

關係行銷對中國運動休閒活動之 慣性行為分析——數據分析法

蔡明志* 陳美蓮** 洪碩宏***

(收件日期：111年03月02日；接受日期：111年08月22日)

【摘要】本研究結合消費行動慣性與價值理論，利用交易資料RFM (recency-frequency-monetary)結構與一般化線性交互模式，以台商在中國浙江地區建設經營的某大型運動遊憩館1,126位會員之實際活動行為數據為例，分析區隔顧客關係策略對維持運動休閒活動的影響。研究發現消費者受關係策略所激發的行動慣性與金錢價值，可以有效的預測其參與休閒活動行為，其中社會型關係較財務型關係更具有維持顧客活動的效能，但是過度的社會關係卻會反而降低顧客價值與資產，此結論在過去休閒產業較少被關注與驗證。研究著重朝向數據分析潮流的學術貢獻，以結合多項行為理論發展分析模式，協助產業簡化並有效預測與區隔顧客行為的作業，深化關係資源運用，在實證上提供台商洞燭管理中國運動遊憩市場的實例。

【關鍵字】關係行銷、行動慣性、再購行為、顧客數據分析

* 國立中興大學行銷學系，通訊作者
Department of Marketing, National Chung Hsing University
Corresponding Author. Email: mctsai@nchu.edu.tw

** 國立台灣師範大學 工業教育系
Department of Industrial Education, National Taiwan Normal University

*** 波力環球企業股份有限公司
Bonny Sports Conglomerate Ltd.

Using Relationship Marketing to Examine the Inertia Behavior in Chinese Sport/Leisure Consumption – A Data Analytics Approach

Ming-Chih Tsai^{*} Mei-Lien Chen^{**} Shuo-Hung Hung^{***}

(Date Received: March 02, 2022; Date Accepted: August 22, 2022)

【Abstract】 This study investigated the customer relationship portfolio of a sport/leisure facility, integrating action inertia, monetary value, and a transactional RFM (recency-frequency-monetary) structure. A generalized linear interaction model was applied to construct prediction models of customer retention and value segmentation. The sample data comprised 1,126 members of a Taiwanese-owned sport/leisure facility in eastern China. The results showed that action inertia and monetary value are effective predictors of customer retention. In terms of two types of relational bonds, social bonds are more effective than economic bonds in retaining customers. However, relationships can also devalue the service and create negative social capital that offsets these effects. The study theoretically integrated theories of customer portfolio, action inertia, and relationship marketing with database analysis in the sport/leisure facility context. The specified model enhanced the interpretation and prediction of customer relationship value by segment to advance the trend of customer relationship analytics with empirical insight into Taiwanese sport/leisure investment in China.

【Keywords】 Relationship marketing, Action inertia, Customer retention, Customer analytics

I、Introduction

Sports facilities, such as swimming pools, gyms, and badminton courts, are an important part of life for many people, providing numerous social and health benefits. The sport/leisure facility industry was worth US\$1.2 billion in the US alone in 2021 (IBIS world, 2022). However, with a rapidly aging society, the number of active adults aged 20 to 64 is steadily shrinking. As a result, sport/leisure facilities and their suppliers are facing increasing challenges to survival. Despite the economic and social value of the sports facilities industry, research that investigates managerial solutions to these challenges is no common in the literature.

Customers are intangible assets that are integral to sports facilities. Sport relationship marketing (SRM) has long advocated safeguarding customers as assets (Bee & Kahle, 2006). In the relationship marketing literature, the customer portfolio is conceptualized as the diverse set of relationships engaged by the supplier with its customers (Tsybina & Rebiiazina, 2013). Business finds value in the customer portfolio through the effective allocation of relationship development resources. The amount of value provide by a customer portfolio perspective depends on the marketer's ability to accurately measure customer value within relationships (Schwieterman et al., 2017). Kotler and Keller (2005) noted customer loyalty serves as an important segmentation basis to support customer portfolio analysis and relationship management. Customer retention is as a measure of customer loyalty and is associated with relationship value in portfolio analyses. Nonetheless, although SRM has received considerable attention, there has been little application of the customer portfolio concept in sports marketing.

Relationship value is formed in the interactions between suppliers and customers (Sanchez, 2005). Customer attendance at sport/leisure facilities is often frequent and regular. The magnitude, dynamics, and consistency of consumption may develop customer habitual inertias that alter the effects of customer satisfaction and competitor attractiveness, according to push-pull-mooring (PPM) theory (Tsai et al., 2021b). That is, inertia may strengthen customers' intentions to stay when they are satisfied with their current suppliers and reduce intentions to leave when attracted by competitors. Inertia is an inherent character of sport/leisure consumption, but to our best knowledge, it has to be yet empirically testified in this context.

Research indicates that relationship marketing can moderate and transform customer habitual inertia into action inertia that is the tendency for attitudinal propensity to stay customer with current supplier (Leppäniemi et al., 2017). In effect, SRM maintains customers

in two ways. One way is through developing relational bonds, which act as idiosyncratic assets that raise switching barriers and prevent customer defection (Tsai et al., 2021a). The other way is through increasing relationship satisfaction and emotional bonds with customers to increase commitment and stimulate action inertia. However, relationship marketing does not always generate positive results, and its value depends on whether customers desire a closer relationship. Since the emergence of relationship marketing in the 1980s, research has continuously highlighted and examined the benefits of relationship management (e.g. Villena et al., 2011; Tsai et al., 2021a). The negative implications were rarely mentioned until recently. Relationships can become destructive when customers feel the service is exploitative, disruptive, or if it devalues or deprives them of personal autonomy. However, how the underlying dimensions of SRM might positively and negatively influence consumption remain unclear.

In today's data driven business environment, analysis of retail transaction data has become a valuable capability. The recency-frequency-monetary (RFM) model of consumption is often utilized to estimate customer value and segment B2B and B2C markets (e.g. Dogan et al., 2018; Monalisa et al., 2019; Safari et al., 2016). However, most RFM studies are data mining and algorithm focused. They lack theoretical marketing foundations that explain customer behavior (Mortensen, 2012). Studies that analyze transaction data but lack theoretical grounding are difficult to interpret from a customer behavior perspective, which in turn reduces their predictive ability.

In response, the current study draws from customer portfolio, action inertia, and relationship marketing theories to investigate the relationship portfolios of sport/leisure facilities using the transactional data structure of the RFM model. Methodologically, we extend the concept of RFM and create inertia indicators that allow classification of inertia by levels. A generalized linear interaction model (GLIM) is applied to construct a number of prediction models of customer retention and value segmentation. The GLIM tool helps determine value segmentation with statistics that merit the best linear unbiased estimates (BLUE) (Tsai et al., 2011). Empirical data was obtained from a Taiwanese-owned facility situated in eastern China to signify the Taiwanese FDI in Chinese sport/leisure industry. The dataset of 1,126 members over the period 2017-2020 is used for analysis.

Sports organizations focus on long-term customer retention, incorporating a variety of database-management techniques to maintain and enhance customer relationships (Bee & Kahle, 2006). Sport data marketing requires broader perspectives on customer learning and customer insights. In this regard, the current study bridges an existing research gap by incorporating marketing theories with the RFM model to enhance interpretation and

prediction of relationship value. Furthermore, while customer portfolio research has primarily relied on conceptual and case study based methodologies, our quantitative GLIM model generates robust results that confirm the benefits and drawbacks of SRM. Furthermore, the calibrated segment prediction models serve as an impetus to advance the use of customer relationship analytics in SRM.

II、Literature Review

(I) Relationship marketing and customer portfolio

Modern marketing initially focused on single transactions (Hargaden & Sills, 2014). This transaction oriented marketing literature viewed all transactions through the lens of the marketing mix (i.e., the 4Ps). Critics have argued the 4P perspective is overly simplistic when considering customer behavior (Hultman & Shaw, 2003). Furthermore, focusing on single transactions leads to inefficiencies because marketers repeatedly search for new customers and negotiate various contracts and activities, leading to increased transaction costs (Sheth & Parvatiyar, 1995). Moreover, transaction marketing ignores the value of social interactions and does not reflect the reality of service industries where customers are actively involved in cocreating value. Customer relationships exist on a continuum from transactional to relational. In the 1980s, the term *relationship marketing* was defined by Berry (1983) as attracting, maintaining, and enhancing customers (Tsai et al., 2021a). Subsequently, relationship marketing has become a popular research issue for marketing scholars.

Relationship marketing creates shared value in a cooperative atmosphere that incubates mutual trust and commitment (Liu et al., 2009; Morgan & Hunt, 1994). Berry (1983) proposed relational bonds come in different forms, such as economic and social (Rust et al., 2004; Wulf et al., 2001). Pricing techniques create economic bonds by generating financial benefits for customers. Social bonds generate social capital by increasing mutual recognition, feelings of familiarity, and friendship (Dagger & David, 2012). According to transaction cost economics (TCE), asset specificity derived from transaction processes serve as switching barriers that prevent customers from defecting to alternatives (Sirdeshmukh et al., 2002). Furthermore, idiosyncratic assets gained through relationship marketing can strengthen customer relationship commitment.

However, there is a potential dark side that comes with relationships. According to resource dependence theory (Ebers & Semrau, 2015; Kumar et al., 2003), close or overly

interdependent relationships may incur higher uncertainty and risk, leading to negative customer reactions. For example, economic bonds created through discount pricing may devalue the service in the customer's mind, which can decrease customer satisfaction and increase intentions to defect. Also, excessive social bonds may impair or even lead to the termination of relationships if customers feel that they are losing their identity and autonomy, or otherwise feel molested and exploited. Although SRM has a long history, the negative aspects of relationships have rarely been examined.

Portfolio analysis can use relationship marketing to identify valuable customers with which to initiate and further develop relationships (Tsybina & Rebiyazina, 2013). In other words, relationship activities provided to customers should be based on a pre-conditional portfolio analysis to ensure relationship resources generate maximal benefits. Relationship value varies with customer. A portfolio analysis that segments customers by value may provide the supplier with diverse insights including the most effective allocation of resources to build relationships. Even though using a portfolio approach to manage business relationships has long been attractive to both practitioners and academics (Ritter & Andersen, 2014), there are few portfolio applications in the existent sports marketing literature.

The complexity of customer portfolios lies largely with the need to understand customer value. The customer value perspective considers future value (Mortensen, 2012). In this regard, repeat customers serve as a measure of the relationship's value. Customer retention has been interpreted as customer loyalty in the literature. Kotler and Keller (2005) note that customer loyalty is an important segmentation basis. Although customer relationship and customer loyalty are interconnected, integration of these two concepts is still not well recognized in the extant literature (Kwiatkiewicz et al., 2020). In this regard, a relationship portfolio that segments customers by loyalty may effectively and efficiently support relationship marketing.

(II) Migrating theory and customer inertia

Customer retention is a common measure of customer loyalty in the literature. Marketing scholars have identified two forms of customer loyalty: attitudinal and behavioral. Attitudinal loyalty signifies true customer fondness and satisfaction with the service/product, which goes beyond the value of the purchase (Pansari & Kumar, 2017). Consumer loyalty is measured in customer self-reports and sophisticated survey tools. Behavioral-based loyalty is a revealed preference, measured by observing actual behavior or using sales records in data collection systems (Malthouse & Mulhern, 2008). In essence, a repeat customer with

behavioral loyalty does not necessarily have attitudinal loyalty or represent a satisfied customer. Likewise, a satisfied customer does not necessarily infer high levels of loyalty (e.g. Merkert & Pearson, 2015; Naumann et al., 2010). To clarify this situation, we introduce the migrating theory of PPM.

The PPM theory has been used in marketing research to account for customer switching behaviors (Cheng et al., 2019; Tsai et al., 2021b; Wang et al., 2020). The push factor captures customer dissatisfaction with his/her current supplier and thus intends to defect. The pull factor captures the attractiveness of competitors' products, which stimulates customer switching behavior. Mooring captures factors that anchor the customer to a given place/company and includes demographics, inertia, and switching barriers (Susanty et al., 2020; Wang et al., 2019). The PPM model can explain the various contexts that other theories have difficulty explaining. For example, it can be used to explain why unsatisfied customers remain with current suppliers (they have high levels of mooring). Conversely, it can reveal why satisfied customers may switch (they have low levels of mooring and/or there is high level of competitor attractiveness).

Compared with customer satisfaction and competitor attractiveness, mooring has seldom been applied in the marketing literature. Customer inertia is a core element of customer mooring and moderates the effects of switching barriers. That is, a customer with high levels of inertia is less affected push and pull forces. Inertia indicates customers' attitudinal propensity to repurchase (or readiness to act) from the current service provider, based on situational cues in non-unconscious processes (Huang & Yu, 1999; Zeelenberg & Pieters, 2004). It is unemotional and convenience driven with habitual attachment. Inert customers tend to avoid decision-making, learning new service practices, and making price comparisons (Khajouei & Nayebzadeh, 2013). A growing amount of evidence indicates customer inertia reduces the influence of customer satisfaction and competitor attractiveness on repurchase intentions. This challenges the marketing tenet that increasing satisfaction increases customer retention. Additional investments in increasing customer satisfaction may be ineffectual (Henderso et al., 2021).

By definitions, there are two different types of customer inertia: habitual inertia and action inertia. Sport inertia can be habitual inertia and action inertia, depending on where the inertias derive. In between, habitual inertia is seen as passive mooring effect (in PPM) for customer retention, while action inertia, although evolving from habitual inertia, is active through relationship involvements. Habitual inertia refers to customer maintenance of the status quo in the short-term and is the result of customer passiveness or inaction (Gray et al., 2017). Customer sport inertia is likely derived from intentions to maintain consistent

sport behaviors and/or minimizing regret for not working out (Henderso et al., 2021). In practices, sport/leisure facilities often rely on frequent and regular users as the consumption pattern easily develops an inertia mindset that aims for status quo maintenance and does not incorporate a sense of obligation. The status quo maintenance raises customer mooring concept to remain with current supplier. However, in the absence of customer commitment, the repeat purchase behaviors are weak and unstable, and customers are easily attracted by competitors (Moe & Yang, 2009). In other words, reliance on habitual inertia for customer retention is risky. In particular, new sport/leisure entrants tend to invest heavily in marketing methods to raise the defection rate amongst competitors' customers who choose their current provider based merely on his/her sport habit (Henderso et al., 2021).

Different from habitual inertia, customers that endure action inertia have intentions to maintain a high level of customer loyalty (Leppäniemi et al., 2017). The high levels of inertia reflect a stable relationship that is built on trust and commitment. Relationship marketing emphasizes creating mutually consistent goals and a cooperative atmosphere between the supplier and customers (Liu et al. 2009), and the focus of it is on incubating trust and commitment with customers in order to maximize the profits over a long-term period (Tsai et al., 2021a). While relationship initiatives develop and grow stronger, customers may become more dependent on the sport/leisure facilities (Rust et al., 2004; Wulf et al., 2001). That is, while habitual inertia attachment is unemotional, indifferent, and convenience driven, effective relationship involvement of sport/leisure facilities may moderate customer habitual inertia and transform it into action inertia that is expected to involve a strong attitude of loyalty (Cheng et al., 2010).

Nonetheless, the moderation is not necessarily meant to be positive. A company that focuses on building customer relationships is not guaranteed positive outcomes. Excessive relationship involvements may annoy and disrupt customers, and the destructive relationship not only incapacitates action inertia, but also reduce customer intentions to stay. While sport/leisure facilities broadly utilize SRM to maintain customers, the dark side of relationship that may unintentionally weaken customer action inertia and worsen customer participation deserve more investigations and empirically testified.

III 、The prediction model

As aforementioned, customer portfolio analysis supports relationship management for effective resource allocations. Customer portfolio segments customers as a portfolio

of exchange relationships that create value over a period of time. Essentially, the portfolio analysis is commensurate with value segmentation in which customer loyalty is positioned as a long-term value in segmentation (Kotler & Keller, 2005). Accordingly, we identified customer retention (indicated as behavioral loyalty) as a dependent variable in the model to be associated with the two segment variables, i.e., customer inertia and customer spending.

The two independent variables are derived, based on RFM transaction data structure. The data required by RFM are designated as practically observable and easily accessible from general transaction data structure of business for analysis. The RFM concept was first proposed by Hughes in 1994, and is often used to calibrate customer value and segments markets. It consists of three customer attributes: recency of consumption, frequency of consumption, and monetary value of consumption (Tavakoli et al., 2018). In using the transaction data, the RFM structure enables the translation and prediction of consumer behavior across contexts.

Extant studies have extended the RFM concept by including extra features or applying data mining techniques (e.g., Heldt et al., 2021). According to the literatures, RF may fit in with the concept of customer inertia but deficient in representations. So we extended RF to represent customer inertia (I) that is measured as the magnitude, consistency, and dynamics of customer consumption (Henderso et al., 2021). As such, we used skewness (s) to express the increasing or decreasing trend of the customer's recent consumption, which could better oversee the customer's consumption dynamic rather than using recency R alone. Second, we retained the frequency of consumption F, termed as (f), to represent magnitude, as intensive usage incubates customer inertia. As with consistency, we used the variable of coefficient of variation of consumption intervals (δ) as a representation to reflect the regularity of customer consumption because customers that maintain regular activity may help build habitual inertia. Finally, the monetary value of consumption (M) that inherently indicates customer behavioral loyalty (Malthouse & Mulhern, 2008) is designated as another independent variable to account for customer retention.

So the conceptual model is shown in Figure 1 in which customer inertia (I) and customer monetary value (M) may positively affect customer retention (γ). In addition, as action inertia evolves from the habitual inertia through relationship involvements. Sport/leisure facilities often exercise economic bonds (E) and social bonds (S) with customers. Both two types of bonds are characteristic of customer relationships with sport/leisure facilities, and could positively or negatively affect customer retention. As aforementioned in literatures, the relationship bonds could transform customer habitual inertia into active inertia to further tie customers with the facilities, and vice versa. As such, we hypothesized

two moderating effects as relationship strategies on sport inertia (E·I and S·I) and those on monetary value (E·M and S·M).

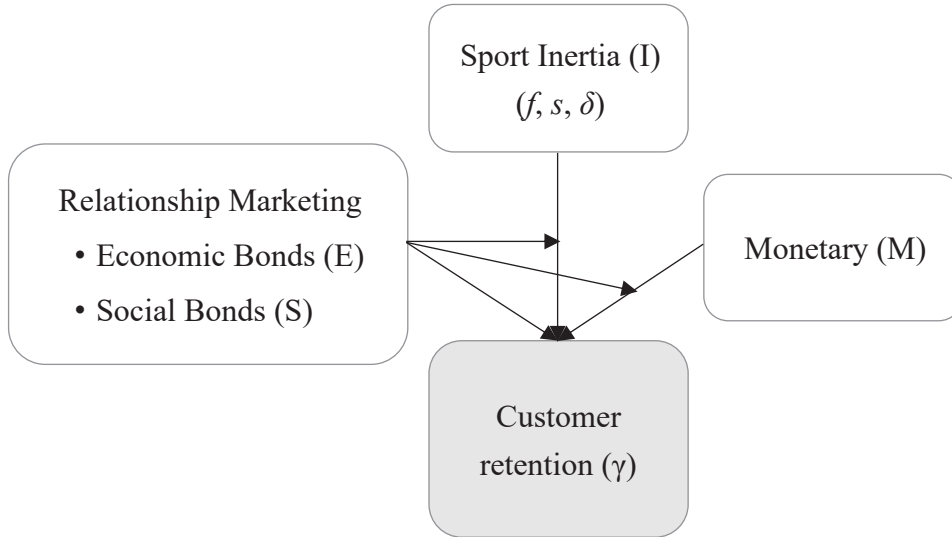


Fig. 1 The conceptual model for retention prediction

We applied a GLIM (generalized linear interaction model) to construct the prediction model because GLIM is a useful tool for value segmentation when variables are categorically expressed and mutually interact. As a well-developed categorical data analysis tool, the GLIM model is expressed as a log-linear form to handle the non-negativity of retention rates. The parameters are calibrated by the maximum likelihood estimation (MLE) technique, so the estimates are those that maximize the likelihood of the models through iterations, given the data. The effects of the variables are examined by statistical significance of partial and marginal association. The parameters calibrated are the best linear unbiased estimator (BLUE) (Tsai et al., 2011).

As retention is binary, the retention rate (γ) is expressed as indicated in Eq. (1).

$$\gamma = \frac{c}{n} \quad (1)$$

Where

γ is the retention rate of a scenario

c is the number of repeat customers in a given segment

n is the total amount of customers in a given segment

The GLIM behaves as a Poisson-like function with values ranging from 0 to infinity, reflecting a discrete outcome. The algorithm for calibrating log-linear models of the retention rate (γ) permits the inclusion of the total amount of customers in a segment (n) as an offset in the expression, indicated in Eq. (2). The strength of the association between the variables is expressed by the calibrated parameters of θ_r where variables are multiplying, according to the conceptual model:

$$\log(\gamma) = \log(c) - \log(n) = \theta_r(I, M, E, S, E \cdot I, E \cdot M, S \cdot I, S \cdot M) \quad (2)$$

Where θ_r is a matrix of the calibrated parameters for the retention rate.

In exponential form, Eq. (2) can be rewritten as Eq. (3)

$$\gamma = e^{\theta_r(I, M, E, S, E \cdot I, E \cdot M, S \cdot I, S \cdot M)} \quad (3)$$

IV 、The data and analysis results

The empirical data was provided by a Taiwanese-owned sport/leisure facility in the three-tier city (with the population of roughly 720,000) in Zhejiang province of China. This is the company's first foreign direct investment in Chinese sport/leisure sectors, designated as a flagship brand for later branch stores opened in other regions of China. Their indoor/outdoor facilities include sports (swimming pools, gym, badminton, tennis, basketball) and leisure (spa, landscaping garden/restaurant, cultural entertainments) activities. Staff and sport instructors are mainly local-hires and customers are managed in a club pattern. Membership fee is relatively low to offer incentives for joining and allows unlimited entry to use all facilities and equipment. Sport training courses and leisure/education tours are all categorized as paid services.

The market competition is fierce in the study area. So relationship of retaining customer becomes essential in management. Since customer behavior survey is infeasible due mainly to political and cultural constraints. Developing transaction data to calibrate customer value becomes sole solution for business intelligences. Customers' consumption/transaction data, including customer visit behavior and spending by time, are all registered and are readily available for analysis.

Existing members who extend their membership by another year enjoy various economic benefits that depend mainly on the monetary value the customer spent in the previous year and their social influence on additional sales. Due to data availability

limitations, we focus merely on two principal economic incentives provided to the members and act as economics bonds. The first incentive is a membership fee discount (13%-17% off). The second is discounts on products sold (on average, 21% off, depending on the bundled product/service). The effects of these two economic bonds are compared with first year members who receive no membership price discount.

In addition to economic bonds, the company establishes social bonds with customers to increase sales and word-of-mouth. The company operationalizes social bonds by encouraging the sport instructors and staff to befriend members. Short-term sport courses (3 to 4 weeks in duration) enable customers to interact intensively with the certified sport instructors, thereby developing social linkage with organization. To clarify the separate effects of economic and social bonds, we only analyze first year members enrolled in sports courses because they are without economic incentives.

The total sample comprises 1,126 members over the years 2017-2020, prior to the COVID19 pandemic. The Table 1 indicates the distributions of the samples collected and pre-processed (customers clustered by inertia) for the following GLIM model examinations and calibrations. The pre-processed clustering was carried out by using the three inertia indicators developed and the K-Means method, and categorized the customers into three levels of sport inertia, namely low, medium, and high levels of inertia groups. In between, the magnitudes were measured as 127, 82 and 38 day visits for high, medium and low levels of inertia groups, respectively. The coefficients of variation of intervals are measured as 1.30, 1.36 and 1.46, respectively, and the smaller the values; the more consistent the visit pattern. Finally, the skewness are -39.6, -28.7 and -12.5. The negative values indicate skew to left. That is, the lower the values; the more recent the visit trend.

Monetary value is designated as a continuous variable indicating customers' actual spending in the previous year. Economic bonds comprise three levels: E1 for no/low membership discount (for first year members), E2 for bounded-product discounts, and E3 for membership fee discount. Social bonds that represent the social influences of sport/leisure facilities on customers aims to bridge mutual social distance using social and technical events and they generate higher mutual dependence than financial bonds do (Berry, 1983). Sport courses are often regarded as principal revenue flow for sport facilities and serve as a venue of delivering technics and business social value to customers. However, owing to cross-cultural cognitions, the study Taiwanese-founded facilities have experienced difficulties in recruiting and managing competent local sport instructor, and this largely restrained it from developing extensive course programs, leading to small number of enrolled customers. Only 54 first year members enrolled in sport courses (labeled S2) were identified against 1,072

counterparts with no enrolment in sport courses (labeled S1).

For each variable, we provide the ratios of its categorical levels on the last column. For example, the distribution of customer with high, medium and low degrees of inertias are 12.3%, 17.0%, and 70.8%, respectively. Numbers of customers involved with varying economics incentive are 39.5%, 24.6%, and 35.9%, respectively, and those with sport courses merely account for 4.8%. Finally, 419 members out of total 1,126 samples continued their membership for the following year, accounting for 37.2%.

Table 1 The sample distribution

Variables	Levels	Counts	Ratios
Inertial (I)	I1 (low) <i>f</i> : 38 days; δ :1.46; <i>s</i> =-12.5	797	70.8%
	I2 (medium) <i>f</i> : 82 days; δ :1.36; <i>s</i> =-28.7	191	17.0%
	I3 (high) <i>f</i> : 127 days; δ :1.30; <i>s</i> =-39.6	138	12.3%
Monetary (M)	Designated as Continuous variable (in \$1,000 RMB)		
Relationship strategies:			
Economic bonds (E)	E1 (little/no membership fee discount)	445	39.5%
	E2 (membership fee/product discounts)	277	24.6%
	E3 (membership fee discount)	404	35.9%
Social bonds (S)	S1 (non-enrolment in sports courses)	1072	95.2%
	S2 (enrolled in sports courses)	54	4.8%
Continuing members		419	37.2%
Total sample size		1,126	100.0%

The 1,126 samples are analyzed for model testing and parameter calibration using the SPSS version 26.0. statistical software package. In GLIM, the measure of goodness of fit for stepwise model testing is scaled deviance, and measure of improvement in fit from one model to another is the reduction in the scaled deviance. Changes in the scaled deviances should have an approximately χ^2 distribution with the given degrees of freedom if the independent variables introduced in moving from one model to the next do affect dependent variables. Fitting and testing of the models are stepwise carried out. In the process, terms can be added in a stepwise analysis of individual interactions. Results of omnibus test provided by the software used indicate a significant model fitting with p-value of 0.001, given chi-square likelihood ratio 209.7 and degree of freedom 15. The parameters by level of the variables are indicated in Table 2.

Table 2 Parameters of variables by levels

Variables		Parameters	Significances	Exponential
Intercept		-2.68	0	0.069
Inertia	I1	0	-	1
	I2	1.606	0	4.985
	I3	2.259	0	9.573
Monetary value	M	0.171	0.003	1.187
Economic bonds	E1	0	-	1
	E2	0.842	0.079	2.321
	E3	1.551	0	4.716
Social bonds	S1	0		1
	S2	1.882	0.027	6.565
Economic bonds * Inertia	E1 · I1	0	-	1
	E1 · I2	0	-	1
	E1 · I3	0	-	1
	E2 · I1	0	-	1
	E2 · I2	-1.44	0.002	0.237
	E2 · I3	-0.959	0.087	0.383
	E3 · I1	0	-	1
	E3 · I2	-1.509	0	0.221
	E3 · I3	-1.223	0.009	0.294
Social bonds * Inertia	S1 · I1	0	-	1
	S1 · I2	0	-	1
	S1 · I3	0	-	1
	S2 · I1	0	-	1
	S2 · I2	1.858	0.035	6.408
	S2 · I3	0.289	0.747	1.335
Economic bonds * Monetary value	E1 · M	0	-	1
	E2 · M	0.26	0.008	1.297
	E3 · M	0.04	0.656	1.041
Social bonds * Monetary value	S1 · M	0	-	1
	S2 · M	-0.528	0	0.59

We set the value of the first categorical level associated with the main and higher-order interaction effects in the model to zero. So, the estimates of all other levels for a given level of interaction are relative to the levels that are set to zero. The exponential indicates the relative effects between the levels of a variable or interacting variables.

In the extended RFM structure, both sport inertia and monetary value are positively associated with customer retention. Further, the two types of relationships also show positive effects, although social bonds are more effective than economic bonds. However, when interacting with sport inertia and monetary value, the two types of relationships exhibit rather different results. Economics bonds with customer sport inertia (E·I) tend to lessen the retention rate (resulting from negative action inertia) but to increase customer retention along with increasing monetary value (E·M). Conversely, social bonds with sport inertia (S·I) may increase the retention rate but reduce retention along with increased monetary value (S·M). Amongst the three levels of customer inertia, medium level inertia customers (I2) are more sensitive and influential than the remaining two groups.

Based on the calibrated parameters, we constructed a set of prediction models by segment, indicating relationship values. A total of 12 prediction models were established. The prediction models were all in the form of Equation (4) with the values of α and β shown in Table 3, to signify relationship value by segment. The retention rates by scenario are thus measured by using the associated values of α and β into Equation (4). For example, for a customer in a baseline scenario (i.e. a low level of sport inertia and no relationship applied, $\alpha = 0$ and $\beta = 0.17$), the retention rate is measured as Equation (5). Conversely, for a customer with a high level of sport inertia and membership fee discount as a relationship bond (i.e. $\alpha = 2.59$ and $\beta = 0.21$), the retention rate is measured as Equation (6).

Table 3 The parameters of the prediction models by segment

	α				β
	Inertia (I)				Monetary (M)
	Levels	I1	I2	I3	slope
Membership fee discount	E3	1.55	1.65	2.59	0.21
Product discounts	E2	0.84	1.01	2.14	0.43
No sport course/no fee discount	Baseline	0	1.61	2.26	0.17
Enrolment in sports course	S2	1.82	3.74	2.53	-0.36

$$\gamma = e^{-2.68+\alpha+\beta M} \quad (4)$$

Baseline scenario:

$$\gamma = e^{-2.68+0.21M} \quad (5)$$

High level of sport inertia with membership fee discount as a relationship:

$$\gamma = e^{-2.68+2.59+0.21M} \quad (6)$$

Table 3 enables us to compare the retention rates of the 12 models using the values of the two parameters, α and β . As shown in the shaded area that presents the baseline of model for the customers of varying sport inertia level without any relationships offered, the retention rates are positively associated with their monetary value spent in the facilities and the higher the sport inertia level, the more likely the customer would continue their membership.

The economic bonds and social bonds were found to effectively moderate sport inertia, but exhibit different relationship values, varying with sport inertia and monetary value of customers. For economic bonds, customer retention rates increase along with increased sport inertia levels in general, and are more significant by using membership fee discount than by product discounts in general, whereas retention rates increase with monetary value are more rapid by product discounts than by membership fee discount. On the contrary, social bonds also activated action inertia, leading to increased customer retention notably for customer with medium sport inertia level. However, increased monetary value may conversely reduce customer intention to stay. That is, enrolled customers are more functionality-oriented than social. Sport instructors/staffs who pushed sales using social bonds may incur customers with a strong sense of exploitation and this increases their intentions to leave.

V、Discussion and conclusions

The sports industry has enormous economic value and for many people is an important part of daily life; however, changing population demographics and an increasing number of competitors has raised the risk of company failure. In reaction to these forces, Sports facilities have shifted their focus from gaining market share to increasing customer value. Sport relationship marketing has thus become increasingly crucial and valuable to the efficient management of assets (i.e., customers). Customers segmented by value in a portfolio

analysis provides Sport/leisure facility managers with greater insights into customer behavior and helps identify how to allocate resources to the right customers in an effective and efficient manner. However, little research has applied portfolio analysis to the sport/leisure facilities industry.

An accepted truth in marketing is retaining existing customers is more cost effective than acquiring new ones. Repeat customers are assumed to have greater customer loyalty. In the contemporary marketplace, the importance of customer loyalty is undeniable (Kwiatk et al., 2020). However, the customer loyalty and customer relationship management concepts may have other influences on customers' intentions to repurchase. In this portfolio study, we develop a GLIM model for value segmentation that integrates these two concepts. Furthermore, this quantitative model generates robust empirical results. Previous customer portfolio studies primarily relied on conceptualizations and case studies.

The transactional RFM model has been broadly used to measure customer lifetime value and segment markets. However, a key weakness of this measurement is that it ignores the risk of relationship termination in the future (Schwartz et al., 2017). Furthermore, repeat customers observed in transaction data do not necessarily correlate with customer attitudes or value (Reinartz & Kumar, 2002). While the customer portfolio perspective is based on motivations, marketing theory foundations are necessary to more succinctly link transaction data to actual customer behaviors. Sport customer value and service provider relationships have individual effects on determining customer portfolios. Their interactions may add new theoretical insights to the SRM literature.

Customer attendance at sport/leisure facilities is often frequent and regular. The magnitude and consistency of sport consumption fosters sport inertia. Customer inertia is an unmistakable issue for sport/leisure organizations, but it has been overlooked in the sport marketing literature. The empirical evidence in Chinese market indicates both customer inertia and monetary value serve as effective predictors for customer retention. Developing data analytics is in particular essential in Chinese market due mainly to two reasons: First, the huge population accounts for variable customer attitude/behavior by region and is difficult to manage without robust disciplines, and second, Chinese society is of high surveillance that restrains customer behavior survey. The transaction data analysis thus becomes immediate solutions as it is accessible and tangible and is of great value to calibrate customer consumption behavior behind. In doing so, we extended the RFM structure to provide insights of customer sport inertia and to predict effects of relationship strategies.

Sport relationship marketing may generate idiosyncratic assets that act as switching barriers and reenergize customer inertia through customer commitment. The current findings

indicate social bonds are more effective than economic bonds in retaining customers. This result supports Berry (1983) theory that social bonds lead to more mutual interdependence than economic bonds, resulting in greater customer retention. It is in particular essential as social relationship, or *guanxi*, has been broadly deemed as a key business operations in China (Xue et al., 2020).

Nonetheless, SRM is not a panacea. Our study identifies two adverse effects associated with SRM. Competition within the sport/leisure facility industry means competitors attempt to dilute and disrupt relationship effects. Pricing discounts meant to create greater economic bonds with customers often devalue the service and debilitate customer's sports inertia. In this study case of three-tier city in China where members are inclined to retired or pre-retired citizens (as the young has dashed to big cities), the customer clusters are serious with sport/leisure activities to maintain health. But they are conservative and sensitive in spending (Carrigan, 1998). As a result, membership fee reduction is far more effective than bundled products/services discount, which largely reduce the chances of cross-selling that are often employed by sport/leisure facilities to increase its revenue flows.

Finally, although the paid services of sport training and leisure activities are cash cows for sport facilities, the main challenges faced by the Taiwanese investments are staff management. Sport/leisure services require highly trained personnel in operations. Owing to the cross-culture natures, the Taiwanese company has found it difficult to recruit or/and train competent professionals, and this largely restrained the quality of the paid services. Even though sport courses can build desirable social relationship with customers (notably the customer with medium level of sport inertia) for a carry-on membership, a potential dark-side is hidden. That is, when the staff is over-driven by sale commissions and press customers to make additional purchases, the customers would then feel exploited and reversely increase their intentions to defect.

VI、Study limits and future studies

The current study used transaction data to account for customer consumption behavior in response to marketing/relationship strategies. According to the customer valuation theory (Kumar, 2018), demographic factors are also potential influences. The study results of sports/leisure facilities vary by area. Future related research should consider demographics to examine and compare other areas in China (such as a first-tier city where customer affordability is high and life-style is different) and countries to enhance the generalizability

of the findings. Customer age in particular deserves additional investigation because in aging societies like China's, older segments (i.e., ≥ 50 years old, including retired and pre-retired customers) may soon become targets for sports/leisure facilities.

The model uses customer retention as the value segmentation base. Nonetheless, customer retention is indicated as behavioral loyalty. A continuing customer does not necessarily mean attitudinally loyal. Attitudinal loyalty signifies true fondness which goes beyond purchase value (Pansari & Kumar, 2017). As word-of-mouth (WOM) is identified as a measure for attitudinal loyalty (Gwinner & Eaton, 1999), in the event that customer recommendations are registered in customer profile, the analytics model can be further extended to examine and segment customers by varying levels of loyalty.

This study is cross-sectional; therefore, longitudinal research is necessary to monitor and analyze dynamic changes in the relationship building/maintenance process. Meanwhile, SRM strategies are multi-tiered and have varying effects. In developing social bonds, future research should further assess the quality of sport instructors. Together with the commission incentive, they may significantly influence on the performance of relationship strategy. Also, for sport/leisure facilities that intend to offer premium services (e.g. VIP club), the higher tier services offered (i.e. customized/personalized solutions and services) should strengthen mutual interdependence. However, these risks incurring uncertainty (e.g., locked-in assets, customer privacy implications) and requires careful evaluation.

Finally, to make our approach actionable, we intentionally narrowed the scope of data analyzed. Nowadays, many sport/leisure facilities have modern IT equipment, such as facial recognition devices that automatically authenticate and document customer entrance and participation. These devices collect abundant behavioral information that opens many new avenues of potential related research on SRM decisions and customer behavior. It also points to the possibility of machine learning/AI and algorithmic predictions that can automatically prescribe sport relationship marketing efforts.

VII、Reference

1. Bee, C. C., & Kahie, L. R. (2006). Relationship marketing in sports: A functional approach. *Sport Marketing Quarterly*, 15(2), 102-110. https://www.researchgate.net/profile/Colleen_Bee/publication/254415672_Relationship_Marketing_in_Sports_A_Functional_Approach/links/0c96053973735aa224000000.pdf

2. Berry, L. L. (1983). Relationship marketing. *Emerging Perspectives on Services marketing*, 66(3), 33-47. <https://doi.org/10.1177/009207039502300402>
3. Carrigan, M. (1998). Segmenting the grey market: The case for fifty-plus “lifegroups” . *Journal of Marketing Practice: Applied Marketing Science*, 4(2), 43-56. <https://doi.org/10.1108/EUM00000000004485>
4. Cheng, C. C., Chiu, S. I., Hu, H. Y., & Chang, Y. Y. (2011). A study on exploring the relationship between customer satisfaction and loyalty in the fast food industry: With relationship inertia as a mediator. *African Journal of Business Management*, 5(13), 5118-5126. <https://doi.org/10.5897/ajbm10.870>
5. Cheng, S., Lee, S. J., & Choi, B. (2019). An empirical investigation of users’ voluntary switching intention for mobile personal cloud storage services based on the push-pull-mooring framework. *Computers in Human Behavior*, 92, 198-215. <http://dx.doi.org/10.1016/j.chb.2018.10.035>
6. Dagger, T. S., & David, M. E. (2012). Uncovering the real effect of switching costs on the satisfaction-loyalty association: The critical role of involvement and relationship benefits. *European Journal of Marketing*, 46 (3-4), 447-468. <https://doi.org/10.1108/03090561211202558>
7. De Wulf, K., Odekerken-Schröder, G., & Iacobucci, D. (2001). Investments in consumer relationships: A cross-country and cross-industry exploration. *Journal of Marketing*, 65(4), 33-50. <https://doi.org/10.1509/jmkg.65.4.33.18386>
8. Dogan, O., Ayçin, E., & Bulut, Z. (2018). Customer segmentation by using RFM model and clustering methods: A case study in retail industry. *International Journal of Contemporary Economics and Administrative Sciences*, 8(1), 1-19. <http://www.ijceas.com/index.php/ijceas/article/download/174/pdf>
9. Ebers, M., & Semrau, T. (2015). What drives the allocation of specific investments between buyer and supplier? *Journal of Business Research*, 68(2), 415-424. <https://doi.org/10.1016/j.jbusres.2014.06.007>
10. Gray, D. M., D’Alessandro, S., Johnson, L. W., & Carter, L. (2017). Inertia in services: Causes and consequences for switching. *Journal of Services Marketing*, 31(6), 485-498. <https://doi.org/10.1108/JSM-12-2014-0408>
11. Gwinner, K. P., & Eaton, J. (1999). Building brand image through event sponsorship: The role of image transfer. *Journal of Advertising*, 28(4), 47-57. <https://doi.org/10.1080/00913367.1999.10673595>
12. Hargaden, H., & Sills, C. (2014). *Transactional analysis: A relational perspective*.

- Routledge (1st ed.). Routledge. <http://doi.org/10.4324/9781315820279>. <https://doi.org/10.4324/9781315820279>
13. Heldt, R., Silveira, C. S., & Luce, F. B. (2021). Predicting customer value per product: From RFM to RFM/P. *Journal of Business Research*, 127(C), 444-453. <https://doi.org/10.1016/j.jbusres.2019.05.001>
 14. Henderson, C. M., Steinhoff, L., Harmeling, C. M., & Palmatier, R. W. (2021). Customer inertia marketing. *Journal of the Academy of Marketing Science*, 49(2), 350-373. <https://doi.org/10.1007/s11747-020-00744-0>
 15. Huang, M. H., & Yu, S. (1999). Are consumers inherently or situationally brand loyal?—A set intercorrelation account for conscious brand loyalty and nonconscious inertia. *Psychology & Marketing*, 16(6), 523-544. [https://doi.org/10.1002/\(SICI\)1520-6793\(199909\)16:6<523::AID-MAR5>3.0.CO;2-B](https://doi.org/10.1002/(SICI)1520-6793(199909)16:6<523::AID-MAR5>3.0.CO;2-B)
 16. Hultman, C. M., & Shaw, E. (2003). The interface between transactional and relational orientation in small service firm's marketing behaviour: A study of Scottish and Swedish small firms in the service sector. *Journal of Marketing Theory and Practice*, 11(1), 36-51. <https://doi.org/10.1080/10696679.2003.11501931>
 17. IBIS world. (2022). *Industry marketing report and statistics, 2022 version*. Author.
 18. Khajouei, F., & Nayeibzadeh, S. (2013). Inertia and customer loyalty in the varying levels of the zone of tolerance and alternative attractiveness. *International Journal of Academic Research in Business and Social Sciences*, 3(7), 555-571. <https://doi.org/10.6007/IJARBS/v3-i7/77>
 19. Kotler, P. & Keller, K. L. (2005). *Marketing Management* (12th ed.). Prentice Hall.
 20. Kumar, V., Bohling, T. R., & Ladda, R. N. (2003). Antecedents and consequences of relationship intention: Implications for transaction and relationship marketing. *Industrial Marketing Management*, 32(8), 667-676. <https://doi.org/10.1016/j.indmarman.2003.06.007>
 21. Kwiatek, P., Morgan, Z., & Thanasi-Boçe, M. (2020). The role of relationship quality and loyalty programs in building customer loyalty. *The Journal of Business and Industrial Marketing*, 35(11), 1645-1657. <https://doi.org/10.1108/JBIM-02-2019-0093>
 22. Kumar, V. (2018). A theory of customer valuation: Concepts, metrics, strategy, and implementation. *Journal of Marketing*, 82(1), 1-19. <https://doi.org/10.1509/jm.17.0208>
 23. Leppäniemi, M., Jayawardhena, C., Karjaluoto, H., & Harness, D. (2017). Unlocking behaviors of long-term service consumers: The role of action inertia. *Journal of Service Theory and Practice*, 27(1), 270-291. <https://doi.org/10.1108/JSTP-06-2015-0127>

24. Liu, Y., Luo, Y., & Liu, T. (2009). Governing buyer–supplier relationships through transactional and relational mechanisms: Evidence from China. *Journal of Operations Management*, 27(4), 294-309. <https://doi.org/10.1016/j.jom.2008.09.004>
25. Malthouse, E., & Mulhern, F. (2008). Understanding and using customer loyalty and customer value. *Journal of Relationship Marketing*, 6(3-4), 59-86. https://doi.org/10.1300/J366v06n03_04
26. Merkert, R., & Pearson, J. (2015). A non-parametric efficiency measure incorporating perceived airline service levels and profitability. *Journal of Transport Economics and Policy (JTEP)*, 49(2), 261-275. <https://docserver.ingentaconnect.com/deliver/connect/lse/00225258/v49n2/s6.pdf?expires=1692713048&id=0000&titleid=1311&checksum=DB3F456B0C696FE736F2CEA213962E7F&host=https://www.ingentaconnect.com>
27. Monalisa, S., Nadya, P., & Novita, R. (2019). Analysis for customer lifetime value categorization with RFM model. *Procedia Computer Science*, 161, 834-840. <https://doi.org/10.1016/j.procs.2019.11.190>
28. Morgan, R. M., & Hunt, S. D. (1994). The commitment-trust theory of relationship marketing. *Journal of Marketing*, 58(3), 20-38. <https://doi.org/10.1177/002224299405800302>
29. Mortensen, M. H. (2012). Understanding attractiveness in business relationships—A complete literature review. *Industrial Marketing Management*, 41(8), 1206-1218. <https://doi.org/10.1016/j.indmarman.2012.10.005>
30. Moe, W. W., & Yang, S. (2009). Inertial disruption: The impact of a new competitive entrant on online consumer search. *Journal of Marketing*, 73(1), 109-121. <https://doi.org/10.1509/jmkg.73.1.109>
31. Naumann, E., Haverila, M., Sajid Khan, M., & Williams, P. (2010). Understanding the causes of defection among satisfied B2B service customers. *Journal of Marketing Management*, 26(9-10), 878-900. <https://doi.org/10.1080/02672571003647750>
32. Öztayşi, B., Kaya, T., & Kahraman, C. (2011). Performance comparison based on customer relationship management using analytic network process. *Expert Systems with Applications*, 38(8), 9788-9798. <https://doi.org/10.1016/j.eswa.2011.01.170>
33. Pansari, A., & Kumar, V. (2017). Customer engagement: The construct, antecedents, and consequences. *Journal of the Academy of Marketing Science*, 45(3), 294-311. <https://doi.org/10.1007/s11747-016-0485-6>
34. Reinartz, W., & Kumar, V. (2002). The mismanagement of customer loyalty. *Harvard Business Review*, 80(7), 86-94.

35. Ritter, T., & Andersen, H. (2014). A relationship strategy perspective on relationship portfolios: Linking customer profitability, commitment, and growth potential to relationship strategy. *Industrial Marketing Management*, 43(6), 1005-1011. <https://doi.org/10.1016/j.indmarman.2014.05.013>
36. Rust, R. T., Lemon, K. N., & Zeithaml, V. A. (2004). Return on marketing: Using customer equity to focus marketing strategy. *Journal of Marketing*, 68(1), 109-127. <https://doi.org/10.1509/jmkg.68.1.109.24030>
37. Safari, F., Safari, N., & Montazer, G. A. (2016). Customer lifetime value determination based on RFM model. *Marketing Intelligence & Planning*, 34(4), 446-461. <https://doi.org/10.1108/MIP-03-2015-0060>
38. Sanchez, R. (2005). Analysis of customer portfolio and relationship management models: Bridging managerial dimensions. *Journal of Business & Industrial Marketing*, 20(6), 307-316. <https://doi.org/10.1108/08858620510618147>
39. Schwieterman, M. A., Goldsby, T. J., & Knemeyer, A. M. (2017). Advocating customer and supplier portfolios in supply chain research: A systematic literature review and research agenda. *Transportation Journal*, 56(4), 429-476. <https://doi.org/10.5325/transportationj.56.4.0429>
40. Sheth, J. N., & Parvatiyar, A. (1995). The evolution of relationship marketing. *International Business Review*, 4(4), 397-418. [https://doi.org/10.1016/0969-5931\(95\)00018-6](https://doi.org/10.1016/0969-5931(95)00018-6)
41. Sirdeshmukh, D., Singh, J., & Sabol, B. (2002). Consumer trust, value, and loyalty in relational exchanges. *Journal of Marketing*, 66(1), 15-37. <https://doi.org/10.1509/jmkg.66.1.15.18449>
42. Susanty, A., Handoko, A., & Puspitasari, N. B. (2020). Push-pull-mooring framework for e-commerce adoption in small and medium enterprises. *Journal of Enterprise Information Management*, 33(2), 381-406. <https://doi.org/10.1108/JEIM-08-2019-0227>
43. Tavakoli, M., Molavi, M., Masoumi, V., Mobini, M., Etemad, S., & Rahmani, R. (2018). Customer segmentation and strategy development based on user behavior analysis, RFM model and data mining techniques: A case study. *2018 IEEE 15th International Conference on e-Business Engineering (ICEBE)*, 2018, 119-126. <https://doi.org/10.1109/ICEBE.2018.00027>
44. Tsai, M. C., Merkert, R., & Wang, J. F. (2021a). What drives freight transportation customer loyalty? Diverging marketing approaches for the air freight express industry. *Transportation*, 48(3), 1503-1521. <https://doi.org/10.1007/s11116-020-10104-0>

45. Tsai, M. C., Merkert, R., Tsai, M. T., & Lin, S. C. (2021b). Towards a taxonomy-based preferred-customer model for suppliers in air cargo express service markets. *Journal of Air Transport Management*, 90(C), 101962. <https://doi.org/10.1016/j.jairtraman.2020.101962>
46. Tsai, M. C., Tsai, Y. T., & Lien, C. W. (2011). Generalized linear interactive model for market segmentation: The air freight market. *Industrial Marketing Management*, 40(3), 439-446. <https://doi.org/10.1016/j.indmarman.2010.06.001>
47. Tsybina, E., & Rebiazina, V. (2013). Managing portfolios of interconnected customers: Evidence from Russian B2B market. *Journal of Business & Industrial Marketing*, 28(3), 229-239. <https://doi.org/10.1108/08858621311302886>
48. Villena, V. H., Revilla, E., & Choi, T. Y. (2011). The dark side of buyer-supplier relationships: A social capital perspective. *Journal of Operations Management*, 29(6), 561-576. <https://doi.org/10.1016/j.jom.2010.09.001>
49. Wang, L., Luo, X. R., Yang, X., & Qiao, Z. (2019). Easy come or easy go? Empirical evidence on switching behaviors in mobile payment applications. *Information & Management*, 56(7), 103150. <https://doi.org/10.1016/j.im.2019.02.005>
50. Wang, S., Wang, J., & Yang, F. (2020). From willingness to action: Do push-pull-mooring factors matter for shifting to green transportation?. *Transportation Research Part D: Transport and Environment*, 79, 102242. <https://doi.org/10.1016/j.trd.2020.102242>
51. Xue, H., Watanabe, N. M., Chen, R., Newman, J. I., & Yan, G. (2020). Football (as) Guanxi: A relational analysis of actor reciprocity, state capitalism, and the Chinese football industry. *Sport in Society*, 23(12), 2005-2030. <https://doi.org/10.1080/17430437.2020.1755959>
52. Zeelenberg, M., & Pieters, R. (2004). Beyond valence in customer dissatisfaction: A review and new findings on behavioral responses to regret and disappointment in failed services. *Journal of Business Research*, 57(4), 445-455. [https://doi.org/10.1016/S0148-2963\(02\)00278-3](https://doi.org/10.1016/S0148-2963(02)00278-3)