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Assessing the psychological pathways of esports events spectators: an application of service quality and its antecedents and consequences

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ABSTRACT

Research question: This research develops and tests a comprehensive structural model to explain the psychological pathway behind esports spectator behaviours, linking perceived service quality to its antecedents (i.e. extrinsic motivation and intrinsic motivation) and consequences (i.e. satisfaction and revisit intention).

Research methods: Two rounds of data collection were completed for Phase One (N = 485) and Phase Two (N = 217). The measurement items were borrowed from a range of pre-existing scales of traditional sport or esports. Phase One was designed to assess the psychometric properties of the measurement model. Phase Two was purported to test the pathways among the constructs as hypothesised in the structural model.

Results and findings: In Phase One, the model fit indices showed good model fit, reliability and construct validity. In Phase Two, the SEM model fitness indices showed a marginally acceptable model fit. The path analysis supported 15 out of 19 hypotheses; no significant relationships were found between relatedness and intrinsic motivation, autonomy and extrinsic motivation, intrinsic motivation and physical environment, and intrinsic motivation and interaction. Overall, the structural model showed a moderate to substantial predictive power.

Implications: The study provides empirical evidence for the proposed relationships among the constructs and expands the realm of the current theories to the context of esports, especially the application of the self-determination theory and the new esports service quality model. It also provides a more comprehensive picture for esports practitioners to understand their spectators and balance their effort in managing elements which promote future attendance.

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Introduction

Known as competitive video gaming, esports has possessed components similar to those of traditional sport (Pizzo et al., 2018). Although the outbreak of the COVID-19 pandemic in 2020 has contributed to the boom of esports around the world (Goldman & Hedlund, 2020), due to lock-down policies, most of off-line esports events had to be cancelled. Before COVID-19, the revenue of merchandise and ticket sales at events increased from USD 103.7 million in 2019 to USD 121 million in 2020 (Newzoo, 2019, 2021). It then dropped to USD 66.6 million in 2021 due to the global wise lockdown (Newzoo, 2021). In 2022, revenue from merchandise and ticket sales rose back to USD $107.9 million (Newzoo, 2022), suggesting more esports events coming back offline. In fact, with more restrictions on events eased in the post-pandemic time, more esports events are back to off-line eventually, for example, 2022 Commonwealth Games, all the League of Legends seasonal games in 2023, 2023 Mid Seasonal Invitations in London, Valorant Champions Tour 2023, 2023 Esports Olympic Week in Singapore, Hangzhou 2022 Asian Games, and LAN events such as DreamHack 2023 World Tour or Insomnia Gaming Festival 2023. With esports escalating internationally and professionally, understanding esports spectators' future attendance intention is of great importance to event organisers.

Future participation generally results from spectators' satisfaction with their experience (Du et al., 2015), and this satisfaction is a well-evidenced consequence of their perceived service quality offered at events (Wakefield & Blodgett, 1994). Service quality attributes need to be designed on spectators' expectations and needs in specific context (Dagger & Sweeney, 2007). In short, spectators' motives are predictive of behaviours such as game attendance (Fink et al., 2002). In order to optimise spectators' experience in an event for future attendance, event organisers need to fully understand what drives the spectators to attend (i.e. motivation) and what has an impact on their affective and behavioural responses (i.e. perceived service quality). Thus, the service quality-satisfaction-behavioural intention chain is worth to be developed with theoretical and empirical support (c.f., Yoshida & James, 2011). However, in the domain of esports, no research so far has studied off-line spectators' attendance behaviours by combining motivational theories and the concept of service quality. To fill the gap in esports literature, this research aims to investigate the psychological pathway of esports spectators by assessing the structural model for service quality, including its antecedents (i.e. motivations) and consequences (i.e. satisfaction and revisit intention). To achieve this research aim, a two-fold study is designed: (a) to test the psychometric properties of the observed variables (intrinsic motivation, extrinsic motivation, competition quality, physical environment quality, event execution quality, interaction quality, satisfaction, and revisit intention), allowing all latent variables to correlate in the measurement model and (b) to examine the direct and indirect relationships among the variables in the structural model (positive relationships between two types of motivation, service quality dimensions, satisfaction, and revisit intention). As the largest esports market which contributes to one thirds of esports global revenue in 2021 (Newzoo, 2021), esports in China is used as the context for the current study.

Theoretical framework

There are two underpinning theories in the proposed theoretical framework of the current research. Motivated reasoning theory (MRT) which explains the relationship between motivations and perceived service quality, and stimulus-organism-response (SOR) theory which is used for the relationships among perceived service quality, satisfaction, and revisit intention.

Motivation and perceived service quality: motivated reasoning theory

Introduced by Kunda (1990), motivated reasoning theory explains how motivation may affect the process of reasoning from forming impressions to making decisions. The objectivity in the conclusion is biased by motivation in the cognitive process (Darley & Gross, 1983; Pyszczynski & Greenberg, 1987). Once an individual is motivated, the motivation will start having an impact on the reasoning process by influencing the pre-existing knowledge, memories or information used in the cognitive process (Klein & Kunda, 1992). Esports events spectators' perception of service quality is the conclusion that is justified not only by their experience at the events but also by their pre-existing knowledge about the event and their general world knowledge (Klein & Kunda, 1992). Different motivations for attending an event will hence influence how they process their knowledge and experience before and during the event. For example, those who attend an esports event for external awards, such as merchandise, in-game prizes, or social activities, are likely to have had positive experiences with such elements previously or have developed certain expectations of these elements before their attendance which contributed to this extrinsic motivation. Their perception of the quality of these elements will therefore be influenced by their motivations, compared to those who attend the event purely for enjoying the plays. Therefore, motivated reasoning theory is employed to underpin the relationships between motivation and perceived service quality in the current study. Furthermore, the perceived service quality contributes to the new experience, knowledge and attitudes of the spectators which therefore will influence further conclusions they reach in the cognitive process, such as purchasing decisions, which in this case is the revisit intention (Kunda, 1990). Therefore, perceived service quality and satisfaction are considered mediators for the relationship between motivation and behaviour intention.

Perceived service quality, satisfaction, and revisit intention: stimulus-organism-response (SOR) theory

The Stimulus-Organism-Response (SOR) introduced by Mehrabian and Russell (1974) explains how the stimulation in the external environment will lead to individuals' behavioural responses or psychological changes via the mediation of the existing components of the organism. According to the framework, stimulus (S) refers to various factors in the environment, organisms (O) are how the user feels about the existing stimulation, and response (R) is the final behavioural result (Kang et al., 2021). In recent years, it has been widely used in sports context where satisfaction mediates the relationships between the external environment and spectators' revisit

intentions, such as sportscape study in Jang et al. (2020a), and in the gaming context, such as Xu et al. (2021) which studied audience participation in game streaming, where arousal and cognitive involvement is considered to mediate the relationship between the perceived experiences and the participation. It was also adopted in recent esports studies of consumer behaviour (e.g. Fernando et al., 2022; Jang et al., 2020b) to support how affective responses mediate the relationship between social environment and behavioural intentions of esports spectators at events. In the current research, perceived service quality consists of several dimensions that are similar to the stimulus in the aforementioned studies. Therefore, in line with the previous studies, the current research employed SOR to underpin the relationships among perceived service quality (S), satisfaction (O), and revisit intention (R) in the proposed model.

Literature review and hypotheses development

Perceived service quality of esports events

Perceived service quality refers the consumers' judgement regarding to the overall excellence or superiority of a good or service (Zeithaml, 1988). As one of the most classic studies of service quality, Parasuraman et al. (1988, p. 15) considers service quality as 'a comparison of expectations with perceptions of performance'. Later in the 1990s, more service quality studies supported the performance-only approach, which argued that 'service quality should be measured as an attitude' (Cronin & Taylor, 1994, p. 64). In the esports context, esports consumers have drawn academic attention in various aspects in recent years, such online esports media consumption (Qian et al., 2020a), esports fans' live streaming experience (Meng-Lewis et al., 2022), esports fan motivation and behaviours (Hamari & Sjöblom, 2017), social atmospherics in esports attendance (Jang et al., 2020c) and esports event attendance (Pizzo et al., 2018). However, the focus has either been the online esports community and events, or one specific area of offline esports events. Limited effort is given to a holistic understanding of off-line esports event service quality, and its relationship with other constructs. In the framework for service quality and its consequences of spectator sport proposed by Biscaia et al. (2023a), service quality consists of the dimensions of functional (i.e. utilitarian service attributes), aesthetic (i.e. hedonic attributes of the service environment and activities that contribute to ambience), and core product quality (i.e. the overall excellence or superiority of sport-related attributes), which are considered to have the most potential for conceptual generalisations. Zhu et al. (2021a) developed a conceptual framework that is exclusive to esports which addresses the three dimensions while reflecting unique elements of esports events. The framework has four dimensions, which are adopted in the current study. Specifically, competition quality refers to the quality of the core product, such as teams, players, gameplay or commentation; physical environment quality refers to the tangible and intangible elements in the event environment; event execution quality stands for the esports event organiser's ability to plan, organise, and deliver the event; and interaction quality measures the spectator-spectator crowd and social experiences. The model was tested by Zhu et al. (2021bb) which showed satisfactory overall and internal model fit.

Motivation: antecedents

Self-determination theory (SDT)

Self-determination theory (SDT) is one of the most widely applied motivational theories in the sports context, such as in sports participation (Pelletier et al., 2013), sports fan behaviours (Zhao & Wu, 2021), sports tourism (Aicher & Brenner, 2015), or esports fan's psychological process and behaviours (Qian et al., 2022). SDT postulated that all human behaviours stem from different types of motivations based on the degrees of self-determination (Deci & Ryan, 1985, 1991), including intrinsic motivation and extrinsic motivation. Self-determination refers to the feeling which is 'free from pressures, such as rewards or contingencies' (Deci & Ryan, 1985, p. 29). For intrinsic motivation, according to Deci (1971), a person is 'intrinsically motivated to perform an activity when he receives no apparent rewards except the activity itself' (p. 105). For example, a person who attends esports events simply for inherent satisfaction or enjoyment is intrinsically motivated. The person is willing to attend the event without any rewards, reasons, punishment, or restraints. On the other hand, extrinsic motivation is widely understood as a motivation which is concerned with meeting an external goal of behaviour, such as praise or approval, or receiving an award or benefit, separate from the inherent satisfactions from doing the activity per se (Deci & Ryan, 1985). Rewards are very commonly used in esports events, in the form of prize draw, prize code, free champion skin, players' posters, signatures, or souvenirs. The scarcity and popularity of the prizes could become a key motivation for people to attend the event, regardless of contents or quality of the event.

Some previous scales using the intrinsic-extrinsic dualistic approach of motivation under the framework of SDT showed good construct validity and reliability, for example, physical activity and leisure motivation scale (Molanorouzi et al., 2014), scales in education (e.g. Krishnamurthy et al., 2014) or workplace (e.g. Grant et al., 2011; Sheldon & Kasser, 1995). Similarly, the current research adopts this dualistic approach of motivation.

Relationship between motivation and perceived service quality

Ko and Pastore (2004) emphasised that customers' motivation determined the level of service quality. Fan motivation is documented to directly influence perceived quality of core service (e.g. competition) in sport (Mahony et al., 2002). Keller (1999) found that intrinsically motivated customers positively influence perceived product-related attributes, which constitute the performance of the core product. Kahle et al. (1996) and Foroughi et al. (2014) both found that identified motivation, which is a part of extrinsic motivation, was closely related to the game quality and outcome. For physical environment quality, spectators whose main purpose of attending the event is to watch competition are more likely to perceive higher physical environment quality (Byon et al., 2013). At the same time, physical environment quality is also inevitably influenced by people with the desired outcome such as a taste of the atmosphere, build camaraderie, or enhance their identity (Funk et al., 2012). For event execution, it is influenced by people's intrinsic motivation demand such as drama between teams or entertainment (Qian et al., 2020a), which is usually delivered by augmented services such as the shows, interviews or between game activities in eSport events. Smith et al. (2010) also found that people who pursued instrumental outcome, in other words who were extrinsically motivated, were more concerned with operating time and augmented services. For

interaction quality, it is found that since the early days of esports, people are motivated to attend esports events for crowd experience (Lee & Schoenstedt, 2011), and therefore, are more likely to influence interaction quality. Hence, positive relationships between motivation and perceived service quality are expected.

> *Hypothesis 1.1–1.2*: Intrinsic (*H1.1*) and extrinsic (*H11.2*) motivations would positively influence competition quality.

> *Hypothesis 2.1–2.2*: Intrinsic (*H2.1*) and extrinsic (*H2.2*) motivations would positively influence physical environment quality.

> *Hypothesis 3.1–3.2*: Intrinsic (*H3.1*) and extrinsic (*H3.2*) motivations would positively influence event execution quality.

> *Hypothesis 4.1–4.2*: Intrinsic (*H4.1*) and extrinsic (*H4.2*) motivations would positively influence interaction quality.

Satisfaction and revisit intention: consequences

Relationship between service quality and satisfaction

In Biscaia et al. (2023b), it is found that service quality at spectating sports events contributes to overall satisfaction, which further results in positive behavioural intentions. According to Greenwell et al. (2002, p. 131), customer satisfaction depends on 'the customer's subjective perception and evaluation of service performance rather than the organisation's objective standards of quality'. In this study, the concept of transaction satisfaction is adopted, which is 'a judgment that a product or service feature, or the product or service itself, provided (or is providing) a pleasurable level of consumption-related fulfilment' (Oliver, 1997, p. 13). Esports event is not a long-term service and due to the wide range of esports game genres and levels, it is difficult for spectators to generate an overall evaluation of all previous events experience. Therefore, compared to cumulative satisfaction, transaction satisfaction is more appropriate for this study. This approach not only fully shows the psychological reactions and attributes of customers after purchasing one specific product/service, but also provides in time reflection of the changes in product/service performance, which offers intuitive feedback to a company (Fornell et al., 1996). Esports event is a short-time service and due to the wide range of esports game genres and levels, it is easy for spectators to generate a simultaneous evaluation of event experience.

For perceived service quality and satisfaction, game quality is found to have a direct and positive impact on spectator satisfaction (Yoshida & James, 2011). In a study of esports, Lee et al. (2014) found that team attachment, skills and commentation (i.e. in-game commentators) had significant effects on satisfaction. Physical environment also influences spectators' satisfaction of their experience, as an esports event lasts usually much longer than traditional sport. Any types of esports event usually take more than three hours, sometimes even a whole day, such as Intel Extreme Masters. Hence, the physical environment would have direct impact on spectators' experience, and thus their satisfaction of the event. As for event execution, operating time and ambient conditions were found to have direct impact on spectators' satisfaction in campus recreation programmes (Ko & Pastore, 2007). As esports originates from video gaming, atmosphere or ambience created by event organisers inevitably contributes to spectators' satisfaction.

For interaction, plenty research has supported the positive relation between interaction quality and satisfaction in sport event settings (e.g. Koo et al., 2009). Westerbeek and Shilbury (2003) found that social conversations between fans in a sport stadium are considered as an important element of service coproduction which directly influences their satisfaction. As esports has developed its own culture of crowd experience such as cheering or shouting in stadiums, it is reasonable for spectators to expect such interaction experiences which determine their overall satisfaction. Therefore, it is hypothesised that:

Hypothesis 7.1–7.4: Competition quality (*H7.1*), physical environment (*H7.2*), event execution (*H7.3*) and interaction (*H7.4*) would positively influence spectator satisfaction.

Relationship between satisfaction and revisit intention

Empirically, a wide range of literatures has documented a positive relationship between customer satisfaction and behavioural intention in sport (e.g. Kwon et al., 2005; Matsuoka et al., 2003; Shonk & Chelladurai, 2008). Similarly, satisfied esports spectators of seasonal games where there are regular games and easier access to tickets, as well as those of large events where revisit is more difficult due to ticket availability or travel distance, are all likely to be willing to visit the games again due to satisfaction with the previous experience. Consistent with the evidence from previous literature in general service and in the context of spectating sport, the following hypothesis could be posited:

Hypothesis 8: There would be a positive relationship between esports spectator satisfaction and revisit intention.

In summary, the proposed relationships among the constructs are presented in Figure 2, which are in line with the proposed conceptual framework for motivation, perceived service quality, satisfaction and behavioural intention in Figure 1. In the structural model in Figure 2, first-order measurement models are employed to measure the dimensions of motivation and perceived service quality. In first-order models, items are influenced by the same single common factor (Ringle et al., 2012), whereas second-order models are more frequently used when examining hierarchical component models which contain a composite of common factors (Van Rie et al., 2017). According to Kline (2015), using the first-factor structure enhances the meaningfulness of the structural model as testing the individual relationships, as hypothesised, provides a fuller
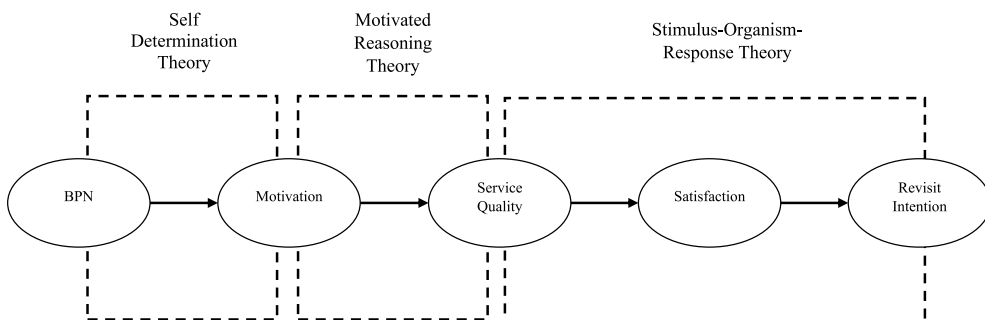
Figure 1. Proposed theoretical framework for esports spectatorship.
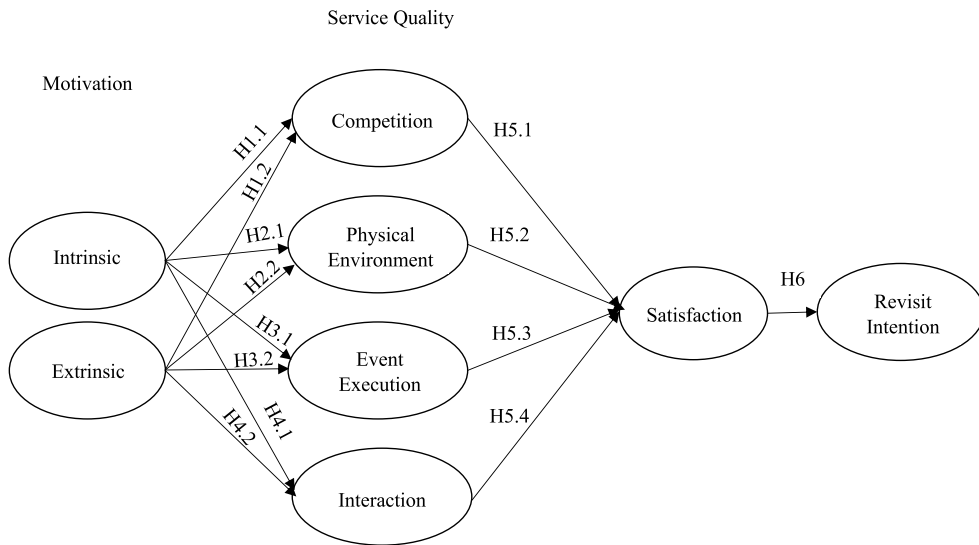
Figure 2. Proposed structural model for esports spectatorship.

information as each factor represents its own unique attribute, thus being more relevant or actionable when suggesting practical/theoretical implications (Kline, 2015). The current research aims to investigate the relationships between the individual common factors (e.g. intrinsic motivation and competition quality) instead of examining conceptual relationships between the constructs (motivation and service quality). Therefore, first-order models are used to delineate the pathway that links individual dimensions to reach behavioural intention, which helps event practitioners better understand how various elements influence spectator behaviours.

Method

Instrument development

Intrinsic motivation was measured by SMS-II (Pelletier et al., 2013) with three items. Three items for extrinsic motivation were borrowed from the controlled motivation in Ryan and Connell (1989) and external regulation items in SMS-II. Perceived service quality was measured using the scale developed based on Zhu et al. (2021bb); seven items for competition, three items for physical environment, four items for event execution, and six items for interaction). Satisfaction was measured using two items from Oliver (1980) and one item from Oliver (1997). Revisit intention was measured using Cronin et al.'s (2000) with three items. In total, there were 8 constructs and 32 items (see Table 1 for the full item statements), which were measured using a 7-point Likert scale, anchored with strongly disagree (1) and strongly agree (7).

Research participants

The research population was Chinese esports offline spectators who were over 18 and attended at least one esports event in the past three months. A convenient sampling

Table 1. Standardised factor loadings, CRs, and AVEs of the constructs for phase one (N = 418).

Item	Item statement	λ	CR	AVE
	Intrinsic Motivation			
I1	Because it gives me pleasure to learn more about esports.	.83	.88	.70
I2	Because it is very interesting to learn how I can improve.	.81		
I3	Because I find it enjoyable to discover new performance strategies.	.87		
	Extrinsic Motivation			
E1	Because people around me reward me when I do.	.89	.93	.80
E2	Because I think others would disapprove of me if I did not.	.92		
E3	Because people I care about would be upset with me if I didn't.	.88		
	Competition Quality			
CQ1	Good commentation are delivered during the games by competent and passionate commentators.	.76	.91	.58
CQ2	I enjoy the excitement associated with player performance in the game	.76		
CQ3	Teams in this event are high quality teams.	.68		
CQ4	Players tried to do their best in the game.	.80		
CQ5	Team players in this event performed well-executed plays.	.83		
CQ6	The competitiveness of the games in the event is high.	.78		
CQ7	Overall, the game is spectacular.	.70		
	Physical Environment Quality			
PE1	The facilities are clean and well maintained.	.73	.83	.62
PE2	The arena is physically comfortable and pleasant.	.79		
PE3	The arena is safe.	.84		
	Event Execution Quality			
EE1	I can easily get information about the event in advance, such as ticket information.	.80	.86	.60
EE2	Updated and helpful information of the event and games is available.	.84		
EE3	Themed merchandise selection is available.	.78		
EE4	The giveaway items in the event are high quality.	.67		
	Interaction Quality			
IQ1	I find that other spectators consistently leave me with a good impression.	.64	.87	.54
IQ2	I feel a sense of family among the fans at the event.	.78		
IQ3	I enjoy the social interaction with other spectators in the event.	.75		
IQ4	This event has provided me many opportunities for social interaction with other fans.	.76		
IQ5	I made friends through participating in this event.	.71		
IQ6	Being surrounded by thousands of fans at a game is a great experience for you.	.74		
	Satisfaction			
S1	I am satisfied with my decisions to attend esports events.	.97	.98	.95
S2	I think that I did the right thing by deciding to attend these events.	.97		
S3	I am not happy that I attended these events.	.98		
	Revisit Intention			
RI1	I would like to come back to the event destination to spectate a game in the future.	.97	.97	.91
RI2	I will recommend spectating a game to other people.	.92		
RI3	I will make a decision to spectate a game if I have chance to spectate a game in the future.	.97		

method was employed (Saunders et al., 2012). Two rounds of data collection were completed for Phase One (N = 485) and Phase Two (N = 217). The questionnaires for both rounds were prepared using the Chinese online research software called Wenjuanxing. Links to the questionnaires were disseminated in two ways for each round. Firstly, the researchers shared the link across WeChat groups of various offline events, including regional collegiate esports and seasonal league games. Secondly, there were research assistants who helped disseminate the questionnaire links for each round, including one esports lecturer, three esports event organisers, and two esports team staffs. The assistants shared links to WeChat groups and at the event venues to recruit those who went to League of Legends Pro Leagues and Peacekeeper Elite League seasonal games in 2021 for Phase One and in 2022 for Phase Two. For Phase One, the questionnaire was sent to the assistants on the 5th of January 2021. Data collection lasted for three

months and finished in late April 2021. For Phase Two, the questionnaire was sent to the assistants on the 7th of January 2022 and the link was closed on the 31st of January 2022.

In total, for Phase One, 485 usable responses were received. Male spectators ($n = 268$) slightly outnumbered female spectators ($n = 217$). Most spectators ($n = 307$) were undergraduate students while 29.1% ($n = 141$) had a job. For Phase Two, there were 217 usable responses received. There were more males ($n = 112$) than females ($n = 161$). There were 161 undergraduate students and 58 spectators (28.3%) reported to have a job.

Common method variance

Because each round of data was collected from the same source and all variables were measured at the same time, relationships among variables could be inflated or attenuated (Podsakoff et al., 2003), which indicate potential existence of common method variance (CMV; Richardson et al., 2009). CMV could result in biases that are attributable to the measurement method instead of the constructs per se (Bagozzi & Yi, 1990). Following Podsakoff et al. (2003), a single-common-method-factor approach was employed. For Phase One data ($N = 485$), the factor loadings between pre- and post-inclusion of the unmeasured factor showed an average difference of .05, ranging from .00 to .31, which was considered small (< .20; Yang et al., 2017). For Phase Two data ($N = 217$), the results of CMV test revealed a similar result; the average difference of the factor loadings between pre- and post-inclusion of the unmeasured factor was .11, with a composite range of .07 to .17. Overall, neither dataset suffered from CMV bias.

Data analysis

The two-step approach of structural equation modeling (SEM; Anderson & Gerbing, 1988) was used to analyse the data. Phase One was designed to assess the adequacy (goodness-of-fit, reliability and validity) of the measurement model using a CFA. Phase Two was then followed to test the hypothetical direct and indirect pathways among the constructs using a path analysis. For each phase, preliminary analyses were conducted, including data screening (Hair et al., 2013), elimination of speeders (Smith et al., 2016), and elimination of outliers (Byrne, 2010). Univariate skewness (< |±2.00|) and kurtosis (< |±7|.00) statistics were also calculated for the items to test their univariate normality, while Mahalanobis distances were calculated to identify multivariate outliers ($p < .01$; Tabachnick & Fidell, 2007). Both phases were run in SPSS and AMOS 26. The maximum likelihood is used as an estimator.

Results

Phase one: measurement model testing (N = 485)

Preliminary analysis
Nine speeders who spent less than one minute on the questionnaire were removed. The univariate normality test showed that the values of skewness ranging from −1.45 to −0.69, and kurtosis ranging from −0.28 to 3.86 were within the acceptable range,

suggesting that the data were univariately normally distributed. No univariate outlier is identified. The results of multivariate normality identified 58 outliers with Mahalanobis Distance ($p < .001$). They were therefore removed, leaving 418 samples remained.

CFA

CFA showed a good model fit: $\chi^2 = 687.04$, $df = 436$, $\chi^2/df = 1.58$, CFI = .98, RMSEA = .04, IFI = .98, TLI = .97, and SRMR = .04 (Hair et al., 2010). Composite reliability values ranging from .83 to .98 exceeded the threshold value of .70 (see Table 1), showing good reliability of the measures (Bagozzi & Yi, 1988). The factor loadings ranged from .64 to .98. Three items had $\lambda < .707$, indicating that those items had more unique variance than common variance (Fornell & Larcker, 1981, see Table 1). However, as any item with standardised factor loading over .60 is considered acceptable (Hair et al., 2010), no items were removed. The AVE values were all over .50, ranging from .54 to .95, which showed acceptable convergent validity (Fornell & Larcker, 1981; see Table 1). The correlation coefficients between each pair of the constructs (−.07–.95) were smaller than their respective squared root of AVEs (.73–97), supporting the discriminant validity of the latent constructs (Fornell & Larcker, 1981; see Table 2). Overall, the first stage was satisfactory, which allowed the further analyses.

Phase two: structural model testing (N = 217)

Preliminary analysis

Two samples which were considered as speeders and removed. The univariate normality test showed that the values of skewness ranging from −0.75 to 0.90, and kurtosis ranging from −0.96 to 1.21 were within the acceptable range. The results of multivariate normality identified 5 outliers with Mahalanobis distance greater than 60.98 ($p < .001$). They were removed, leaving 210 samples left for the hypothesis testing.

SEM

The SEM model fitness indices showed a marginally acceptable model fit ($\chi^2 = 697.99$, $df = 451$, $\chi^2/df = 1.55$, CFI = .95, RMSEA = .05, IFI = .95, TLI = .95, SRMR = .12). Composite reliability values were > .70, indicating good reliability of the data. Standardised factor loadings of all items were over .60, which is considered acceptable. AVE values were all over .50, showing good convergent validity. HTMT test showed that the HTMT

Table 2. Correlation matrix for discriminant validity test in phase one (N = 418).

	Constructs	1	2	3	4	5	6	7	8
1	Intrinsic Motivation	**.84**							
2	Extrinsic Motivation	.35	**.89**						
3	Competition	.03	-.04	**.76**					
4	Physical Environment	.04	-.07	.47	**.79**				
5	Event Execution	-.01	-.13	.43	.43	**.77**			
6	Interaction	-.07	-.21	.45	.49	.49	**.73**		
7	Satisfaction	.91	.29	.07	.05	.02	-.04	**.97**	
8	Revisit Intention	.91	.30	.06	.06	.01	-.07	.95	**.95**

Note. Squared root of AVE values appear on the matrix diagonal.

values of all pairs are below .90, ranging from .00 to .81 which supports the discriminant validity (Henseler et al., 2015).

The path analysis supported 11 out of 13 hypotheses at the .05 probability level (see Table 3). Extrinsic motivation was positively related to all service quality dimensions (b = .35, $p < .01$ for competition, b = .58, $p < .01$ for physical environment, b = .59, $p < .01$ for execution, and b = .94, $p < .01$ for interaction), while intrinsic motivation was positively related to competition (b = .72, $p < .01$) and execution (b = .28, $p < .01$) only. All service quality dimensions were positively related to satisfaction, with standardised b values ranging from .11 to .47. Finally, satisfaction was positively related to revisit intention (b = .81, $p < .01$). The coefficient of determination (R^2) for an endogenous variable in a structural model indicates the percentage of the variance in the endogenous variables explained by the model and the predictivity of the model for future datasets (Podasakoff & MacKenzie, 1994). The R^2 values of the endogenous variables range from .41 to .73, meaning that the model overall showed moderate to substantial predictive power (Hair et al., 2011). In summary, all the hypotheses were supported, except for H2.1, and H4.1.

The mediating effects of four service quality dimensions and satisfaction were tested using a bootstrap method. No mediating effects were tested for the paths involving H2.1 and H4.1, as their direct paths were not significant (Wong, 2016). The indirect effects for paths involving execution quality are not significant ($p > .05$). All the other indirect effects appeared to be significant at $p = .05$ (.01–.39 for estimated effects; see Table 4 for 95% CIs).

Discussion

Psychometric properties of the measures

The Phase One results showed satisfying reliability and validity of all the measurement models. For motivation, supporters of multifaceted theories in early motivation studies pointed out that human needs and motivations should include a number of genetically distinct types instead of just intrinsic and extrinsic motivation (Reiss & Havercamp, 1998). It was argued that 'human motives are too diverse to fall into just two categories' (Reiss, 2012, p. 152). However, when investigating esports spectators, the intrinsic-extrinsic dualistic approach to measure motivation was statistically supported in the

Table 3. Pathway analysis results in SEM.

Hypotheses	Relationships	Standardised b	t-value	*p*-value	Hypothesis results
H1.1	Intrinsic Motivation → Competition	.72	9.56	< .001	Supported
H1.2	Extrinsic Motivation → Competition	.35	5.01	< .001	Supported
H2.1	Intrinsic Motivation → Physical Environment	.08	1.33	.184	Not supported
H2.2	Extrinsic Motivation → Physical environment	.58	6.84	< .001	Supported
H3.1	Intrinsic Motivation → Execution	.28	4.55	< .001	Supported
H3.2	Extrinsic Motivation → Execution	.62	7.54	< .001	Supported
H4.1	Intrinsic Motivation → Interaction	.03	0.46	.649	Not supported
H4.2	Extrinsic Motivation → Interaction	.94	10.10	< .001	Supported
H5.1	Competition → Satisfaction	.47	10.69	< .001	Supported
H5.2	Physical Environment → Satisfaction	.17	2.85	< .05	Supported
H5.3	Execution → Satisfaction	.11	1.99	< .05	Supported
H5.4	Interaction → Satisfaction	.17	3.58	< .001	Supported
H6	Satisfaction → Revisit Intention	.81	11.49	< .001	Supported

Table 4. Indirect effects for the structural model.

Indirect Effect	Estimated Effect	95% IC	
		Lower Bound	Upper Bound
Intrinsic – > Competition – >Satisfaction – >Revisit	0.28*	0.20	0.38
Intrinsic – > Competition – >Satisfaction	0.34*	0.25	0.4
Intrinsic – > Execution – >Satisfaction – >Revisit	0.01	0.00	0.05
Intrinsic – > Execution – >Satisfaction	0.02	0.00	0.06
Extrinsic – > Competition – >Satisfaction – >Revisit	0.13*	0.07	0.21
Extrinsic – > Competition – >Satisfaction	0.16*	0.09	0.26
Extrinsic – > Physical Environment – >Satisfaction – >Revisit	0.08*	0.03	0.16
Extrinsic – > Physical Environment – >Satisfaction	0.09*	0.04	0.19
Extrinsic – > Execution – >Satisfaction – >Revisit	0.06*	0.01	0.16
Extrinsic – > Execution – >Satisfaction	0.08*	0.01	0.20
Extrinsic – > Interaction – >Satisfaction – >Revisit	0.11*	0.05	0.21
Extrinsic – > Interaction – >Satisfaction	0.14*	0.05	0.24
Competition – > Satisfaction – >Revisit	0.39*	0.29	0.50
Physical Environment – > Satisfaction – >Revisit	0.13*	0.04	0.24
Execution – > Satisfaction – >Revisit	0.10*	0.01	0.23
Interaction – > Satisfaction – >Revisit	0.12*	0.05	0.23

*Significant at the .05 probability level.
Note. The estimates in the table are bootstrap-corrected.

current study. The items borrowed from SMS-II (Pelletier et al., 2013) were originally designed to measure motivation of sport athletes instead of spectators. The model fitness results in current study indicated that the two measurements could be well applied to spectator sport. Overall, the factor loadings were acceptable statistically. As for satisfaction and revisit intention, all items have been used in a range of previous research in general service or sport and are deemed to be reliable and valid.

Relationship motivation and service quality

Underpinned by motivated reasoning theory (Kunda, 1990), the current research investigated the influence of motivations on perceived service quality at esports events. The results supported that intrinsic motivation and extrinsic motivation have different impacts on how people develop their perceptions of event experiences, though there is also a similar influence seen from both motivation types. For H1.1 to H4.2, it was found that either more intrinsically or more extrinsically motivated esports spectators, perceive competition quality and execution quality of the event higher. The more spectators are extrinsically motivated, the more positively they would perceive the physical environment quality and the interaction quality of the event. The positive relationships between both motivations and service quality echo with Keller's (1999) finding. However, no impact was found on physical environment quality and interaction quality from intrinsic motivation. Esports spectators' inherent tendency to learn about games does not contribute to physical environment quality and interaction quality. This finding is not fully in line with Byon et al. (2013) that spectators who attend the competition per se tend to perceive higher physical environment quality. The current result supports Hill and Green's (2000) finding that sportscape elements are not considered pivotal for spectators who are highly psychologically involved in the sport. Similarly, for esports spectators who are intrinsically driven, their primary focus is on games themselves instead of the surroundings or facilities. As for interaction quality, the current

study finds that spectators who are intrinsically motivated do not necessarily perceive crowd experience or spectator interaction higher, such as cheering or shouting with other esports fans around them, or the impression of other spectators at esports events. Previous research on the social experience of spectators in sports (e.g. Kim et al., 2019) and esports (e.g. Jang et al., 2020c) evidenced how social atmospherics have a positive impact on spectator satisfaction. The new findings provide more explanations of the cognitive process behind the perception of such social experience components by different spectators. Spectators' internal expectation is reflected in the process behind the external manifestations of their behaviours, such as satisfaction or revisit intention (De Mello & MacInnis, 2015). The test of indirect effects indicates that there is no sufficient evidence of execution quality being an effective mediator between motivations and satisfaction or behaviour intention.

Relationships among service quality, satisfaction, and revisit intention

Grounded in the SOR framework (Mehrabian & Russell, 1974), the relationships between perceived service quality, satisfaction, and revisit intention are examined in the proposed structural model for the psychological pathway of esports event spectators. For H5.1 to H5.4, the results revealed that all service quality attributes as stimuli contribute to esports spectators' satisfaction. Service quality is confirmed as a significant antecedent of customer satisfaction in esports. This showed that esports is the same as other traditional spectator sports, where it has been well evidenced that quality directly influences spectators' satisfaction (e.g. Biscaia et al., 2023a; Biscaia et al., 2023b; Khotbesara & Moharramzadeh, 2020; Slavich et al., 2017). Finally, for H7, unsurprisingly there was a significant positive relationship between spectators' satisfaction and their revisit intention to events in the future. This finding supports the SOR framework and the existing sport service quality literature, such as general sport events (Vassiliadis et al., 2021), marathon (e.g. Duan et al., 2020), or volleyball (Khotbesara & Moharramzadeh, 2020). Revisit intention in this study not only refers to the willingness and decisions of coming back to future events but also the willingness to recommend spectating an esports game to other people. Higher revisit intention could significantly benefit esports industries as a whole because satisfied spectators of one game could potentially encourage more spectators to a different game because for outsiders the term 'esports' is one commonly shared tag of many different games.

Theoretical implications

The current research proposed a theoretical model based on the reasoning-motivated theory and the SOR theory to explain the psychological pathways behind esports spectators' behavioural intentions. The SDT and esports-specific perceived service quality model are integrated into the framework to conceptualise and measure the respective constructs in the framework. Although SOR has been adopted in several previous esports studies such as Fernando et al. (2022), no research extended the SOR model to be combined with other models to provide a more holistic framework to understand the decision-making process behind esports spectators' revisit decisions. Motivated reasoning theory in esports is predominantly applied in studying players' psychology

and performance (e.g. Aeschbach et al., 2023), and its values in enhancing the under-standing of esports fans and spectators are yet to be explored. By integrating it into the theoretical framework, the current research provides a reference for such research in the future. As for the motivation studies of esports fans or spectators such as Qian et al. (2020b), to our best knowledge, they have never combined motivational theories such as SDT with motivated reasoning theories, or perceived service quality. By applying the motivated reasoning theory, SOR theory, and self-determination theory, the current research provided a more holistic approach to interpreting esports event spectators' decision-making process. It not only tests the measurement of the different constructs in esports and examines the service quality-satisfaction-behavioural intention chain, but also investigates motivations as antecedents of service quality, providing a more com-prehensive understanding of spectators' cognitive process and expectations surrounding services provided at venues. In particular, the relationship between motivation and other constructs such as service quality for off-line esports spectators was investigated for the first time. This study would provide a reference for future researchers in motivation and service quality to better understand how a service quality model could be effectively designed for spectating sports. It extends the application of SDT, motivated reasoning and SOR theory into esports off-line context and provides empirical evidence to support the theoretical frameworks.

Practical implications

To nourish intrinsic motivation, event organisers might want to add more functions in their event apps, game delivery on site, or in-game cameras, such as basic information of games, highlight and analysis of plays, historical records between teams, special episodes of players or explanation of the meta by game publishers and coaches. For example, since 2018 KFC has created a digital mascot called Colonel KI (Contagious, 2021) in League of Legends Pro League (LPL) who presented and analysed teams data before games (e.g. evaluating the quality of the Ban & Pick for both teams by giving grades which are easy to understand) and provided in-game data for spectators which are very easy to follow by new players or spectators (e.g. showing the gold differences, delineating routes of the junglers on the mini-map, or updating the grade given to each team).

Providing external rewards to extrinsically motivate spectators to a reasonable extent potentially have a positive contribute to overall perceived service quality through physical environment and interaction experience, especially when the competition quality does not meet spectators' initial expectation. For example, when LGD stadium in Hangzhou first completed in 2017, it was advertised as the most advanced and professional esports stadium that has been ever associated with one specific esports team, in other words, the first host stadium for a team in China (Wang et al., 2017). People were hence attracted to watch games in that stadium, not only for the event itself, but also for the stadium. They went there to take selfies and pictures, to receive souvenirs, and to discuss about it with their friends.

Game publishers might consider centralised management of their games' events across regions, leagues, and levels, to ensure a consistent and standardised experience is delivered to spectators at different events for the same game. For example, those who were happy with their experience at one LoL event might want to go to more

LoL events in the future, or other esports events of different titles such as Valorant Champtions Tour (VCT) because of the pleasant memories of consumption and both LoL and VCT are produced and managed by the same organiser, Riot Games. Riot Game is known for being strict with issuing their license for hosting a LoL or Valorant event to other parties.

Limitation and future research

The first limitation of the current research is that the conceptualisation of extrinsic motivation in this study is more in line with external regulation only and did not consider introjected regulation, identified regulation, and integrated regulation. Future research may need to extend the model by integrating other regulations based on SDT. Secondly, the data collection was conducted in China only. The impact of culture is not considered in the current research. Cultural dimensions of the host country could potentially be an effective moderator in the pathway between motivation and behaviours. Similarly, there are likely to be more variables that intervene in the psychological paths from motivation to behavioural intentions such as team identification, which could be further studied.

Data availability statement

All data underpinning the research in this publication is available from the University of Northampton Research Explorer at http://doi.org/10.24339/f2915a7e-623b-4cb4-81a1-26b33cf58f1e from 01/01/2025.

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

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