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Typology of Customer Retention Schemes in the Private Sports Sector During COVID-19: Analyzing the Behavior of Martial Arts Instructors Using Latent Class Analysis

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ABSTRACT

The COVID-19 pandemic brought new challenges in all aspects of life. It largely brought the sports sector to a halt: major events were postponed or canceled, while gyms and training centers were closed due to repeated lockdowns and social distancing rules and regulations. In the private sports sector, some instructors adopted technological means of maintaining contact with their students in an attempt to retain customers and maintain a high volume of cash flow. Our work focuses on the martial arts (MA) sector in Israel during two crucial periods in 2020: The first lockdown of March through June, when all sports activities were banned, and the period following it, when trainers were allowed to commence training under some regulations. Using data collected from 199 MA instructors, we test for their level and means of engagement with trainees during the lockdown, and the impact these had on customer retention in the period that followed. Using latent class analysis, we establish an empirically based typology of retention schemes (low contact, high contact, and maverick), and test whether these influenced the financial performance of MA studios. Our findings show that the financial damage and the return rate of trainees do not vary between the three types. We offer some insights into the uniqueness of the MA field, and how this may explain these counter-intuitive results.

Keywords: Customer retention, COVID-19, Latent class analysis, Martial arts, Private sports sector

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1. Introduction

The COVID-19 pandemic took the world by surprise; the lack of knowledge concerning the virus and how to properly respond to it became a major concern for governments and individuals worldwide. Israel was not excluded, and towards the end of February 2020 the first cases of COVID-19 were detected, followed by a continuous increase in the number of positive cases [1]. The Israeli government mandated social distancing and curfews, minimized commerce and, as of March 14 2020, imposed a general lockdown, closing commercial services that were deemed non-essential [2]. Cultural and athletic activities were banned, leading to an immediate shutdown of all fitness centers, outdoor activities, and martial arts (MA) schools [3]. In May 2020 professional athletes in Olympic sports were allowed to commence training; however, MA activities for non-professional participants—who account for the majority of the sector—only reopened (under restrictions) two and a half months later, ending the total ban on MA training [4], [5]. This work focuses on non-professional MA activities, and the way that MA instructors dealt with the reality of the new COVID-19 era.

Social distancing, whether mandated or voluntary, made online interactions via video conferencing the new norm in many walks of life. These norms, however, may be more difficult to apply to participation in sports activities, and pose obstacles to trainers and trainees alike [6], [7]. Accordingly, some in the sports industry were quick to adopt these technologies and adapt their portfolio of services offered to these unique times, while others chose to refrain from making changes to their product or service [8]. These *coping schemes* can also be seen in the behavior of MA instructors in Israel during the first lockdown of March 2020: Some instructors adopted various communication and interaction approaches in order to deal with the ban on in-person training; some maintained a high volume of interaction with their students through social media and various online communication platforms; and others maintained minimal interaction or none at all.

This paper aims to empirically study two main issues. The first is to validate that a typology of coping schemes indeed exists, and to characterize each of these using the intensity and method of communication. The second is to study the relationship between the coping scheme used by instructors during the lockdown and trainers' customer retention during and after it was lifted. We test for these issues using data surveyed from 199 MA instructors (approximately 10% of the MA schools' population in Israel), sampled at two crucial points in 2020: during the first lockdown and during the period after it was lifted, when businesses returned to their semi-regular routines for a short while. Using latent class analysis, followed by a series of ANCOVA tests, we establish that trainers may be disaggregated into three distinct groups based on their coping scheme, and that—counter-intuitively—the coping scheme did not customer retention during and after the lockdown.

2. Literature Review

2.1 Martial arts

The term MA is commonly associated with Asian fighting arts, such as karate, kung fu, and tae kwon do. Surprisingly, the English term is derived from the Roman god of war, Mars, hence the name 'Arts of Mars' which was used as early as the 1550s in Europe [9]. Today, the term MA may also be used when referring to combat disciplines originating from various locations, such as the Israeli Krav Maga [10], French savate [11], or the Russian sambo [12].

In Israel, MA training is quite popular, with 1% of the adult population and 18.1% of boys aged 11–17 participating regularly in training [13], [14]. The keywords 'Martial Arts Schools in Israel' provided more than 2,000 pins on Google Maps. These clubs provide thousands of participants with competitive and leisure training. Although Israel developed a new combat discipline in the 1920s, which gained popularity worldwide, MA gained significant popularity during the 1990s [10]. This followed Israel's success in winning its

first Olympic medals in judo in 1992, followed by three additional medals in 2004 and 2016 [15].

2.2 The sports sector

The sports sector consists of sports activities, related amusement, recreation activities, and all additional activities which require sport as an input, such as goods and services, but without the need for active participation [16]. It is customary to divide the sports sector into three categories: (a) ***The public sector*** traditionally provides financial and political support for sport infrastructure, and focuses primarily on the construction of sports facilities and subsidizing non-governmental sports organizations. This sector operates in a top–down fashion, starting from governmental organizations (i.e., the sports ministry) and going down to municipal departments and academic studies in areas such as physical education and sports sciences. (b) ***The voluntary sector*** refers to national sport federations, national Olympic committees, and regional organizations of different sport disciplines (e.g., New Zealand regional triathlon organization) [17], [18]. (c) ***The private sector*** consists of profit-making private entities that produce and sell sports products and services. This sector includes the gym industry, private trainers, and private sports establishments such as MA schools [16]. Our work focuses on individuals and firms operating in this sector.

The COVID-19 era poses new challenges to the sports sector as a whole: During 2020, most international and local sports activities were canceled, and public admittance to those still operating was banned or restricted. As a result, most leagues postponed their activities, and the Olympic Games scheduled to commence in Tokyo in July 2020 were postponed [19]. While the public and voluntary sectors rely on financial support from governments, non-government organizations, and other well-funded supporters, the private sector does not have equal financial stamina, and may be the most financially fragile during the COVID-19 era [20], [21]. In addition, curfews, social distancing, lockdowns, quarantines, and the disease itself reduced the willingness of individuals to participate in face-to-face private sector activities, as people tended to isolate themselves at home [22]–[24]. Considering both the breadth of the crisis and the restrictions it imposed on regular training routines, these times called for reexamining the effectiveness of traditional customer retention strategies in sports, and the effectiveness of technology-based training schemes in general.

2.3 Crisis management and customer retention

A crisis is an event leading to uncertainty, causing threat or perceived threat to individuals, organizations, societies, or humanity, and demanding changes to cope with its effects [25]. It is often defined as an abnormal, sudden shock which disrupts or impedes normal life-course, and threatens lives, property, the economy as a whole, or infrastructures [26]–[28]. One may also look at the financial toll taken by a crisis, and the amount of time needed to return to pre-crisis economic performance levels, or to achieve a 'new normal' sustainable post-disaster level of economic activity" [29]. Another common typology, first offered by [30], measures the severity of a crisis by its predictability and influence on a business. The COVID-19 pandemic—an unpredictable crisis with a grave influence on the economy and society—may be defined as a fundamental crisis, where little to no preparedness may apply, and counteracts may prove futile amid such levels of uncertainty [31]–[33].

The set of actions taken by an organization facing a crisis is called 'crisis management.' This refers to the process of evaluating the effects of a crisis, addressing issues caused by it, preparing for its aftershocks, and learning from it [34]–[36]. While the scientific literature discusses various aspects of major crises in sports, such as the Munich Hostage Crisis in 1972 [37] or the NFL concussion crisis [38], none of these are similar in scale or impact to the COVID-19 pandemic. When dealing with the effect of COVID-19 on the private sector, crisis management schemes which may apply to large organizations may not fit small businesses. Small firms are more flexible in their ability to respond to changing

conditions, and are usually free of rigorous compliance mechanisms implemented in larger firms [39], [40]. In addition, small businesses need fewer employees in order to operate or function, especially when they offer only partial services [41]. Despite the vast body of literature on the matter, few studies researched factors that influence small businesses during times of acute crises, such as the COVID-19 pandemic. In terms of the sports industry's adaptation to crisis, trainers and schools often adjust their manpower based on demand, thus they are able to downsize quickly and efficiently.

Downsizing, in the case of the COVID-19 crisis, also means ceasing face-to-face interaction with trainees. However, in order to maintain business viability and resilience, a suitable customer retention policy, fit for a time of mandated social distancing, should be applied. Customer retention is a process conducted by a service-supplier aimed at maintaining and prolonging a customer's continued transactions with the firm [42]. In the sports industry, as in most other sectors, customer retention is one of the key components of business resilience, due to its positive influence on financial indicators such as cash flow, market share, and profitability [43], [44], which in times of crises are even more significant. As noted by [45], satisfied customers engage in repeated purchases, and in the context of the sports and fitness centers sector, this propensity may result in their recommending the center and its services to others and demonstrating positive repurchase behaviors [43].

In order to conduct an effective retention process, the firm needs to: (a) identify customers who are at risk of dropping out, (b) find out the reasons why each of these customers is at risk, and (c) decide which of these customers to target, when to do so, and how [42]. COVID-19 created a new challenge in terms of how to deal with customer retention, since all customers were at risk of dropping out during the lockdown and prolonged periods of strict regulations. One strategy adopted by MA instructors was to maintain contact with customers, assuming that this would contribute to a faster return to in-person practices once restrictions were lifted. The introduction of video conferencing as a new means of social contact, along with the rising popularity of different social media channels among all age groups [46], gave rise to new possibilities in maintaining contact with sports trainees. These technological tools, however, were not a panacea for all educational interactions, and were adopted with mixed feelings [47]–[49]. In light of the fact that some trainers (and trainees) were reluctant to adjust and adapt to on-line training, we present our first hypothesis:

(h1) MA instructors may be disaggregated into distinct groups according to their customer retention schemes during the crisis.

The nature of the MA training profession, and its traditions, raises some questions regarding the possible differences between MA instructors and sports coaches, and whether they may influence trainee retention. In modern Western countries, the MA instructor is sometimes perceived as a mystic figure with great abilities and influence over his disciples, much like a guru or a guide [50]. This phenomenon is reflected in various popular culture movies and television series such as *The Karate Kid* (1984), *Bloodsport* (1988), and *Teenage Mutant Ninja Turtles* (1990), in which Mr. Miyagi, Senzo Tanaka, and Splinter, respectively, represent the semi-mystic figure of the sensei. Indeed, one can easily find a few fundamental, distinct features of the MA sector that may influence, change, and enhance the relationships between instructors and trainees:

(1) **The focus:** In MA the emphasis is on the process of training itself. Its essence "is removed from the notion of winners and losers, trophies and prizes because the real opponent of a student is the self" [51, p. 45]. In contrast, in competitive sports the focus is on the result (i.e., winning). Thus, when looking at MA training as a lifelong process, a 10-week halt in in-person training is not as crucial as it might be for competitive athletes in merit-based sports.

(2) **The social role:** The MA instructor has an extensive pedagogical influence. It is part of his exercise routine to instill a sense of community and belonging, in contrast to the isolated, alienated atmosphere that pervades other places of physical training [50], [51]. In addition, MA trainees often see themselves as a family and in some cases as members of a moral community which resembles a religious brotherhood [52]. As such, the commitment of trainees to their MA instructor is deeper. Hence, they may be less influenced by a forced hiatus.

(3) **Moral education:** In addition to technical aspects of training, the MA instructor is expected to be able to perform the techniques he teaches and be responsible for the moral education of his students, including fostering good manners and virtues such as civility, humility, modesty, chivalry, loyalty, and respect [52], [53]. The sports coach, however, is not required to do any actual physical performance, and his moral education focuses on maintaining the athletic code of ethics [54]. Hence, MA instructors are more likely to maintain loyalty to their school, even during times of uncertainty and forced halts in their training routines.

(4) **Cultural context:** MA correspond with the cultures they originate from; thus, the MA instructor is required to have knowledge and understanding of the culture of the art he teaches. The sports coach, however, is not required to have such knowledge in order to excel in his field. Culture is associated with the norms, values, meanings, and patterned ways of behavior shared by a group of people [55]. As argued by [56], Asian cultures (which are the origins of many MA) "emphasize interdependence by valuing the self and individuality as part of social context, connections among persons, and attending to and harmoniously coordinating with others" [p. 564]. Thus, the strength of social responsibility based on the origin/culture of the MA, if manifested by the MA instructor, may also explain the commitment of MA students to their school community.

The literature surveyed establishes a weighty difference between the role and essence of the sports coach and the MA instructor. In particular, the character and personality of the MA instructor, in conjunction with the sociocultural atmosphere he creates in his school, may serve as primary factors which determine the school's durability during a relatively short crisis period. We, therefore, offer our second hypothesis for this work:

(h2) Customer retention in the MA sector is influenced by more complex and latent factors beyond common customer retention strategies (e.g., the frequency and means of communication with trainees), hence the coping scheme itself is insufficient in determining the rate of customer retention during such times.

3. Materials and Methods

3.1 The data

Our research employs data collected from 199 MA instructors in Israel, using an online survey. The data collection process was based on a snowball sample, where MA instructors were invited to participate in a survey, and encouraged to send the link to fellow instructors. The survey was distributed via email and responses were gathered between May 11, 2020 and July 8, 2020. The response rate was 47%, resulting in 95 fully filled surveys analyzed in this work. The remaining responses were imputed using maximum likelihood techniques, which helped reduce bias in the initial part of our statistical work. Initial analysis showed that the sample comprised of largely men, with 87% of respondents being males, and represented correctly the general tendency of men to engage in the MA training profession in Israel. Mean respondent age was 43 years of age, and mean and median income levels complied with those of the general population of Israel (*i.e.* – a monthly salary of 4860 USD).

Since the data collection process was conducted during the lockdown on the sports and leisure industry, respondents were asked questions regarding the coping schemes of their MA schools

before and during the lockdown. The questionnaire consisted of the following sections: *(a) Socioeconomic questionnaire* – This part measured standard attributes such as gender, age, income, and educational attainment. *(b) Attributes of the MA school* – This included the types of MA taught, the number and type of trainees (i.e., adults vs. children), marketing strategies, and the seniority of the school and trainers. *(c) The financial effect of COVID-19 on the MA school* – This section included questions regarding activity volume prior to the crisis and during the lockdown. *(d) Coping scheme*- Respondents were asked to rate the means and frequency of contact and interaction with trainees during the lockdown, and report whether such means included using Zoom (or similar) communication technologies in order to continue their training routine. On June 12, 2020 we distributed an additional survey among the same participants, which resulted in 43 fully filled questionnaires. In the second survey, respondents were asked to report the percent of trainees who had returned to the school. Descriptive statistics for variables used in this work are presented in table 1.

Table 1: Descriptive statistics

Variable	Type	Description	Mean	Standard Deviation
Years Training	Discrete	Number of years the respondent has actively trained	17.41	12.75
Years Operating	Discrete	Number of years the respondent has operated/worked in the MA center	12.43	10.76
Income Loss Ap2020	Discrete	Percent of income loss during April 2020 due to lockdown	0.572	0.369
Contact				
No Contact	Dummy	1= If the respondent did not contact trainees during the lockdown	3.1%	
Low Phone	Dummy	1= If the respondent kept sporadic phone contact during the lockdown	7.6%	
Low Text	Dummy	1= If the respondent kept sporadic text messaging contact during the lockdown	9.8%	
High Phone	Dummy	1= If the respondent kept frequent phone contact during the lockdown	5.4%	
High SMS	Dummy	1= If the respondent kept frequent text messaging contact during the lockdown	23.7%	
Social Media	Dummy	1= If the respondent encouraged trainees to share videos on social media	12.1%	
Low Zoom	Dummy	1= If the respondent conducted sporadic training sessions via Zoom	4.5%	
High Zoom	Dummy	1= If the respondent conducted regular training sessions via Zoom	23.7%	
In-person Sessions	Dummy	1= If the respondent conducted in-person training sessions for small groups	6.3%	
Lectures	Dummy	1= If the respondent gave lectures on MA via Zoom	6.3%	
Alternative Services	Dummy	1= If the respondent offered alternative services during the lockdown	5.8%	
Video Training	Dummy	1= If the respondent distributed pre-recorded training sessions	4.6%	
Performance Measures				
Cancelation Rate	Discrete	Share of cancelled subscriptions during lockdown	0.124	0.265
Pause Rate	Discrete	Share of paused subscriptions during lockdown	0.38	0.414
Return Rate	Discrete	Share of trainees who returned to the school after the lockdown was lifted	0.346	0.855

NOTE: For dummy variables, the percent of positive responses in reported.

3.2 Statistical tools used

Our main hypothesis focuses on differences stemming primarily from the frequency and means of communication between instructors and trainees. Since our original data consists of 11 different categories of means of communication, we employed a dimension reduction scheme aimed at creating clusters of groups, based on likelihood maximization algorithms [57]. Since poLCA uses expectation maximization and Newton-Raphson algorithms to maximize the log likelihood of the model, it may only locate a local maximum. In order to avoid erroneous classification, the latent class model was estimated multiple times in order to obtain the global maximum [58].

4. Results

4.1 Deciding on the optimal number of classes

As with many mixture models, several criteria must be taken into account when deciding on the optimal number of classes. Information criteria are perhaps the most common indices for comparing model performance; however, they require some modification and extra caution in our communication methods, based on the probabilistic attributes of the data. Since all categories are binary, latent class analysis (LCA) was used in order to achieve this goal. The classification process was performed using poLCA package in R. LCA classification uses the posterior probabilities of each observation to belong to each group, given a predetermined number of
case. The results for indices used in our analysis are presented in table 2.

As indicated by the AIC criterion, a three-class model is preferable. When examining the SBIC criterion, the values calculated in our analysis agree with this notion. However, it is worth mentioning that the use of a single BIC value is extremely misleading, since the bounds of the learning parameters of the LCA are sensitive to the prior distribution on the class probabilities. We therefore perform the analysis for an array of shape parameters in order to assure the desired asymptotic properties. Using the sBIC package in R, we change the penalty parameter in each class model, and compare results across parameters and classes [59]. As can be seen in figure 1, a latent class model with three classes obtains the minimal value of BIC (in absolute values).

Table 2: Information and fit criteria for the LCA scheme

No. of classes Criteria	1	2	3	4	5	6
AIC	949.64	925.26	918.94	922.93	934.51	942.53
SBIC	-488.86	-483.6	-482.65	-487.04	-491.77	-497.44
Log Likelihood	-463.82	-439.63	-424.47	-414.46	-408.25	-400.26
Entropy	NA	0.66	0.75	0.99	0.75	NA
$PV_{(a)}$		0.001	0.005	0.097	0.481	0.247

(a) Calculated Probability Value of Lo-Mendel-Rubin ad-hoc adjusted likelihood ratio test

Table 3: Results of ANCOVA tests for the latent class model

	Cancelation Rate		Pause Rate		Income Lost Ap2020		Return Rate	
	$F(2,76)$	η^2	$F(2,77)$	η^2	$F(2,89)$	η^2	$F(2,38)$	η^2
Years Training	2.042	0.026	0.523	0.007	0.554	0.006	1.669	0.042
Years Operating	0.927	0.012	0.029	0.0003	0.814	0.009	0.675	0.017
Class	0.901	0.023	1.838	0.04	0.337	0.008	1.919	0.092

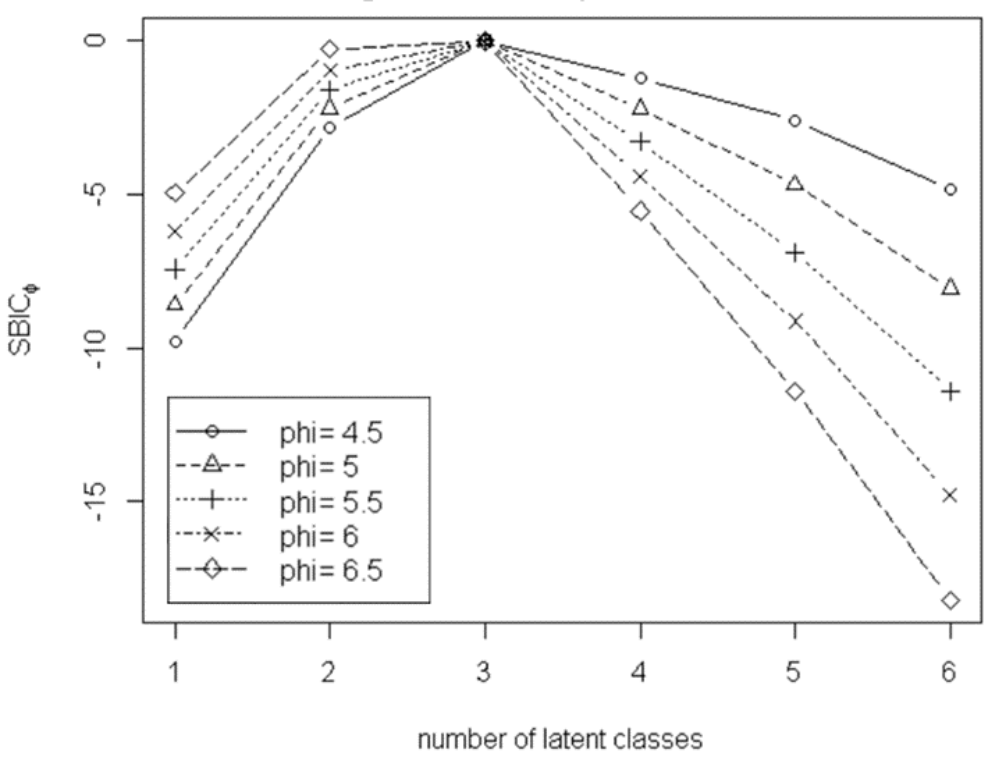

Figure 1- SBIC by Φ values

As for the log likelihood value, it is of little surprise that it increases with the number of classes, since it does not penalize less parsimonious models, hence it presents a better fit when the number of classes increases. When examining the R^2 values for the entropy of the models, it is clear that a model with four classes has the most superior explanatory power over the data, with $R^2 = 0.99$. This result, however, is not in line with all other measures examined in this work; therefore, it should be treated with caution. The R^2 value of the three-class model is lower but within the acceptable range for the social sciences [60], [61]. It is also important to remember that the entropy R^2 value is influenced by the sample size; therefore, it may be downward biased in this case and may in fact represent a much better fit than that indicated in our calculations. In addition, when examining the PV of the likelihood ratio test, it is clear that the model fit improves when the dimension reduction scheme does not exceed a three-class model. We therefore continue our analysis using a three-class model, as described hereafter.

4.2 Characterizing the latent class scheme

We now describe and define the classes produced by our dimension reduction scheme.

Class 1 constitutes 52.4% of the sample, and is characterized by low participation in all contact methods. While some trainers participated in phone, text, and Zoom contact, the vast majority of them did not engage in any contact whatsoever. We therefore call this the **'Low Contact Class.'**

Class 2 constitutes 6.1% of the sample and is characterized by trainers offering various types of contact, placing an emphasis on conducting in-person sessions in small groups during the lockdown. It is worth noting that while government regulations forbade such interactions, a few were able to conduct them illegally under different pretenses. We call this group the '**Maverick Class**' (or lawbreakers).

Class 3 constitutes the remaining 41.5% of the sample, and includes trainers who mostly contacted their trainees using technology. These trainers mostly engaged in texting, Zoom sessions, and social media. Hence, the appropriate name for this class is the '**High Contact Class.**' Graphical representations of the distribution of communication means among the three classes are presented in figures 2 and 3.

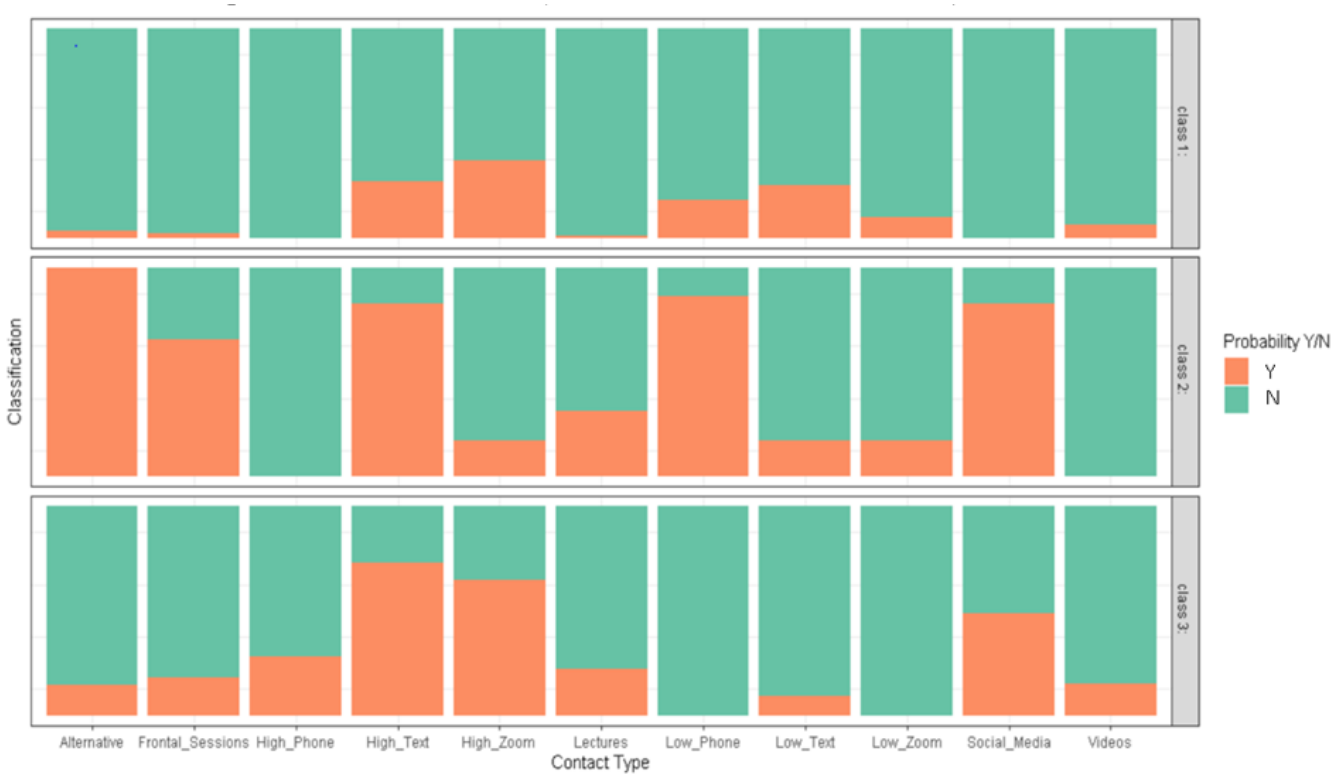

Figure 2- Percent of Participation in Interaction Methods by Class

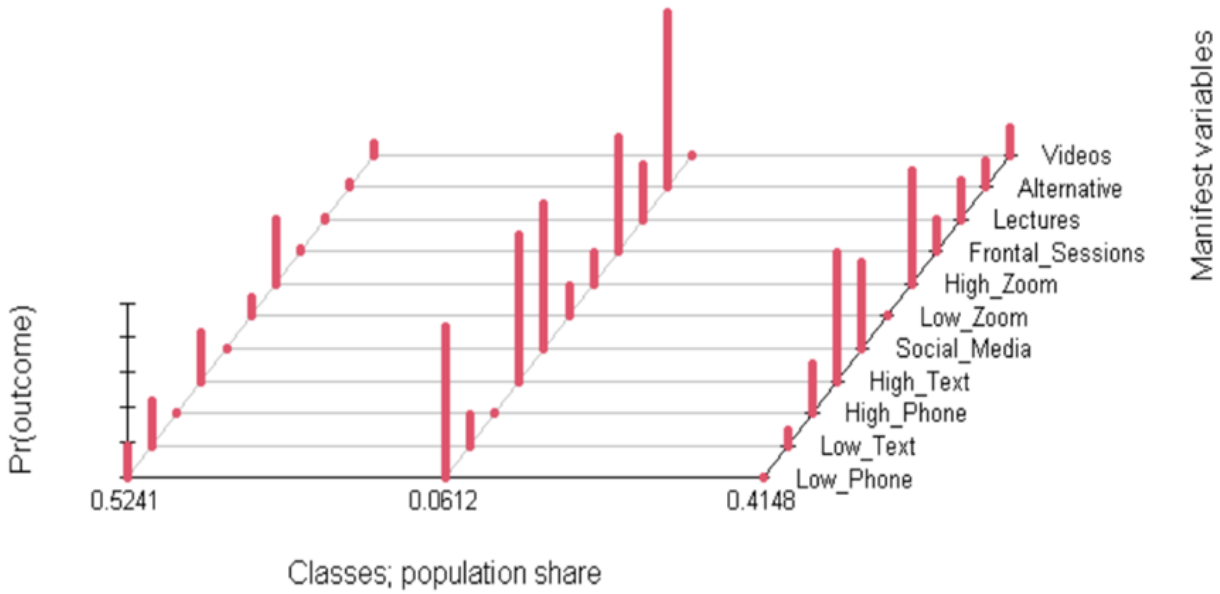

Figure 3- Posterior probability of Participation in Interaction Methods by Class

4.3 Testing for differences between classes of trainers

Using the three-class model we built, we now test for differences in their effect on the clubs' performance and customer retention rates during and after the crisis. We use the cancelation and pause rates, income lost in April 2020, and the return rate as proxies of the clubs' ability to retain trainees and recover from the lockdown. Since we assume that well-established clubs with highly experienced trainers may be better able to manage losses during the crisis, we control for these factors using a covariate analysis of variance (ANCOVA). Results for the test are presented in table 3.

The ANCOVA test for differences between classes produced no significant results for all performance indices measured in this work. Therefore,

cancelation, pause, and return rate and loss of income are statistically the same, on average, across all three classes of trainers, despite differences in their means and frequency of contact and interaction with trainees. The results also indicate that the choice of contact is independent of the experience the trainer has in the field and the seniority of the club itself.

5. Discussion

Our results validate our two main hypotheses, contributing to the understanding of customer retention in the sports industry in two ways. First, it offers an empirically based typology of retention attitudes during the COVID-19 crisis (low contact, high contact, and maverick). Second, it shows that whichever coping scheme is chosen, it does not alleviate the damage caused to MA schools during the crisis, nor does it assist them in retaining trainees when the lockdown is lifted. The first part of our empirical analysis highlighted the fact that MA instructors took different approaches when faced with strict regulations preventing them from conducting any in-person training routines. Some chose a passive approach and mostly refrained from communicating with their trainees during this period. Others chose to maintain frequent communication with their trainees using various methods available these days (e.g., Facebook, WhatsApp groups, and Zoom). A handful chose to continue their training despite strict COVID-19 regulations.

While one would expect these approaches to create differences in the schools' financial performance both during and after the lockdown, the latter part of our analysis indicates that none of the schools performed better than the others. All measures of performance studied in this work were, on average, the same for all typologies constructed in the former part of this work. Moreover, the results clearly indicate that trainers who took no action during the lockdown did not accumulate greater losses than trainers who participated in high levels of communication with their students. It seems that their ambivalence had no statistically significant effect.

These results were in line with the literature surveyed on the uniqueness of the connection between the Sensei and his students. While the empirical work in our study shows that indeed the coping scheme has no effect on the retention scheme, the link between the atmosphere created by the MA instructors and the reaction of their trainees is well depicted in the semi-structured interviews we conducted. Interestingly, interviewees represented very different approaches to maintaining contact during the lockdown, and may be easily attributed to the classes defined using the statistical model. Some kept no contact with trainees and used the forced hiatus to renovate their clubs and adapt their facilities to "new normal" standards (e.g., disposable covers, partitions, and hand sanitizers). Others maintained existing social media accounts and personalized their relationship with trainees using these channels. Some tried new interactive and virtual training programs using YouTube, Zoom, and Facebook. While all interviewees stated that online activities cannot replace in-person lessons in the long term, they highlighted the personal benefits they experienced due to being busy during the lockdown and restriction periods, producing these activities, and supporting their students and community. This notion was supported by John, who owns a school in a small, upper-middle class suburban community, but also trains victims of abuse:

"*Trainees have a WhatsApp group which was very active before the COVID crisis. While I am a part of this group, I do not run it, and the interaction is more spontaneous. I initiated some discussions during the lockdown, but most of it came from the community, which is highly engaged with one another. I believe that the contact kept during the lockdown stems from the trainees themselves, rather than any proactive action I may or may not have taken during this time. This is, of course, not the case for the young women I train in the city, for which the training itself is part of a therapeutic process, and no virtual interaction can replace the training sessions themselves.*"

The willingness of trainees to keep the community united during the lockdown was even clearer in the case of Sam, who owns a club training generations of trainees for more than 30 years in a remote city. Sam was suspected as COVID-19 positive shortly after reopening the doors of his school and had to enter a 14-day quarantine:

"*We were open for such a brief time, and already I had to bring training to a halt again. Trainees were reluctant, to say the least, and quickly offered me the following solution: The school is to remain open, with older and more experienced trainees serving as trainers, while parents to the younger age group administrate the technical aspects of the school, such as secretariat tasks, registration, and cleaning. The community truly proved its ability to manage the situation, and keep the school open during these times of uncertainty and instability. As a former trainee of the club myself, I believe that values learned in our school educate people towards responsibility in all walks of life, and, combined with the inherent willingness of people to help each other in our town, alleviated the damage caused by the COVID crisis.*"

Another example of the strength of the community was given by Bob, who runs one of the largest MA clubs in Israel, with 12 instructors who conduct classes in his school. According to Bob, instructors who succeeded in creating a community atmosphere in their classes prior to the crisis experienced only a moderate dropout rate in comparison to those who focused primarily on the professional aspect of training. This point was further highlighted in the case of George, one of Israel's top martial artists. George kept very low contact with his students during the lockdown period, yet enjoyed a 99% retention rate after it was lifted. George insisted that in the MA training business, retention has nothing to do with coping schemes during times of crisis, and depends on the relationship the instructor has with his trainees:

"*In my opinion the character of the sensei* [teacher in Japanese] *and the atmosphere he creates in his dojo* [school] *are the main factors for students' satisfaction. Therefore, these are the sole retention techniques relevant in our field of business.*"

References

[1] Israeli Parliament, "Data on the New Corona Virus," 2020.

[2] State of Israel, *Emergency Regulations 2020: Activity Restriction*. Jerusalem, 2020, pp. 1–5.

[3] Ministry of Culture and Sports, "Ministry of Health Guidelines for training Sports Instructors and Coaches in Light of the Corona Virus Outbreak," 2020.

[4] Ministry of Culture and Sports, "Information Update May 27, 2020." State of Israel, 2020.

[5] Ministry of Culture and Sports, "Training routine for professional athletes under COVID-19 regulations." State of Israel, 2020.

[6] V. Ivanov and J. Tzankova, "Online Distance Education on Wordpress Web Based Platform As an Innovation in the Learning Process of Sports Students From Medical University - Sofia During the Pandemic of Covid-19," *Pedagogika-Pedagogy*, vol. 92, no. 7, S, pp. 143–151, 2020.

[7] B. Bennett, "The Video Coach—Reflections on the Use of ICT in High-Performance Sport," *Int. Sport Coach. J.*, vol. 7, no. 2, pp. 220–228, 2020.

[8] P. Escamilla-fajardo, M. Alguacil, and F. Garc, "Business Model Adaptation in Spanish Sports Clubs According to the Perceived Context : Impact on the Social Cause Performance," *Sustainability*, vol. 13, no. 6, pp. 1–11, 2021.

[9] J. Clements, "A Short Introduction to Historical European Martial Arts," *Meibukan Mag.*, no. 1, pp. 2–4, 2006.

[10] G. Mor, "History and singularity of krav-maga," *Int. J. Hist. Sport*, vol. 35, no. 15–16, pp. 1622–1636, 2018.

[11] J. F. Loudcher, "A history of savate, chausson and 'French boxing' (1828-1978): A short story for a long past," *Sport Hist.*, vol. 27, no. 3, pp. 459–486, 2007.

[12] M. DeMarco, *Sambo and Systema Russia's Prominent Martial Arts*. Santa Fe: Via Media, 2016.

[13] T. Shohat *et al.*, "Exercise Habits Among Israelis Over 21 Survey," 2012.

[14] R. Tesler, Y. Harel-Fish, and N. Shteinmetz, "Health Behaviors in School Age Children- Cross National Study," 2019.

[15] Israel Judo Association, "History of Judo in Israel." [Online]. Available: http://www.ija.org.il/html5/?_id=11043&did=11009&G=10552&SM=11043. [Accessed: 29-May-2021].

[16] A. Laine and H. Vehmas, *The Private Sport Sector in Europe*, vol. 14. 2017.

[17] A. Martin, A. Geurin-Eagleman, and P. Pancoska, "A case study of regional sport organization

development in triathlon," *J. Appl. Sport Manag.*, vol. 6, no. 1, pp. 72–94, 2014.

[18] S. Fairley and B. C. Green, "Volunteering abroad: Motives for travel to volunteer at the Athens Olympic Games," *J. Sport Manag.*, vol. 21, no. 1, pp. 41–57, 2007.

[19] E. Belli, O. Mizrak, and Y. Saracoglu, "Crisis Management in Sports Organizations: The Case of Covid-19," *J. Phys. Educ. Sport. Manag.*, vol. 7, no. 1, pp. 55–65, 2020.

[20] T. Horky, "No sports, no spectators–no media, no money? The importance of spectators and broadcasting for professional sports during COVID-19," *Soccer Soc.*, vol. 00, no. 00, pp. 1–7, 2020.

[21] D. Parnell, P. Widdop, A. Bond, and R. Wilson, "COVID-19, networks and sport," *Manag. Sport Leis.*, vol. 0, no. 0, pp. 1–7, 2020.

[22] H. Chtourou *et al.*, "Staying physically active during the quarantine and self-isolation period for controlling and mitigating the covid-19 pandemic: A systematic overview of the literature," *Front. Psychol.*, vol. 11, pp. 1–16, 2020.

[23] B. Constandt, E. Thibaut, V. De Bosscher, J. Scheerder, M. Ricour, and A. Willem, "Exercising in times of lockdown: An analysis of the impact of COVID-19 on levels and patterns of exercise among adults in Belgium," *Int. J. Environ. Res. Public Health*, vol. 17, no. 11, pp. 1–10, 2020.

[24] A. Hammami, B. Harrabi, M. Mohr, and P. Krustrup, "Physical activity and coronavirus disease 2019 (COVID-19): specific recommendations for home-based physical training," *Manag. Sport Leis.*, vol. 0, no. 0, pp. 1–6, 2020.

[25] M. W. Seeger, T. L. Sellnow, and R. R. Ulmer, "Communication, Organization, and Crisis," *Ann. Int. Commun. Assoc.*, vol. 21, no. 1, pp. 231–276, 1998.

[26] H. Al-dahash, M. Thayaparan, and U. Kulatunga, "Understanding the Terminologies : Disaster ," *Proc. 32nd Annu. ARCOM Conf.*, vol. 2, no. September, pp. 1239–1248, 2016.

[27] D. Alexander, "Towards the development of a standard in emergency planning," *Disaster Prev. Manag. An Int. J.*, vol. 14, no. 2, pp. 158–175, 2005.

[28] A. McConnell, "Success? Failure? Something in-between? A framework for evaluating crisis management," *Policy Soc.*, vol. 30, no. 2, pp. 63–76, 2011.

[29] W. Xie, A. Rose, S. Li, J. He, N. Li, and T. Ali, "Dynamic Economic Resilience and Economic Recovery from Disasters: A Quantitative Assessment," *Risk Anal.*, vol. 38, no. 6, pp. 1306–1318, 2018.

[30] S. Gundel, "Towards a new typology of crises," *J. contingencies Cris. Manag.*, vol. 13, no. 3, pp. 106–115, 2005.

[31] C. Roux-Dufort, "Is crisis management (only) a management of exceptions?," *J. Contingencies Cris. Manag.*, vol. 15, no. 2, pp. 105–114, 2007.

[32] S. Sarkar and O. Osiyevskyy, "Organizational change and rigidity during crisis: A review of the paradox," *Eur. Manag. J.*, vol. 36, no. 1, pp. 47–58, 2018.

[33] C. Borio, "The Covid-19 economic crisis: dangerously unique," *Bus. Econ.*, vol. 55, no. 4, pp. 181–190, 2020.

[34] A. O. Oparanma and I. Wechie, "Crisis Managemnet Processes To Ensure Effective and Continuous Performance," *IOSR J. Bus. Manag.*, vol. 16, no. 8, pp. 01–04, 2014.

[35] D. Prochazkova, J. Prochazka, A. Santos, and L. Carvalho, "Competent crisis plan for crisis management of municipalities and complex facilities," *Saf. Reliab. Complex Eng. Syst. - Proc. 25th Eur. Saf. Reliab. Conf. ESREL 2015*, pp. 245–253, 2015.

[36] J. Wang and B. W. Ritchie, "Understanding accommodation managers' crisis planning intention: An application of the theory of planned behaviour," *Tour. Manag.*, vol. 33, no. 5, pp. 1057–1067, 2012.

[37] A. Vowinckel, "Sports, Terrorism and the Media: The Munich Hostage Crises of 1972," *Esporte e Soc.*, vol. 2, no. 6, pp. 1–16, 2007.

[38] Douglas Wilbur and Dani Myers , "The NFL and Its Concussion Crisis: Adapting the Contingency Theory to Examine Shifts in Publics' Stances," *J. US-China Public Adm.*, vol. 13, no. 3, pp. 181–188, 2016.

[39] P. Hong, C. Huang, and B. Li, "Crisis management for SMEs: Insights from a multiple-case study," *Int. J. Bus. Excell.*, vol. 5, no. 5, pp. 535–553, 2012.

[40] C. Wickert, A. G. Scherer, and L. J. Spence, "Walking and Talking Corporate Social Responsibility: Implications of Firm Size and Organizational Cost," *J. Manag. Stud.*, vol. 53, no. 7, pp. 1169–1196, 2016.

[41] R. Doern, "Knocked down but not out and fighting to go the distance: Small business responses to an unfolding crisis in the initial impact period," *J. Bus. Ventur. Insights*, vol. 15, no. August 2020, p. e00221, 2021.

[42] E. Ascarza *et al.*, "In Pursuit of Enhanced Customer Retention Management," *SSRN Electron. J.*, 2017.

[43] S. Avourdiadou and N. D. Theodorakis, "The development of loyalty among novice and experienced customers of sport and fitness centres," *Sport Manag. Rev.*, vol. 17, no. 4, pp.

419–431, 2014.
[44] J. García-Fernández, P. Gálvez-Ruíz, J. Fernández-Gavira, L. Vélez-Colón, B. Pitts, and A. Bernal-García, “The effects of service convenience and perceived quality on perceived value, satisfaction and loyalty in low-cost fitness centers,” *Sport Manag. Rev.*, vol. 21, no. 3, pp. 250–262, 2018.
[45] T. Kotler, Philip and G. Armstrong, *Principles of Marketing, Global Edtion.* 2020.
[46] K. Filo, D. Lock, and A. Karg, “Sport and social media research: A review,” *Sport Manag. Rev.*, vol. 18, no. 2, pp. 166–181, 2015.
[47] C. A. Blauwet, D. Robinson, A. Riley, K. MacEwan, M. Patstone, and M. E. Dubon, “Developing a Virtual Adaptive Sports Program in Response to the COVID-19 Pandemic,” *PM R*, vol. 13, no. 2, pp. 211–216, 2021.
[48] P. Lowenthal, J. Borup, R. West, and L. Archambault, “Thinking beyond Zoom: Using asynchronous video to maintain connection and engagement during the COVID-19 pandemic,” *J. Technol. Teach. Educ.*, vol. 28, no. 2, pp. 383–391, 2020.
[49] D. Serhan, “Transitioning from Face-to-Face to Remote Learning: Students’ Attitudes and Perceptions of using Zoom during COVID-19 Pandemic,” *Int. J. Technol. Educ. Sci.*, vol. 4, no. 4, pp. 335–342, 2020.
[50] W. J. Cynarski, “Coach or sensei? His group relations in the context of tradition,” *Phys. Cult. Sport. Stud. Res.*, vol. 88, no. 1, pp. 41–48, 2020.
[51] S. Mor-Stabilini, “The Essence of Karate-do: Sankido Example. Ido Movement for Culture,” *J. Martial Arts Anthropol.*, vol. 13, no. 4, pp. 45–48, 2013.
[52] H. Cook, “The Sensei,” *Dragon Times*, 2020.
[53] I. Martinkova, J. Parry, and M. Vagner, “The contribution of martial arts to moral development,” *Ido Mov. Cult.*, vol. 19, no. 1, pp. 1–8, 2019.
[54] IOC, “International Olympic Committee’s Code of Ethics 2020,” Chateau de Vidy, 2020.
[55] B. Aliaksandr, E. Blanzieri, P. Giorgini, and G. Fausto, “Aliaksandr Birukou , Enrico Blanzieri , Paolo Giorgini , and Fausto Giunchiglia June 2009 Technical Report # DISI-09-021,” *Intelligence*, no. June, pp. 3–17, 2009.
[56] C. R. Cooper and J. Denner, “Theories linking culture and psychology: Universal and Community-Specific Processes,” *Annu. Rev. Psychol.*, vol. 49, pp. 559–584, 1998.
[57] A. L. McCutcheon, *Latent Class Analysis*, 1st ed. SAGE Publications, 1987.
[58] D. A. Linzer and J. B. Lewis, “poLCA: An R Package for Polytomous Variable Latent Class Analysis,” *J. Stat. Softw.*, vol. 42, no. 10, pp. 1–29, 2011.
[59] A. Luca and M. L. Weihs, “Computing the Singular BIC for Multiple Models.” 2016.
[60] S. Clark and B. O. Muthén, “Relating Latent Class Analysis Results to Variables not Included in the Analysis,” *StatisticalInnovations.com*, pp. 1–55, 2009.
[61] K. L. Nylund, T. Asparouhov, and B. O. Muthén, “Erratum: Deciding on the number of classes in latent class analysis and growth mixture modeling: A Monte Carlo simulation study (Structural Equation Modeling (2007) 14:4 (535)),” *Struct. Equ. Model.*, vol. 15, no. 1, p. 182, 2008.