In addition to the text, the star rating of each review was also recorded. The distribution of star ratings followed a classical J-shape (Hu et al., 2009): 20.4% of ratings were 1-star, and 50.3% ratings were 5-star. 2-star, 3-star, and 4-star ratings were about 7.3%, 7.8%, and 14.2%, respectively.

Data analyses

To develop an inductive model of CX in commercial fitness clubs, we conducted a twophase study. As shown in Figure 1, the first phase was STM model determination. The main outputs of this phase, which served as inputs for Phase II analysis, included a list of 98 topics accompanied by their top words and representative reviews, and a topic correlation matrix. The second phase was fitness CX model development, in which we conducted topic network analysis and three rounds of content analysis. The first round of content analysis focused on topic selection; the second round of content analysis, guided by the general CX framework, focused on assigning labels to the topics and classifying them into theoretical dimensions; and the third round of content analysis, informed by the results of topic network analysis and the experience design framework, focused on topic refinement and conceptualizing the final model. Whereas Phase I was an objective and sequential process, Phase II, was iterative and involved subjective interpretation.

Phase I: STM

To perform the STM analysis, we followed a process that entailed: (a) establishing preprocessing techniques to prepare the documents; (b) specifying the STM equation, (c) determining the K parameter (i.e. the number of topics parameter that best describes the variability of the corpus), in which we used two methods (the K = 0 method and the search K method); and (d) finalizing the model and using the STM algorithm to automatically identify coherent topics in the text data. The STM was conducted by using the stm package version 1.2.1 in R (Roberts et al., 2019).

The accompanying appendix details the key steps in our modeling decisions. The final topic model generated 98 topics that were represented by sets of top words that were selected based on highest probability (PROB), where the words are selected based on frequency, and FREX, where the words are selected based on both frequency and exclusivity. In the current



Figure 1. Procedure of data analysis with inputs and outputs of each step.

application, the PROB and FREX methods often selected the same set of words that only differ in ranking. To facilitate the interpretation and labeling, we pooled the two wordlists.

Phase II: content analysis

To facilitate the interpretation of the topics, we continued the process by manually reviewing all the topics and content analyzing representative reviews identified by the STM's findThoughts function. The first round of topic review was to eliminate less coherent or relevant topics. As a result, a total of 30 topics were discarded. Topic proportion was not a consideration when we eliminated the topics. Yet, most of these topics happened to have lower proportions, and the total discarded topics represented 24% of topics in the entire corpus.

The second round of content analysis focused on assigning a theoretical label to the remaining 68 topics and then classifying them into theoretical dimensions when appropriate. Following the recommendation of Nelson (2020), we performed qualitative deep reading of representative reviews to label the topics. The analysis in general was guided by the CX literature. For the two rounds of content analysis, three researchers independently reviewed all topics, thoroughly analyzed their representative reviews, and assigned labels to the topics. Any discrepancies were resolved through discussion(s) and mutual agreement.

In the spirit of the grounded theory methodology, the coding process was iterative (Merriam & Grenier, 2019). The final labeling also considered the results of the topic network analysis to be reported. With the consideration of the topic network analysis results and the adoption of the experience design framework (Voss et al., 2008; Funk, 2017), a third round of review was then conducted by the lead author to assign topics to their respective cluster and make minor revisions to topic labels.

Phase II: topic network analysis

As the topics generated by STM are correlated, we can explore the relationships among all of them by performing a topic network analysis via STM's topicCorr function. Of greater interest, however, are the relationships on the construct level. The topic network can be further contracted using the igraph's (Csardi & Nepusz, 2006) contract function, which would re-draw the topic network by aggregating the topics into their respective constructs. We performed such an analysis to examine the construct relationships. Furthermore, we utilized the concept of centrality from social network analysis to describe the relative significance of each topic and construct in consumers' narratives, with an aim to develop an inductive model. Refer to the appendix for the definitions and equations of the centrality measures.

Results

Topic proportion and prevalence

Among the 68 topics in the analysis, we identified four pre-usage topics, 55 usage topics, and nine post-usage evaluation topics (Table 1). Specifically, during the pre-usage stage, experiences with promotions (2 topics, 1.55%) and sales (2 topics, 1.72%) were the two constructs identified, representing a total of 3.27% of topics in the corpus. Fifty-five topics were related to experiences with service usage at the fitness clubs, representing 62% of topics in the corpus. They were further classified as Experience with Management (10 topics, 10.05%), Experience with Program (22 topics, 27.60%), and Experience with Facility (23 topics, 24.22%). Lastly, nine post-usage evaluation topics (10.81%), which are often of interest to business operators, fell under three constructs – Satisfaction (2 topics, 2.44%), Perceived Value (3 topics, 3.43%), and Behavioral Consequences (4 topics, 4.94%).

Many topics associated with service usage significantly overlap with the dimensions and subdimensions of service quality models in the existing literature (Chelladurai et al., 1987; Ko & Pastore, 2005; Lam et al., 2005). These topics reflected 13 dimensions under the three themes. Experience with Management topics included Communication (3 topics, 2.66%), Managerial Staff (4 topics, 3.52%), and Membership (3 topics, 3.86%). Experience with Program topics included Atmosphere (3 topics, 3.23%), Outcomes (6 topics, 6.20%), Methods (2 topics, 2.59%), Program (6 topics, 7.51%), and People (5 topics, 8.08%). Experience with Facility topics included Workout Equipment (5 topics, 7.00%), Workout Facility (7 topics, 6.49%),

Table 1. Results of STM.

Topic#	Top Words	%	Label
	Tonics Palata to Pra-Usaga Experience Promotions	1 55	
40	sure attention limit groupen warry introduce	0.60	Croupon promotion
49	sure, attention, innit, groupon, wony, introduce	0.09	
64	free, oπer, spend, triai, speciai, list, commit, redeem	0.86	Free trial
	Sales	1./2	
91	sign, deal, sale, lie, process, agree, sale_pitch	1.09	Dishonest sales process
93	talk, cheap, interested, hang, pricing, hate, pushy	0.63	Pushy salesman
	Topics Relate to Experience with Management Communication	2.66	
1	contract, email, contact, receive, company, response	1.10	Contract communications
31	phone, speak, number, corporate, refuse, disappointed, message	0.89	Telephone
			communications
46	state, card, payment, information, website, shady, paperwork	0.66	Transparent information
	Managerial staff	3.52	
68	issue, management, order, poor, handle, guit, previous, frustrating,	0.77	Issue handling
	no longer		2
84	manager, rude, horrible, treat, terrible, unprofessional, conversation,	1.27	Courtesy
-	disrespectful		,
87	hannen consider multiple forget promise unclear	057	Reliability
80	week hear immediately idea word available receive	0.57	Responsiveness
07	Membershin	3.96	Responsiveness
2	membership pass today quest tour stand facility quest pass	1 21	Guest pass
2 20	membership, pass, today, guest, tour, stand, fachity, guest_pass	1.21	Guest-pass
28	member, club, upgrade, general, country	1.37	Membership Perks
98	fee, membership, contract, monthly, pay, charge, extra, annual_fee	1.28	Membership fees
	Topics Relate to Experience with Program Atmosphere	3.23	
58	family, job, young, smile, attitude, treat, laugh	0.77	Family-like
63	fun, motivate, energy, encouraging, intense, challenging, inspire	1.40	Energetic
92	goal, environment, support, intimidate, reach, genuinely, push_limit	1.05	Supportive
	Outcomes	6.20	
44	push, shape, result, motivated, boot_camp, push_harder	1.21	Shape
53	week, lose, weight, progress, gain, pulse, gain muscle, lose body fat	1.23	Weight
65	muscle, head, track, hate, burn, fat, calorie, exactly, pace	0.68	Muscle
81	exercise, encourage, health, learn, improve, nutrition, strive, dedication	1.06	Health
88	life program change healthy achieve old motivating transformation	1 02	Transformation
	succeed		
96	strength strong build incredible accomplish grow endurance	1 01	Strength
20	nroper form	1.01	Stichgth
	Methods	2 50	
0	set entire circuit ctule travel concept consistently	0.50	Circuit training
9 40	set, entite, circuit, style, travel, concept, consistently	0.50	Interval training
42	workout, tough, fast, heart_fate, harder, interval, calone_burn	2.01	interval training
	Program	7.51	
6	class, group, instructor, attend, kickboxing, cycling, bodypump	2.50	Group class
13	change, schedule, understand, completely, stick, single, realize, similar	1.03	Flexible schedule
27	teach, instructor, core, student, dance, learn, instruction	0.91	Variety of programs
37	training, personal, session, assessment, director, consultation	1.46	Personal training
51	injury, ability, scale, hurt, arm, modify, increase, movement, recovery	0.78	Availability of programs
78	yoga, spin, instructor, class, pilate, favorite, teacher, body_pump, jazzercise	0.83	Yoga/pilate/jazzercise
	People	8.08	
10	Kind, professional, appreciate, accommodate, pleasure, personality	0.75	Professional attitude
26	help, knowledgeable, meet, truly, willing, patient, journey, achieve_goal,	1.40	Professional knowledge
	guidance		5
50	friendly, super, helpful, happy, tip, personable, greet, smile	1.99	Friendly and helpful staff
55	coach hox community drop athlete welcoming crossfit magna	2 4 3	Welcoming coach
85	trainer train client listen certify investment master personalize exceed	1 51	Caring trainer
05	Tonics Belate to Experience with Facility Workout Fauinment	7.00	caring trainer
11	hanch har rack selection dumbhall squat rack plate	1.07	Weight training
	אנויניו, אמי, ומנה, זכוכנווטוו, ממווואאכוו, זקממנ_ומנה, אומנפ	1.07	
22	machina allintical fairly and full stain slimbar and is that the	1 77	equipment Working oggingerent
22	machine, enliptical, fairly, order, frill, stair_climber, cardio_theater	1.32	working equipment
66	maintain, decent, quality, condition, rest, average, immaculate	0.59	Functional equipment
69	equipment, broken, old, replace, repair, maintenance, wear, outdate	1.21	Equipment maintenance
73	clean, equipment, facility, available, pleasant, wide_variety, spotless,	2.81	Good workout equipment
	working_order		
	Workout Facility	6.49	

Topic#	Top Words	%	Label
2	weight, cardio, free, lift, stretch, section, upstairs, cramped	1.47	Weight and cardio space
21	area, large, building, locate, ball, frequently, popular, cramp	0.92	Workout space
32	small, space, huge, center, separate, quiet, cram	0.77	Space layout
40	floor, towel, wipe, water, cleanliness, paper_towel, gross, water_fountain, soap	1.06	Workout space hygiene
43	problem, wall, avoid, standard, middle, mat, corner, climb	0.64	Workout space safety
70	music, play, loud, hear, listen, headphone, radio, player, noise	0.84	Noisy workout space
82	treadmill, fan, hot, summer, temperature, winter, humid Physical Facility	0.79 4.05	Workout space ambience
7	close, wish, live, drive, house, switch, respectful	0.88	Convenience of location
12	crowd, plenty, overall, parking, crowded, peak, layout	1.04	Availability of parking
15	car, face, case, course, lock, bag, parking, steal, police, window, permit, glass	0.72	Parking lot safety
56	open, early, pack, weekend, evening, afternoon, early_morning	0.86	Hours of operation
97	perfect, convenient, spacious, organize, fancy, safe, bright, state_art	0.54	Facility ambience
	Locker Room	2.54	
18	bathroom, dirty, smell, filthy, restroom, disgusting, cleaning, dust, carpet	1.17	Clean bathroom
94	room, locker, shower, steam, lock, door, shampoo, blow_dryer, sauna steam	1.37	Adequate locker room
	Amenities	4.14	
14	access, basic, membership, massage, beat, tanning, black_card	1.04	Tanning/massage
20	pool, sauna, swim, spa, court, basketball, hot_tub, lane, racquetball, jacuzzi	1.05	Swimming/spa/jacuzzi
52	plan, expensive, eat, package, food, supplement, meal	0.70	Food service
61	kid, child, care, childcare, son, daughter, old, parent	1.34	Childcare
	Topics Relate to Experience with Post-Usage Evaluation Satisfaction	2.44	
30	amazing, welcome, favorite, absolutely, fantastic, beautiful	1.24	Positive sentiment
72	top_notch, atmosphere, positive, provide, excellent, wonderful, individual	1.20	Top notch experience
	Perceived Value	3.43	
45	worth, extremely, include, vibe, affordable, overall, advantage	0.78	Worth
67	contract, pay, money, cost, save, waste, afford	1.69	Monetary cost
75	price, add, low, amenity, compare, spot gold	0.96	Amenity value
	Behavioral Consequences	4.94	
17	review, update, read, write, post, negative, feedback	0.83	eWOM
24	complain, pretty, rule, annoying, fine, generally	0.81	Complaint
29	definitely, recommend, comfortable, greet, informative, impressed, best	1.13	Recommendation
35	cancel, charge, membership, account, money, refund	2.16	Cancellation

Table 1. Continued.

Physical Facility (5 topics, 4.05%), Locker Room (2 topics, 2.54%), and Amenities (4 topics, 4.14%).

The most discussed dimension was People (8.08%), followed by Program (7.51%), Workout Equipment (7.00%), Workout Facility (6.49%), and Outcomes (6.20%). The top 10 most prevalent topics represented about 19% of the topics in the corpus. They were #73 (Good workout equipment), #6 (Group class), #55 (Welcoming coach/ trainer), #42 (Interval training), #50 (Friendly and helpful staff), #85 (Caring trainer), #2 (Weight and cardio space), #37 (Personal training), #26 (Professional knowledge), and #63 (Energetic atmosphere). Compared to a baseline proportion of 1.02 (i.e. 1/98), the odds ratio of having a top 10 topic ranged from 1.37 to 2.76.

Topic network and centrality

Figure 2 presents the network of 68 correlated topics, in which each topic is a node and each link connecting two nodes is an edge. The topic network analysis provides insight into the organizational structure at the corpus level. The numbers denote the topic number from the STM output, which is considered a node in the network diagrams. The lines between two nodes are connected when they have a correlation greater than 0.1.

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The degree centrality of topics ranged from 0 to 42 (M = 21, SD = 11.5). Correspondingly, the normalized degree centrality ranged from 0 to .62 (M = .20, SD = .19). Specifically, #43 (Workout space safety), #70 (Noisy workout space), #52 (Food service), and #61 (Childcare) had degree centrality of zero and #15 (Parking lot safety), and #78 (Yoga/Pilates/jazzercise) had degree centrality of two, suggesting these topics were often discussed in isolation. The betweenness centrality of topics ranged from 0 to .22 (M = .03, SD = .05). Specifically, #49 (Groupon promotion), #28 (Membership perks), and #13 (Flexible schedule) were the top three topics in terms of betweenness centrality. Figure 3 presents the network of 21 constructs with a total of 93 edges. The degree centrality of the constructs ranged from 3 (eWOM) to 16 (Perceived Value) (M = 9, SD = .3.04). Correspondingly, the normalized degree centrality ranged from 0 (eWOM, Cancellation) to 48.54 (Perceived Value, M = 8.00, SD = 11.70).



Figure 2. The network of the 68 correlated topics. Note. Node size is proportional to the topic proportions in the entire corpus. Edge width (i.e. the line thickness) is proportional to the betweenness centrality of the topics. The 30 deleted topics are not shown in the Figure.

Satisfaction and Perceived Value are two important constructs in consumer behavior research. We showed that the antecedents and consequences of these two constructs might differ. Promotions, Atmosphere, Methods, Program, People, and Outcomes were the antecedents of Satisfaction. In contrast, the antecedents of Perceived Value included Promotions, Sales, Communication, Managerial Staff, Membership, People, Workout Equipment, Workout Facility, Physical Facility, and Amenities. The consequences of Perceived Value included Complaint, Recommendation, and Cancellation. eWOM had low centrality in the current analysis, with only Sales, Communication, and Managerial Staff linking to the construct. Complaint was primarily associated with Facility constructs and Perceived Value. Recommendation was associated with both Perceived Value and Satisfaction and Facility and Program constructs. Cancellation was primarily associated with Perceived Value and Management constructs.



Figure 3. The constructed network graph of the 21 constructs. Note. Topics in triangles are preusage constructs; Topics in circles are Program constructs; Topics in pies are Facility constructs; and Topics in rectangles are Management topics; Topics in spheres are value-in-use constructs, and Topics in stars are behavioral consequences constructs. Graph is generated by using the igraph's contract function.

Discussion

Based on the results from the STM, content analysis, and topic network analysis, an inductive model was developed (Figure 4). This model presents the salient topics, constructs, and their interrelationships and highlights the interaction among experience design elements and CX along the three stages of the customer journey. Further, we had recourse to the CX paradigm (De Keyser et al., 2020; Homburg et al., 2017; Lemon & Verhoef, 2016) and experience design framework (Funk, 2017; Voss et al., 2008) in interpreting the final model.

The nature of CX

In the context of fitness service, CX are a customer's internal and subjective responses to a fitness club's offerings throughout the entire customer journey. CX is shaped on the basis of cognitive (think), emotional (feel), physical (act), sensorial (sense), and social (relate) responses. However, the relevance of each type of response may vary across contexts (Becker & Jaakkola, 2020). Empirically, these five responses may not always be clearly differentiated, especially when the experience is complex (Gentile et al., 2007). This was the case for the current study. All of these five responses were evident and



Figure 4. An inductive model of CX in fitness clubs.

scattered across most topics. For instance, #45 (Worth) and #75 (Amenity Value) are cognitive, #70 (Noisy workout space) and #82 (Workout space ambience) are sensorial, #18 (Clean bathroom) and #73 (Good workout equipment) can be a mixture of sensorial, emotional, and cognitive responses, #58 (Family-like) can be both relational and emotional, and #17 (eWOM) can be both relational and cognitive. The presence of these responses in the reviews indicates that online reviews are indeed a reflection of CX.

The stages of customer journey

As mentioned, the customer journey can be divided into three stages that include preusage, usage, and post-usage evaluation. The pre-usage stage encompassed all aspects of the customer's interactions with the firm, including such factors as need recognition, search, consideration, and past experiences (Lemon & Verhoef, 2016). This study suggests that, in the context of the fitness club industry, trials (e.g. a free pass), promotions (e.g. the use of Groupon), and experiences with the salesperson are crucial elements of the pre-usage experience. The interactions during this stage were customer-to-salesperson and customer-to-manager. The touchpoints at this stage are primarily owned by the firm or a business partner (e.g. Groupon).

The second stage was service usage which can be longitudinal. Unlike one-time transactions, the fitness club business is typically membership-based, and users can have prolonged and repeated interactions with the offerings of the service provider. Roughly speaking, we can differentiate such customers into two categories: those who use personal trainers and/or attend group classes and those who are self-served. The former will involve more interactions with employees compared to the latter. For the former, interactions during this stage are with both the program and the facility; and for the latter, interactions are primarily with the facility. The touchpoints at this stage are mainly owned by the firm (e.g. employees, workout space, equipment) or a business partner (e.g. contracted trainers, coaches, equipment providers).

The third stage was post-usage evaluation. Research on this stage has focused on such constructs as customer satisfaction, repeated purchase and loyalty, and word of mouth (Lemon & Verhoef, 2016; Happ et al., 2021). The post-usage evaluation has dual functions in CX. On the one hand, it is a stage within the customer journey that influences the total CX; on the other hand, it is an outcome of CX. The relationship between CX and post-usage evaluation is therefore non-recursive. The post-usage evaluation is the 'loyalty loop' (Lemon & Verhoef, 2016) of the overall customer decision journey, through which a trigger may occur that either leads to customer loyalty, through renewing and/or upgrading membership, or customer attrition through canceling or non-renewing membership when a customer reenters the pre-usage phase and starts to reconsider alternatives. This study suggests satisfaction and perceived value are the two constructs that lead to various behaviors, including eWOM, recommendation, and cancellation. The interactions during this stage are primarily customer-to-manager.

Experience antecedents and experience design

Management, Program, and Facility are the three clusters of experience antecedents for club users. The correlations among the three clusters provide insight into the potential

process integration points on which linkware can be based. Thus, the results of this study support the viability of the system design approach proposed by Voss et al. (2008) and Funk (2017).

Orgware and experience with management

The orgware element represents an organizational management system and policies that create an environment and culture for fostering positive experiences. The Management cluster encompasses three dimensions: Membership, Communication, and Management, which represent the orgware element of experience design. At the center of this cluster are #98 (Membership fee) and #89 (Responsiveness). This cluster is also closely related to pre-usage topics as well as post-usage topics such as eWOM (#17), Monetary Cost (#67), and Cancellation (#35).

Our results suggest that key orgware decisions involve membership structure, communication channels, managerial staff, and sales force. Notably, the managerial staff is the key touch point during service failure. Training managerial staff to engage customers and managing service recovery is one of the most crucial aspects of fitness club service. Additionally, the sales force is the key touch point during pre-usage experience. Therefore, the results highlight the importance of sales force training in acquiring customers.

Customerware and experience with program

The customerware element is the touch points and interactions within the service delivery system. The Program cluster, encompassing Atmosphere, Benefits, Program, and Coach/Trainer, corresponds with the customerware element. At the center of this cluster appears to be #6 (Group class) and #26 (Professional knowledge). This cluster is closely related to Satisfaction (#30 and #72) and Recommendation (#29), and one pre-usage topic (#49). Our results suggest that customer-instructor/coach/trainer interactions are most crucial and have significant behavioral consequences. To our surprise, customer-customer interaction, which has been an important dimension in the existing literature (e.g. Ko & Pastore, 2005), was not identified as a salient topic. It could be that customer-customer interaction was subsumed by other dimensions, such as Atmosphere. Another possibility could be that the Yelp users tend to be more solitary when working out in the fitness clubs. Solitary is a theme that was identified by Kim and Mao (2021) during interviews when some sports fans expressed that spectatorship is a solitary pursuit.

This cluster included multiple topics relating to customers' psychological and physiological responses to the programs, including the experienced atmosphere and expected outcomes. Our results support the notion that interactions in the fitness club setting are subjective, contextual, and temporal. Our results also highlight the importance of considering consumers' expectations and desired outcomes in designing customerware.

Stageware and experience with facility

The stageware element is the tangible and intangible attributes that are important to build CX. The Facility Experience cluster, encompassing Workout Space, Workout Equipment, Physical Facility, Parking, Locker Room, and Amenities, corresponds with the stageware element. The topics in this cluster are more scattered than other clusters with Good Workout Equipment (#73) playing a dominant role, which highlights the

importance of the availability of equipment in creating CX. This cluster is closely related to one positive indicator of Perceived Value (#75) and Complaint (#24). Perceived Value (#45 and #75) connects the Program and Facility clusters. It should be noted that the location and business hours of the physical facility, availability and safety of the parking lot, adequacy and hygiene of the locker room/restroom, workout space (ambience, availability, design, hygiene, and safety), workout equipment (availability and maintenance) and availability of other secondary consumer services have been identified as salient service quality attributes in the existing literature. This study corroborates this existing knowledge.

Amenities, including childcare, massage, sauna, swimming pool, jacuzzi, meals, and so on, may be considered as secondary consumer services, according to Chelladurai et al. (1987). It should also be noted that many topics in this cluster are familiar from research on service quality of fitness centers (Lam et al., 2005). It is also interesting to note that the four topics of Amenities scatter around two different clusters. #14 (Tanning/massage) and #20 (Swimming/spa/jacuzzi) are closer to Facility than to Program; #61 (Childcare) and #52 (Food service) are closer to Program than to Facility. The provision of amenities in fitness centers usually requires space, equipment, and accompanying services. Therefore, depending on the nature of the amenity, it may appear in different clusters.

Linkware and process integration

The linkware element represents the integration of service processes through a communication system that filters information across the sport organization. The three elements of service experience design do not exist in separation, as evidenced that all these topics are interconnected. Most notably, #28 (Membership perks), #13 (Flexible schedule), and #50 (Friendly and helpful staff) are at the center of the topic network and connect the three clusters, which suggests that the fitness club experience is created through coordination and integration of the three elements and highlights the importance of linkware. Whereas the linkware is generally latent to customers, this study suggests some potential links for businesses to consider. For instance, the design of membership perks involves programming and allocation of the facility, which needs to be clearly communicated to the customers by the sales force; when promises were not kept, customers tend to blame the salesperson's dishonesty. A more flexible scheduling system is valued by customers, but it requires the manager to better coordinate resources. Finally, courteous staff are crucial to creating positive experiences, yet it requires a customer-centric and experience-centric culture that is unequivocally conveyed to the staff by the managers. The direct outcome of this concerted effort is the realization of consumers' total experience in the form of evoked internal responses to the service context through their encounters with the management, program, and facility.

Limitation and future studies

One limitation of this research was the representativeness of Yelp reviewers. We do not believe Yelp reviewers were a representative sample of all consumers. However, at issue is the representativeness of the comments (i.e. the corpus for text mining), which unfortunately cannot be empirically evaluated. Yet, future research should cross-validate the current findings using alternative data sources, such as survey data, user-generated content from other platforms. A second limitation is the topic-document and word-topic distributions, which were the main findings of the STM, and can be influenced by the composition of the corpus. Essentially, it is rather plausible that all topics are not equally important to all businesses. Some topics may be more salient to consumers of a certain chain. As customers are heterogenous, so are CXs. A future study may focus on a more homogenous group of customers by focusing on one chain brand and provide a more in-depth analysis of club specific CX. By comparing topics emerging from different brands, we can examine the competitive positioning of each chain brand using the extracted topics.

In specifying the STM equation, we did not control for the semantic valence of the reviews because valence is found to be highly correlated with star ratings (Lee & Yu, 2018; Mao, 2022). Yet, as shown in Table 1, some topics are driven by more negative sentiments. The valence-dependent mutation theory on lexical evolution (Jackson et al., 2022) suggests that we have more negative words than positive words in our languages because human beings tend to intentionally manipulate and refine negative words. Another explanation may be that customers tend to have more negative experiences in these aspects. We do not know the exact reasons, but certainly it is an area that warrants further research.

Another limitation is that topic models do not capture temporal order even though the reviews provided by consumers do contain temporal information. The Yelp reviews are narratives of consumers' experiences, and they often discuss things in logical order. Due to the nature of topic modeling, the links captured by topic networks are non-directional. STM does not quantify the interrelationships among the topics and constructs in the same way as multiple regression and structural equation modeling do. To further develop the theory, it is necessary to examine the relationships using dependence statistical techniques. A natural next step in this regard is to develop an industry-specific or even a brand-specific CX measurement to quantify CX, followed by an examination of the structural relationships suggested by Figure 4.

Finally, the data for this study were collected before the disruption of the COVID-19 pandemic. Undeniably, COVID-19 has had a profound impact on the operations of the fitness club industry. The preventative measures businesses take may have an impact on CX. Future research may investigate how COVID-19 has shaped CX in fitness clubs.

Conclusion

The research on fitness clubs has been dominated by the service quality paradigm. With fitness businesses pivoting towards managing customer experience (CX) and theoretical advancement in the CX literature, we acknowledge the limitations of applying the service quality paradigm to this dynamic and repetitive fitness service context and proffer the CX paradigm as a more encompassing alternative to reconcile some conceptualization issues and a more relevant strategy to guide practices. We inductively identified topics and themes germane to CX in commercial fitness clubs and derived a general CX model based on unsolicited customer feedback. Sixty-eight relevant topics were identified through an iterative STM and content analysis process and were subsequently interpreted using the CX paradigm (Lemon & Verhoef, 2016) and experience design framework (Funk, 2017; Voss et al., 2008). Our final

model integrates experience design elements (i.e. stageware, orgware, customerware), customer journey (i.e. pre-usage, usage, post-usage) and CX (i.e. internal responses) and shows the interrelationships among them. Although on the surface many elements within our model also appear in previous service quality studies (Ko & Pastore, 2005; Lam et al., 2005; Vieira & Ferreira, 2018), our model offers an integrative and coherent CX framework. Our model and methodology allow researchers and organizations not only to capture CX and the relative salience of CX topics, but also to track CX trends over time, compare the design elements (customerware, stageware, orgware, linkware) of an organization, measure CX performance against competitors, and link CX topics to other criterion variables (e.g. retention rate, financial performance, and business survivability).

Disclosure statement

No potential conflict of interest was reported by the author(s).

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