

# **FACTORS AFFECTING KNOWLEDGE-SHARING WITHIN ENDURANCE-SPORTS ONLINE COMMUNITIES**

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**Byungseok Kang**

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## **ABSTRACT**

According to Hur, Ko, and Valacich (2007), the Internet is becoming one of the most important management tools for sports stakeholders (e.g. marketers, sports business owners, and etc.). The number of Internet users has rapidly grown, and it is a primary source of information for many sports consumers. Nowadays, participants in sports industries (e.g. manufactures, sports teams, etc.) employ the Internet in their business strategies. In considering the growth of online sports business, it is important for sports stakeholders to understand the motivation for sports online consumption. There have been several studies focused on motivation for consumption of professional team sports Web sites; however, there has not been a great deal of research undertaken to investigate the motivations of non-team specific online sports community users or the factors that influence their knowledge-sharing behaviour (KSB). KSB is the process of mutually exchanging knowledge and jointly creating new knowledge (van den Hooff & de Ridder, 2004). This research comprises three cross-sectional studies. The aims are as follows: 1) develop a valid and reliable scale to measure motivation for endurance-sports online community (ESOC) participation through modification of the Motivational Scale for Sports Online Consumption (MSSOC) (Seo & Green, 2008); 2) identify motivational differences between lurkers and contributors within an ESOC; and 3) propose and test a structural equation model that identifies relationships between variables that affect the KSB within an ESOC. Data was collected from 20 ESOCs devoted to triathlons, running, cycling, and swimming.

Study 1 begins with a three-phase qualitative component (literature review, content validity, face validity). The qualitative phase is followed by a two-phase quantitative component (exploratory factor analysis and confirmatory factor analysis). The results showed that seven

factors (information/knowledge seeking, information/knowledge-sharing, entertainment, interpersonal communication, escape, pass time, and economic) served as motivation for ESOC participation. The researcher found that ESOC users might not visit ESOC for interpersonal communication purposes, even if some NFL (National Football League) fans use NFL Web sites for the purposes of interpersonal communication. Additionally, ESOC users' seeking and sharing motives are not as complicated as the researcher initially proposed. Information seeking and technical knowledge seeking factors are highly correlated, and the same applies to sharing factors.

Study 2 utilises the scale developed in Study 1 to conduct a Multivariate Analysis of Variance (MANOVA) to identify motivational differences between lurkers and contributors. The results showed that the importance of the seven motives differs by level of participation, or that participation levels might be changed by ESOC users' motivation for ESOC consumption. Information/technical knowledge-sharing, interpersonal communication, and economic factor mean scores were significantly different between lurkers and contributors.

Study 3 consists of six phases (Hair, Black, Babin, Anderson, & Tatham, 2009): defining individual constructs, developing the overall measurement model, designing a study to produce empirical results, assessing the measurement model validity, specifying the structural model, and assessing structural model validity. Consistent with previous research on KSB research (Gagné, 2009; Pavlou & Fygenson, 2006), the Theory of Planned Behaviour (TPB) (Ajzen, 1991) provides the underlying framework for the model. According to the TPB, three factors influence intentions and behaviour: attitude toward the behaviour; subjective norms regarding the behaviour, and beliefs about one's control over the behaviour. The model also proposes that sense of virtual community (SOVC) (Blanchard, 2008) is also positively associated with KSB.

The result showed that intention was clearly the best predictor of actual knowledge-sharing in an ESOC. Perceived behavioural control is also a good predictor of intention to share knowledge in an ESOC, but it is not a good predictor of actual KSB in an ESOC. Attitudes about sharing knowledge in an ESOC and subjective norms were theoretically good predictors of sharing intention, but both subjective norms and sharing attitude were statistically insignificant paths.

## **CHAPTER 1 - INTRODUCTION**

Online communities are a popular social space. Regardless of their topic of interest- politics, health, sports, technology, or art- these communities are entirely dependent upon the ability of community members to share their knowledge with other members. The ability to facilitate knowledge-sharing is central to the survival of the community.

The original Internet model focused mainly on connecting computers to each other. Whilst this model remains relevant, the Internet today is as much about connecting people as it is connecting computers (Chai et al., 2011). The Internet is the most important medium for information exchange and central to a significant proportion of interpersonal, business-to-consumer and business-to-business communication (Zahariadis, Pau, & Camarilo, 2011).

Internet usage is extensive. According to recent reports (IWS, 2011; Nielsen, 2009), over 1016 million people in Asia, 500 million people in Europe, 273 million people in North America, 235 million people in Latin America and the Caribbean, 139 million people in Africa, 77 million people in Middle East, and 24 million people in Oceania had access to the Internet on December 31, 2011. Globally, the number of Internet users is 2267 million, according to Internet World Stats (IWS, 2011). However, usage of the Internet is not evenly distributed throughout the world. Internet usage is high in North America (78.6 %), Oceania and Australia (67.5 %), and Europe 61.3 %; thus, only one third of the world population accesses the Internet (IWS, 2011). Despite the fivefold increase in the first decade of the new millennium, nearly 70 % of the world's population does not access the Internet. However, the key point is that in all well-developed economies throughout the world, the Internet's reach is extensive.

In these economies, the Internet is also pervasive. Few industries or aspects of social life remain untouched by the Internet. One aspect of social life revolutionised by the Internet is interpersonal communication. The Internet allows people to find and engage in discussions with like-minded individuals. People interact online by debating topical issues, playing games, or exchanging knowledge and information. These interactions are facilitated by a variety of technologies such as email, instant messaging, bulletin boards, and message boards/Internet forums. Message boards and Internet forum can be used interchangeably. For simplification, only Internet forum is used in this chapter.

An Internet forum is a Web site capable of facilitating interpersonal communication. Interpersonal communication occurs when people write and ‘post’ messages to the Web site. Content on an Internet forum revolve around a topic of mutual interest (Obst, Zinkiewicz, & Smith, 2002; Preece, 2000). These online communities are more likely characterised by a shared interest rather than a shared social characteristics (i.e. gender, socio-economic status) (Wellman & Gulia, 1999). A conversation about a particular topic is known as a thread. The number of people who can contribute (i.e. write something) to a thread is without limitation. Similarly, the number of people who can read the thread without making a contribution is also potentially limitless. An increasing number of people engage in online-forum discussions, either as writers or silent observers (Nicholas, 2007). According to a report issued by ‘Nielsen’ (Nielsen, 2009), two-thirds of the world’s Internet population has utilised an Internet forum. The Nielsen research reported that time spent on Internet forums is growing at more than three times the rate of overall Internet growth.

The utility, success, and ultimately the viability of an Internet forum is largely dependent upon both the quality and quantity of User-Generated Content (UGC) (Assmann, Sandner, &

Ahrens, 2009). UGC refers to the data, information, or media on the Internet that is produced by the general public. UGC differs from Internet content that is produced by professionals (e.g. publicists, journalists, advertising copywriters). The user is central to the Internet forum because they can be both producer (i.e. writer) and primary consumer (i.e. reader) of the Web site's content (Arriga & Levina, 2008). If users do not engage in knowledge-sharing activities, then the Internet forum would cease to exist (Hsu, Ju, Yen, & Chang, 2007).

Message boards and Internet forums are also referred to widely as online communities. In this context, communities refer to “self-organizing groups of individuals organized around a perceived need to satisfy a shared interest or set of interests by cooperating” (Baker & Ward, 2002, p. 211). These communities provide a novel source for seeking and sharing information and/or knowledge. These Web sites can assist in problem solving, information sharing, and the provision of mutual support and empathy (Savolainen, 2011).

Online communities are developed and utilised by both for-profit and non-profit organisations for strategic purposes. Online communities permit organisations to share and receive information with their customers outside the traditional organisation-customer communication channels. This can be used to enhance product support and enhance the quality of their relationships with customers. Knowledge exchange can enhance product development, promote innovation, and provide otherwise unavailable or expensive market and consumer intelligence (Füller, Jawecki, & Mühlbacher, 2007; Morrison, Roberts, & Midgley, 2004).

An online community is defined as an “aggregation of individuals or business partners who interact around a shared interest, where interaction is at least partially supported and/or mediated by technology and guided by some protocols or norms” (Porter, 2004, p. 16). Sense of community is defined as “a feeling that members have of belonging, a feeling that members

matter to one another and to the group, and a shared faith that members' needs will be met through their commitment to be together" (McMillan & Chavis, 1986). It is important to note that the sense of community within an online community can vary considerably. While Internet communication enables people to overcome spatial and temporal barriers (Baker & Ward, 2002), it simultaneously involves certain challenges. These include a lack of social cues (i.e. body language and tone of voice are redundant), a lack of familiarity, and disparities in communication skills (Kock, 2005). These might all create challenges for creating a sense of community amongst members. Hence, it is of particular importance to investigate knowledge-sharing within online communities and the contribution made by the sense of community.

### **Online Sports Consumption**

The proliferation of the Internet has also changed how sports consumers' access information. For example, according to comScore (2011), in October 2011, 83.3 % of online users age 15 and older in New Zealand visited a sports-related Web site, leading the globe in market penetration for the content category. Brazil ranked second with 80.3 % of its Internet audience visiting the sports category, followed by South Korea (74.7 %), the United States (72.7 %). To take another example, in October 2011, 2.3 million online users in New Zealand visited a sports-related Web site. According to comScore (2011), 219 million minutes were consuming sports content online in Australia in February 2011. The amount of time spent in online sports consumption was increasing at a rate of 25% annually in recent years (comScore, 2009). Thus the Internet represents a key medium for the dissemination of sports-related information and knowledge.

### **Online Sports Communities**

Online sports communities (OSCs) are simply online communities in which members share their sports-related interests. Members of an OSC constitute just one type of online sports-Web site

user. Online sports users are defined in a priori studies as people who have experience with obtaining sports-related information online, who have downloaded game highlights, who have purchased sports-related products online, and who have shared their opinions online about sports-related issues (Füller et al., 2007; Farrior et al., 1999; Jadin, Gnambs, & Batinic, 2013; Seo & Green, 2008).

OSCs are a recent addition to the sports media. Sports devotees now experience sports through these non-traditional forms. Prior sports management research into sports Internet/Web sites have focused on the content of the sites (Carlson, Rosenberger III, & Muthaly, 2003), effective Internet marketing strategies (Evans & Smith, 2004), the Sport Interest Inventory (SII) (Filo & Funk, 2005), the development of sports organizations to capitalize on associated online products (Kitchin, 2006), online sports motivation and concerns (Hur, Ko, & Valacich, 2007), Web cohesion, Web commitment, attitude toward sports-related Web sites, Web consumption (Seo, Green, Ko, Lee, & Schenewark, 2007), sports-related motivation (Seo & Green, 2008), attitude toward an event (Filo, Funk, & Hornby, 2009), and the degree of brand awareness resulting from virtual advertising (Tsuji, Bennett, & Leigh, 2009). The participants of prior studies are mostly from Web sites and online communities of professional sport's teams that have little in the way of User-Generated Content (UGC) but large numbers of professional-generated content such as news and announcements.

### **Endurance Sports**

The Internet provides an otherwise unobtainable ease of communication, through which 'niche sport' communities can be sustained. Niche sports (i.e. endurance-sports, x-sports, martial arts, etc.) have limited 'widespread' media attention and rely on specialised media (Zhang, Bennett, & Henson, 2003). Endurance-sports are a subset of sports in which the goal is prolonged athletic



output over an extended distance or for an extended period of time. These sports require a high level of muscle endurance. This is achieved primarily through aerobic activities (e.g. running, cycling, swimming, etc.). According to Reuter (2012), endurance sports are a unique activity. Participants of endurance sports range widely in age, experience, and body type. According to runnerstats.net (2013), marathon completion times range from less than 2.5 hours to almost 10 hours. Races will often have cut-off times of between seven and eight hours. Runnerstats.net data also indicates that marathoners range in age from 18 years to over 70 years. Some of the participants are first-time finishers, while other participants have completed many marathon races.

From a marketer's perspective, endurance sports athletes are a very attractive demographic (Running-USA, 2011). According to a survey by *Sport Business Journal*, the average annual income of people who had subscribed to any type of triathlon magazine was 122,600 USD (Williams, 2007); USA Triathlon membership has grown immensely and it is growing still—from 19,000 in 1999 to over 150,000 in 2012 (USA-Triathlon, 2012). 'Core runners' active adult participants who tend to enter running events, train year-round; purchase 2-4 running shoes each year; are highly educated' with 77.2% having earned a college diploma (national average = 29.5%); and are affluent, with 72.9% reporting a household income of more than 75,000 USD.

The focus of the current study is on individual sports, especially 'participation sports', which involve continuous activities such as running, cycling, swimming and triathlons (i.e. endurance-sports). The above sports are amongst the more-popular participation sports in the United States, the United Kingdom, Australia, and New Zealand (U.S. Physical Activity Council 2013; U.K. Department for Culture, Media and Sport 2011; Australian Bureau of Statistics 2012; SPARC 2008).

### **Statement of Purpose**

The purpose of the present research is to understand participant motivation and factors affecting knowledge-sharing behaviour within endurance sport online communities.

The specific objectives of the research are as follows:

1. Develop a valid, reliable scale to measure motivation for visiting endurance-sports online communities (ESOCs).
2. Identify motivational differences between lurkers and contributors within endurance-sports online communities.
3. Propose and test a structural equation model that identifies relationships between variables that affect knowledge-sharing behaviour within endurance-sports online communities.

### **Statement of Hypotheses**

Study 1 is a scale development exercise; thus, hypotheses were not established. Study 2 is written without the development of an explicit hypothesis; however, the research question clearly reflects the researcher's perception that there are motivational differences between lurkers and contributors.

Consistent with SEM best practice, Study 3 proposes a number of explicit hypotheses. The hypotheses are as follows:

- H1: A positive knowledge-sharing attitude influences members' intention to share knowledge in an OSC.
- H2: Positive subjective norms influence members' intention to share knowledge.
- H3: Perceived behavioural control will positively influence knowledge-sharing intention.
- H4: Perceived behavioural control will positively influence actual knowledge-sharing behaviour in an OSC.

H5: Positive knowledge-sharing intention influences knowledge-sharing behaviour in an OSC.

H6: Sense of virtual community will positively influence knowledge-sharing intention in an OSC.

### **Significance of the Study**

This thesis is expected to make a number of contributions to existing knowledge, and practice, as well as yield implications for future research. Forum success depends upon contributors providing content and additional ‘eyeballs’ to read the posts. The latter is directly related to the advertising/commercial value of the forum. Even if the forum owner is not commercially driven, an extensive readership permits them to claim that their forum is larger than another. Every contributor is a reader, but not every reader will contribute. Thus, there is a need for a theoretically grounded, empirically supported model that explains participant motivation and factors affecting knowledge-sharing within endurance -sports online communities.

The sustainability of an online community is underpinned by the community’s ability to attract and maintain contributors that regularly share knowledge with the community (Cheung & Lee, 2009). However, it is problematic for forum owners that the majority of Internet users are more interested in knowledge seeking than knowledge-sharing (Solis, 2010). The sustainability of an online community hinges on the willingness of its members to share knowledge (Chen, 2007; Wenger, Liu, Schneider, Prasarnphanich, & Chen, 2009). The results of this study compel forum owners and their moderators to ensure that forum behaviour creates a sense of community, because in its absence the number of people who contribute content will likely be compromised.

From a measurement perspective, a valid and reliable scale to measure the motivations of people who participate in ESOCs was developed and empirically tested in the present study; no

such scale was previously available to researchers. Another contribution of the present research is the delineation of the ways in which lurkers and contributors differ with regard to their knowledge-sharing, communication, entertainment and economic motives.

This research is amongst the first to examine the factors that facilitate knowledge-sharing within online sports communities. Although online sports consumption and OSCs have grown significantly, there is insufficient understanding of knowledge-sharing behaviours and the role that a sense of community plays in this process. Similarly, even within the study of non-sports online communities, there is still an insufficient amount of research on knowledge-sharing (Wasko & Faraj, 2005).

The theoretical contribution of this research lies in demonstrating the influence of sense of virtual community (SOVC) on the well-established Theory of Planned Behaviour. A key contribution is the specification, justification, and empirical measurement of a model linking key factors associated with knowledge-sharing within the online community context. Thus, the model provides a mechanism for understanding the impacts of SOVC on knowledge-sharing and, by default, the provision of user-generated content within online communities.

This study can potentially provide a better understanding of a consumer's behaviour when using online communities. From a practical perspective, sports organisations, event owners, product manufacturers, and sponsors need information about how their clients/participants behave. Just as importantly, they need to understand what they are saying. Thus, knowing how and why their consumers behave online will permit a better understanding of customers 'in the real world' and facilitate stronger relationships with them.

## **Overview of Methodology and Methods**

Methodologically, this research is underpinned by the positivist paradigm. Positivists assume that reality is objective and can be measured using properties that are independent of the researcher and his or her instruments (Guba & Lincoln, 1994). Put simply, positivists believe that knowledge is both objective and quantifiable. Positivistic researchers utilise quantification to organize the knowledge generation process. Great care is taken to describe precisely the variables under investigation, as well as their relationship to each other. Positivists believe that they can uncover the truth (Creswell, 2009).

In Study 1, a valid and reliable scale to measure motivation for endurance-sports online communities is developed. Using the Motivational Scale for Sport Online Consumption (MSSOC) (Seo & Green, 2008) as the basis for item generation and procedure, this study utilises a four-phase qualitative component (literature review, item generation, content validity, and face validity) and a two-phase quantitative component, consisting of an exploratory factor analysis (EFA) and a confirmatory factor analysis (CFA). The EFA and CFA participants were recruited from four endurance-sports online communities: [www.runnersworld.com](http://www.runnersworld.com), [www.coolrunning.com.au](http://www.coolrunning.com.au), [www.bicycles.net.au](http://www.bicycles.net.au), and [www.tritalk.co.uk](http://www.tritalk.co.uk).

In Study 2, motivational differences between lurkers and contributors within endurance-sports online communities are identified. The scale developed in Study 1 was utilized in Study 2. Data were collected from 20 endurance-sports online communities, none of which was used in Study 1. ANOVAs and *t*-tests were conducted to explore (a) mean differences on composite variables within each group and (b) mean differences between lurkers and contributors on the ESOC composite variables.

In Study 3, a structural equation model that identifies relationships between variables affecting the knowledge-sharing behaviour within endurance-sports online communities is

proposed and tested. Data collection for Study 2 and Study3 were collected at the same time. The latent variables were knowledge-sharing behaviour, knowledge-sharing intention, knowledge-sharing attitude, perceived behavioural control, subjective norms, and SOVC. A two-step SEM procedure tested the theoretically based relationships among the latent variables. In the first step, the CFA was used to test an overall measurement model. In the second step, the specific paths influencing knowledge-sharing were examined.

### **Thesis Structure**

The structure of this thesis is consistent with Auckland University of Technology's Pathway Two thesis structure. The purpose of this pathway is to encourage doctoral students to prepare manuscripts for submission to peer review journals. This thesis comprises a progression of studies that are presented as sequential chapters. For more information, download AUT postgraduate handbook (<http://www.aut.ac.nz>). Three chapters of this thesis contain submission-ready papers for publication in peer-reviewed journals. At the time of thesis submission, none of these chapters had been submitted for peer review.

A detailed, narrative literature review is presented in Chapter 2. This literature review outlines the concept of online community, motivation underlying customers' participation, theories of motivation, SOVC, and theory of planned behaviour. Chapter 3 presents Study 1. The purpose of Study 1 is to develop a valid and reliable scale to measure participants' motivation for visiting endurance-sports online communities. Chapter 4 presents Study 2, in which motivational differences between lurkers and contributors within endurance-sports online communities were explored. Chapter 5 presents Study 3. In Study3, a structural equation model to identify relationships between variables affecting knowledge-sharing behaviour within endurance-sports online communities. Chapters 3-5 all have a similar structure of introduction, background

literature, methods, results, and discussion. Prefaces are provided at the beginning of each of these chapters to outline the sequential progression of studies. Given the sequenced nature of these studies, there is content overlap within these three chapters. Each chapter is written to ‘stand-alone’, making repetition unavoidable. The findings and recommendations emerging from all three studies are integrated in Chapter 6. In this chapter, the implications of the research for knowledge, future research, and industry are discussed. Supplementary information not provided in the thesis chapters is included as Appendices. This includes ethics approvals and participant questionnaires.

### **Definition of Terms**

This section defines key concepts and specialised vocabulary used throughout the thesis. The concept, definition and definition source are outlined in Table 1 below.

Table 1

*Concept, Definition and Source*

Concept	Definition	Source
Sense of community	A feeling that members have of belonging, a feeling that members matter to one another and to the group, and a shared faith that members' needs.	(McMillan & Chavis, 1986)
Online community	An aggregation of individuals or business partner who interact based on a shared interest, where interaction is at least partially supported and/or mediated by technology and guided by some protocols or norms <sup>1</sup> .	(Porter, 2004).
Knowledge-sharing behaviour	An actual behaviour through which knowledge (i.e. information, skills, or expertise) is exchanged among people of community	(Aulawi, Sudirman, Suryadi, & Govindaraju, 2009)
Knowledge-sharing intention	The degree to which one believes that one will engage in an explicit or implicit knowledge-sharing act	(Ajzen, 1991)
Knowledge-sharing attitude	The degree of one's positive feelings about sharing one's knowledge	(Ajzen, 2003)
Information sharing	Members providing the information required for problem solving to other organization members	(Davenport, Eccles, & Prusak, 1998)
Perceived behavioural control	A person's perception of the ease or difficulty of performing the behaviour of interest	(Ajzen, 1991).
Subjective norms	The perceived social pressure to engage or not to engage in a given behaviour	(Ajzen, 2002; Pavlou & Fygenson, 2006)
Lurker	One who post occasionally or not at all but regularly read the group's postings.	(Rafaeli, Ravid, & Soroka, 2004).
Poster/Contributor	One who actively engage with the online community and contribute social capital	(Rafaeli, et al., 2006)
User-generated content (UGC)	UGC refers to content created or produced by the general public rather than by paid professionals and that is primarily distributed on the Internet	(Daugherty, et al., 2008)
Endurance sports	Sports in which the cardiovascular and the aerobic energy producing systems are strongly engaged during training and competition	(Chagnon, et al., 1984)

*Notes.* 1. The literature also uses the term virtual community (Blanchard, 2008; Chen, Chen, & Kinshuk, 2009). For the purposes of this thesis, the terms 'online' and 'virtual' are seen as synonymous modifiers of any social community in which interaction is mediated by communication technology. 2. Message board and Internet forum can be used interchangeably.



### **Delimitations of Scope**

The delimitations of a study are those characteristics selected by the researcher to define the boundaries of the study (Simon, 2011). The participants sample in the present study was delimited in a number of ways. The first decision was to focus on endurance sports. Within the endurance sports framework, the study utilised only four types of endurance sports; swimming, cycling, triathlon and running. There are, of course, a considerable number of other endurance sports. The examination of endurance sports permits a focus on sports participants (as distinct from sports spectators). The individual (i.e. non-team) nature of such sports provides a novel point of departure from previous research that was reliant upon team sports. Lastly, a focus on endurance sports resulted in a sample of participants that was reasonably homogenous in terms of training and competition demands. By contrast, the training and competition demands of, for example, golf, tennis, martial arts, and weightlifting are fundamentally different.

Participants were recruited only from those Internet forums where English is the dominant (if not exclusive) language. Non-English language Internet forums were excluded from the analysis; otherwise, the survey would have needed to be translated into multiple languages. The exclusive use of English-language Internet forums also assisted in ensuring that participants had sufficient English-language proficiency to understand the survey questions.

### **Study Limitations**

As with any research endeavour, these studies have their own set of limitations that must be acknowledged. The limitations are as follows:

- Since the study sample comprised members of 20 OSCs, the present findings may not generalize to the general population.

- Data were obtained via survey in this study. The results of a survey are dependent on whether respondents respond thoughtfully and honestly.
- The convenience sampling approach cannot guarantee that the sample was representative of the population (Creswell, 2002).
- The risk on a non-response error must be acknowledged. There is no way of knowing whether those who responded are different from those who did not respond (Dillman, 2000).

### **Chapter Summary**

This chapter has introduced the study. Participation in OSCs is a very popular leisure activity throughout the world. OSCs are reliant upon the willingness of its members to share knowledge through the provision of content. The chapter then provided a statement of purpose, followed by a statement of the hypotheses. Most of these hypotheses pertain to Study 3.

The potential significance of the research was then outlined, followed by an overview of the methodology and methods. The overarching structure of the thesis was outlined, highlighting that Chapters 3-5 describe three sequenced studies (Studies 1, 2, 3). Key concepts were defined. Delimitations were acknowledged and justified. The chapter concluded with exploration of the limitations associated with the study.

The following chapter provides a review of the existing literature that directly and indirectly pertains to the motivations and factors affecting knowledge-sharing within endurance-sports online communities.

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## **CHAPTER 2 - REVIEW OF LITERATURE**

### **Introduction**

In this chapter, a brief review of the research on motivation theories, including general motivation theories, and theories of motivation for online consumption, is presented. Next, research on motivation for online sports consumption and participation in OSCs is discussed. The aim here is to related research in the sports management field with non-sports-related literature such as community, online community, online brand community, and users' behaviour.

Next, theories of engagement (e.g. sense of community, SOVC) and theories of participation (e.g. the health belief model, trans-theoretical model, theory of reasoned action, technology acceptance model, and theory of planned behaviour) are presented. Finally, a review of the other constructs (i.e. helping behaviour and levels of participation) used in the study is provided in the last part of this chapter. A more specific review of the relevant literature is conducted in the literature review section of each chapter.

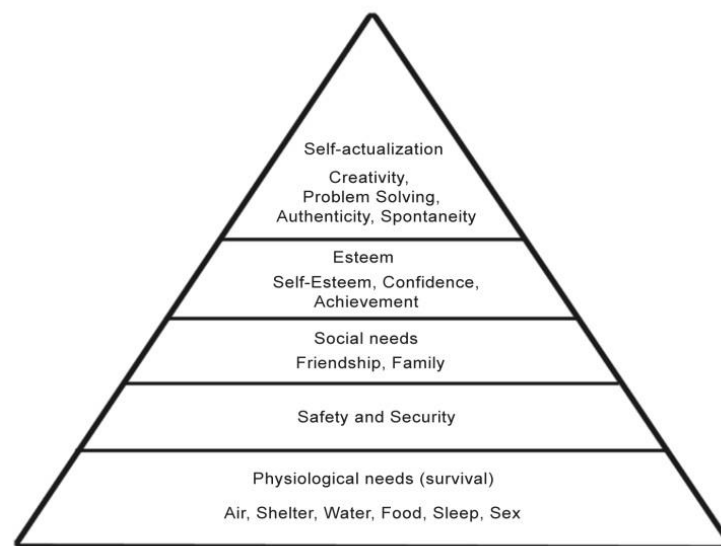
The aims of this study are to develop a valid and reliable scale to measure motivation for visiting ESOCs, identify motivational differences between lurkers and contributors within ESOCs, and propose and test a structural equation model that identifies relationships between variables that affect knowledge-sharing behaviour within ESOCs. The chapter begins by reviewing the literature on motivation, which is considered the central concept of the study.

### **Theories of Motivation**

#### **Hierarchy of Needs Theory**

Maslow (1943) proposed the hierarchy of needs theory to explain motivation. Maslow suggested humans are deficient organisms with indefinite needs. A new need arises soon after satisfying the

previous need, and endless efforts are made to meet those needs. The driving factor of active motivation is an unsatisfied needs, as a satisfied need cannot act as a motivator. In Maslow's theory needs are categorized and organised in a serial hierarchy, ranging from the lowest to the highest level. His assumption suggests that actions are not motivated by the accomplishment of lower level needs; rather, actions are motivated by the overarching desire to achieve a higher level of needs. The needs, listed from basic (lowest, earliest) to most complex (highest, latest) are as follows: Physiology (hunger, thirst, sleep, etc.); Safety/Security/Shelter/Health; Belongingness/Love/Friendship; Self-esteem/Recognition/Achievement; Self-actualization (see Figure 1).



*Figure 1.* Maslow's hierarchy of needs.

Maslow suggests that the fulfilment of lower-level needs does not always precede the desire of higher-level needs. There can be cases where a higher-level element is wanted prior to

satisfying lower-level elements. Although the theory applies to the general public, it is not universally applicable because of individual differences (Maslow, 1943).

Maslow's theory was criticised for ignoring individual and circumstantial differences and was corrected by other researchers. Porter and Lawler (1968) corrected Maslow's need hierarchy theory and suggested the following hierarchy:

1. Need for safety
2. Need for possession
3. Need for self-recognition
4. Need for freedom
5. Need for self-actualisation

However, Porter and Lawler's (1968) theory explaining basic human needs is too comprehensive for use in research on needs associated with participation in online communities. Since basic human needs are not the focus of the present study, the needs hierarchy theory will only be used to understand the basic principle of motivation.

### **Existence, Relatedness, Growth (ERG) Theory**

The needs hierarchy theory suggested by Alderfer (1969), which was based on field research, was proposed to overcome the problems of Maslow's needs hierarchy. In this theory, Maslow's five need levels are divided into three categories: needs for existence; needs for relatedness, and needs for growth. The needs for existence include various forms of physiological/physical needs including hunger, thirst, housing, comfortable workplaces, and adequate compensation. This level of needs is similar to Maslow's physiological and safety needs. Relatedness needs translate every need in interpersonal relationships within an organisation. The needs include belongingness, interpersonal relationship, love, and self-recognition. This category of needs

corresponds well to Maslow's needs for comfort, belongingness, love and a part of self-existence. Growth needs pertain to individual efforts in creativity and individual growth. The satisfaction of a growth need is a realisation of motivation achievement. Growth needs are similar to Maslow's need for self-realisation and a part of self-existence.

Although Alderfer's (1969) theory is similar to Maslow's theory, the theories differ with regard to the stipulation that, the satisfaction of lower level of needs acts as a motivator for higher-level of needs. Specifically, the following points differ between the two theories. First, in addition to Maslow's satisfaction-proceed approach, Alderfer (1969) introduces the failure-retreat approach. This states that lower-level needs become more important when higher-level needs are unachieved or failed. Second, compared to Maslow, who proposed a serial achievement of needs, Alderfer (1969) stated one or more needs may arise at the same time. Third, Alderfer (1969) neglects the assumption that lower-level needs must be satisfied before higher-level of needs can affect human activities. Such a hierarchical theory also is not suitable for understanding the needs of the limited and specialised subjects (online users) of the current study.

### **Theory X and Theory Y**

McGregor and Cutcher-Gershenfeld (2006) proposed the XY theory, which encompasses assumptions about humanity based on lower-level needs (X theory) and higher-level needs (Y theory); Y theory also comprises management strategies that correspond to the proposed assumption. X theory is a conventional theory pertaining command/control. The assumptions on humans are as follows:

- 1) Humans, by nature, do not want to work and try to avoid work whenever possible.

- 2) Since humans do not want to work, humans should be forced, controlled, or ordered to accomplish the goals of an organisation and punished if they fail to meet these goals.
- 3) Humans usually like to follow orders and do not want to be responsible. They are low in ambition but thrive for security.

Y theory comprises the following assumptions of humans and their associated management strategies.

- 1) Work can be naturally fun when it is physically and psychologically satisfying. Humans are not naturally opposed to working.
- 2) Humans serve themselves in a self-oriented and self-controlled way when striving toward a goal.
- 3) A sacrifice made to achieve a goal act as compensation. The best compensation is earned from self-satisfaction and self-actualisation.
- 4) Under reasonable circumstances, humans usually prefer responsibility and pursue work that demands responsibility.
- 5) With acceptable motivation, humans are autonomous and creative in their work.
- 6) Although humans typically have infinite capability usually only part of it is used.

Theory X is conventionally accepted in organisational management; thus order, command, and control serve as the main management strategies. However, McGregor and Cutcher-Gershenfeld (2006) concluded that the assumptions of Theory X are not suitable for general application, if various changes in social environment and other circumstances, including an increase in education level and lifestyle, are apparent; in response to such changes, organisational members are likely to strive for a better lifestyle. Therefore, Theory Y assumes

that humans are not lazy and can be trusted; thus, the assumption of Theory Y suggests that, with reasonable motivation, humans can be autonomous and creative in their tasks.

A common misinterpretation of these theories is that Theory X is negative while Theory Y is positive. This problem arises because McGregor and Cutcher-Gershenfeld (2006) simply bisected the theories without considering managers' behaviour patterns or individual differences between members and situations in complex human relations. Although the theory is focused on organisation management, a field irrelevant to the interest of the current study, the theory can nonetheless be used to explain online sports community users' motivation to share their knowledge gained through their own information and experiences by referencing to the psychological satisfaction suggested in the first assumption of the Y theory.

### **Theories of Motivation for Online Consumption**

#### **Interactive Needs**

Hoffman and Novak (1996) divided interactivity in the online environment into man-interactivity and machine-interactivity. Man-interactivity refers to interactivity between the members of the community, while machine-interactivity denotes interactivity through a medium. In their study of Web communities, Rothaermel and Sugiyama (2001) found that off-site communications, emails, and phone conversations between members highly influences the economical outcome of the community. Seo and Green (2008) proved that interpersonal communication motivation is an important motivator in sports-Web site consumption.

#### **Social Needs**

**Need for pleasure.** Hsu and Lu (2007) suggested that perceived cohesion, perceived user friendliness and perceived pleasure are primary characteristics of online game communities.

They further argued that customer loyalty could be enhanced through perceived cohesion, perceived user friendliness, and perceived pleasures.

**Need for relationship.** Baumeister and Leary (1995) suggested that humans want to participate in close social relationships. ‘Relatedness needs’ encompass all needs involving relationships with other people, such as family members, co-workers, and friends. One of the basic characteristics of relatedness needs is that their satisfaction depends on a process of sharing or mutuality (Alderfer, 1969). According to Alderfer (1969), people satisfy relatedness needs by mutually sharing their thoughts and feelings. The Internet facilitates meaningful relationships by providing individuals the opportunity to share similar experiences at their convenience (Hagel & Armstrong, 1999).

### **Economical Needs**

**Need for transaction.** According to Farrior (1999), the economic value of a Web community can be achieved by providing spaces for transaction and the needs for transaction, as transaction needs are an important part of daily life for social beings like humans. Hagel and Armstrong (1999) proposed a wider definition of transaction, which included trading of information between users through the Internet. Researchers assume that sports online community users are interested in particular sports or sports-related products and services. Therefore, these users share relevant information and purchase and use experiences. The majority of transaction in this context is characteristics of social needs.

**The relationship between social needs and economical needs.** Hagel and Armstrong (1999) stated that although Web-communities can become biased towards social or economic needs depending on the nature of the interest, bias decreases the success of Web communities because these communities can potentially satisfy various needs and members’ needs vary. Thus,

the ultimate goal of a sports marketer is to create economic value through the satisfaction of social needs, which is the occurrence of transactions through a community.

### **Information Needs**

According to Rothaermel and Sugiyama (2001), humans have the need and desire to gather information on the topic of their interest. This need for information is fulfilled by organization of interest topics from a wider to a narrower range of sports, hobbies, and travelling. The development of Web-communities connected people, even those not competent with computers, who wanted to share specific information (Hagel & Armstrong, 1999).

### **Theories of Motivation for Online Sports Consumption**

Papacharissi and Rubin (2000) found five general motives for using the Internet: interpersonal utility, passing time, information seeking, convenience, and entertainment. Although this is useful in understanding Internet use in general, it is less helpful in understanding consumers' interest in particular Web sites (Seo & Green, 2008). Much of the appeal of sports Web sites derives from passionate sports fans who need their daily fix of information (Carlson, Rosenberger, & Muthaly, 2003). Traditionally, the source of this information has been newspapers, television, magazines, and telephone services. More recently, fans have been turning to the Internet. Notably, Filo and Funk (2005) took a first step in this direction by examining the relationship between attendance motives and Internet content and they found some similarities between features of interest to sports-event attendees and information featured on teams' Web sites.

Other studies have explored motivations for online sport consumption. For example, (Clavio, 2008) investigated the demographics and usage profiles of collegiate sport message board users. Clavio and Kian (2010) utilised uses and gratification theory to identify organic,



functional and interactive factors within followers of a retired female athlete's Twitter posts. In a similar study of a mixed martial-arts blog (Frederick, Clavio, Burch, & Zimmerman, 2012) identified six gratification dimensions: evaluation, community, information gathering, knowledge demonstration, argumentation, and diversion. Speed of information access, the depth of information, and the ability to access otherwise unavailable information were key. In two studies, Hur and colleagues (Hur, Ko, & Valacich, 2007, 2011) developed and tested a conceptual model of online sports consumption motivation and concerns when using the Internet for sports information and shopping. In their second study, they developed a structural model of the relationships between sport Web site quality, e-satisfaction, and e-loyalty. There are also many studies on participation in online, fantasy sports leagues (Billings & Ruihley, 2013; Brown, Billings, & Ruihley, 2012; Drayer, Shapiro, Dwyer, Morse, & White, 2010; Dwyer & Kim, 2011; Ruihley & Billings, 2013; Ruihley & Hardin, 2011). For example, in the Ruihley and Hardin (2011) study, the three strongest motivating factors were fanship, competition, and social sport and the bottom three were fan expression, ownership, and escape. Ruihley and Billings (2013) identified that men and women yielded consistent motivations on five of the seven measures – arousal, entertainment, escape, self-esteem and surveillance. Men reported high scores for the two remaining two dimensions - enjoyment and passing time.

Seo and Green (2008) developed a motivation scale for sports online consumption which has 10 dimensions of motivation: fanship, interpersonal communication, technical knowledge, fan expression, entertainment, economic, pass time, information escape, and support. Seo and Green (2008) found that 9 of the 10 dimensions (technical knowledge, interpersonal communication, information, fanship, entertainment, economic, pass time, escape, and team support) had been previously identified as key motives for the consumption of the Internet,

communications, live sports events, or other sports media. It is interesting that one new dimension was identified (fan expression), and one expected dimension was not supported. Fan expression is consistent with the concepts of community, belongingness, and subcultural expression, which are important and sought-after benefits for sports participants and spectators (Green, 2001), sports tourists (Green & Chalip, 1998), volunteers (Green & Chalip, 2004), and other communities of consumption (McAlexander, Schouten, & Koenig, 2002).

However, as the subject of the Seo and Green (2008) study were users of an NFL team's Web site, which includes both fan and team-related categories, these findings should not be used to make implications regarding the motivation for sports Web site use.

### **Concept of an Online Community**

There is no generally accepted definition of an online community (Mittila & Mantymaki, 2002). As online communities became more successful, the term has become a buzzword with many different meanings. Dyson (1998, p. 31) defined a community as 'the unit in which people live, work and play' (p. 31). She argued that as the world becomes increasingly complex, people seek community for fellowship and security. According to her, the Internet is an enabling technology that supports the human interaction required for community formation. Online communities are quite similar to traditional communities in terms of capabilities or purpose.

Rheingold (1993, 2000) was the first to define the term virtual/online community: virtual communities are social aggregations that emerge from the Net when enough people perpetuate certain public discussions for a sufficient amount of time and with sufficient human feeling to form Webs of personal relationships in cyberspace. Rheingold emphasized in his definition the importance of meaningful relationships. These meaningful relationships can emerge between users or also between users and representatives of companies. Hagel and Armstrong (1999)

argued that although online communities result in the aggregation of information and other kinds of resources, they are primarily about aggregating people. People are drawn to online communities because they represent an engaging environment in which to connect with other people; however, more often, these communities provide an on-going series of interactions that create an atmosphere of trust and real insight. This interaction is based on people's desire to meet four basic needs: interest, relationship, fantasy, and transaction. The strength of online communities rests in their ability to address multiple needs simultaneously. For this reason, the most successful online communities meet more than one need simultaneously.

At a workshop on the subject of online communities in 1996, a group of scholars recognized the following core characteristics of online communities (Whittaker, Issacs, & O'Day, 1997):

- Members have a shared goal, interest, need, or activity that provides the primary reason for belonging to the community.
- Members engage in repeated, active participation and there are often intense interactions, strong emotional ties and shared activities occurring between participants.
- Members have access to shared resources and there are policies for determining access to those resources.
- Reciprocity of information, support and services between members is important.
- There is a shared context of social conventions, language, and protocols.

Last of all, Preece (2000) also identified the key characteristics of online communities. The characteristics are members who wish for interaction among the community to satisfy their needs; shared particular interest; certain norms that direct the relationship; and computer systems that support communication and cohesion among members.

Although the term ‘virtual community’ is used popularly, the term ‘virtual’ might misleadingly imply that these communities are less ‘real’ than physical communities. Kozinets (1998) pointed out that these social groups represent a ‘real’ existence for their participants, and thus have consequential effects on many aspects of behaviour, including consumer behaviour. To maintain the useful distinction of computer-mediated social gathering, the researcher used the term ‘online communities’ to refer to these Internet-based communities or forums.

### **The History of Online Communities**

Online communities date as far back as the early 1970s when the first newsgroups emerged on the Internet. At first, these groups consisted of researchers with a common interest in research and a need for cooperation. At approximately the same time the first multi-user dungeons (MUDs) appeared in Great Britain. A MUD is a virtual world where people play different types of role playing games in an imaginative environment. They can also associate with other people and exchange ideas. By 1980 email capabilities had developed significantly. Bulletin boards were regularly used and Finger and WHOIS programs were developed to help people find email addresses (Obino & Bernaschi, 2010). These improvements on the initial communication tools were made in response to the demand of the users. Once they were sufficiently developed and enough structure existed, users began to form communities (Balasubramanian & Mahajan, 2001; Preece, 2000; Rheingold, 2000).

More recently, the early static Web sites that appeared in the mid 1990’s have shifted to highly interactive Web sites that allow communication not only between the site and visitors, but also between visitors. As a result, online communities have swiftly appeared on the World Wide Web. As both the numbers of online community sites and visitors have grown quickly, both the

popular press and researchers in various fields have become interested in them as a subject of study (Ridings & Gefen, 2004).

The rapid evolution of technology has significantly influenced the development of online communities. The first bulletin boards were based on the design of physical bulletin boards. Nowadays board messages can be displayed in various ways. Usually the messages are threaded so that the first message is at the beginning of the thread and later responses are stacked beneath the first one. During the last 10 years, services have rapidly developed that enable visitors to use advanced search facilities, create profiles with their personal data and pictures, view other people's profiles, have private conversations, and use avatars. In addition to asynchronous communication technologies, such as discuss forums (bulletin boards), where messages can be read and responded to hours, weeks, or months later, synchronous services that require communication partners to be co-present online have been added. These synchronous services include chat systems, instant messaging and texting systems. (Preece, Maloney-Krichmar, & Abras, 2003).

One of the more recent platforms through which online communities may form is a social networking site (SNS), which is 'Web-based service that allows individuals to construct a public or semi-public profile within a bounded system, articulate a list of other users with who they share a connection, and view and traverse their list of connections and those made by others within the system' (Boyd & Ellison, 2007, p. 211). For Boyd (2010), these special network sites created networked publics. Like other types of publics, SNS help people to gather for social, cultural and civic purposes beyond those immediately available from their friends and family. These technologies reconfigure publicness, creates confusion between audience and public and changes the way people engage in public life (Naym & Boyd, 2012).

There is increasing scholarly interest regarding the use of the Internet for sports-related activities, especially social media (Eagleman, 2013; Hopkins, 2013; Hutchins & Mikosza, 2010; Kwak, Kim, & Zimmerman, 2010; McGillivray, 2014; Miranda, Chamorro, Rubio, & Rodriguez, 2014; O'Shea & Alonso, 2013; Özsoy, 2011; Price, Farrington, & Hall, 2013; Stavros, Meng, Westberg, & Farrelly, 2013). Within the broad domain of social media, studies have investigated consumer use of Twitter (Clavio & Kian, 2010; Hopkins, 2013; Özsoy, 2011; Price et al., 2013), Facebook (Hopkins, 2013; Miranda et al., 2014; Özsoy, 2011; Stavros et al., 2013; Waters R.D., Burke K.A., Jackson Z.H., & J.D., 2011) and blogs (Dart, 2009; Hutchins & Mikosza, 2010; McCarthy, 2013).

Facebook and Twitter are popular SNS. They are different from previous online communities because they are organized around people rather than interests (Boyd & Ellison, 2007). The focus of Facebook is on connecting people, in addition to entertainment. Despite the ability of Facebook users to make connections beyond their geographical location, research has indicated that Facebook users primarily interact with people who are also in their in person network (Hargittai, 2008). Twitter is much less elaborate and was created to allow users to post a 140 words messages (tweet), (e.g. what are you doing at the moment?), suggesting Twitter may be used to interact with others online, rather than just to post a status update. Indeed, Kelly (2009) found that 38% of Tweets consisted of messages that intentionally went back and forth between users in a fashion similar to instant messaging.

### **Classifying Online Communities**

In terms of social dynamics, there are many similarities between traditional and online communities: both involve developing a Web of relationships among people who have

something meaningful in common (e.g. hobby, political cause, or sports interest). On the other hand, online communities have some specific features.

First, while earlier communities were bound to the limitations of time and space, these restrictions have been resolved by the global communication possibilities offered by the Internet. Second, people may never meet each other face to face. Third, within the context of an online community people probably manifest themselves differently than within the context of in-person meeting because of the computer-mediated nature of online interactions. Finally, an online community differs from other groups using the same computer network by offering members the possibility of many-to-many communication: members can interact with one another not only on a one-on-one basis, but also on a many-to-many basis. This means that by posting to a newsgroup or sending a message to a discussion forum, one can communicate with all other members. In addition to a discussion forum, where members can post messages and other can read and reply, there are several kinds of services used in communication.

Owing to the multitude of different elements within online communities, the variety of different kind of online communities is wide as well. Thus, it is necessary to classify these communities at some level to understand this variety. Researchers have made classifications based on many different criteria (e.g. bulletin board, weblogs, chat rooms, forums, etc.), but no particular typology has been considered beyond others. After reviewing several proposed typologies, Li (2004) concluded that none of the classifications or definitions of online community comprises every aspect or applies in every circumstance. However, establishing a common ground classification scheme would support the goal of facilitating interdisciplinary research agendas.

A well-known online community classification was made by Schubert and Ginsburg (2000). They divided communities into two categories: those based on the underlying medium and those based on the common perspective. From the view of the underlying medium, an Internet community is a network community that evolves on the Internet. Perspective-based communities were further divided into leisure time communities, research communities, and business communities. Business communities may appear in the form of communities of commerce, communities of transaction, and electronic malls. Leisure time communities may be oriented toward gaming, binding relationships or fantasies. However, communities can occupy more than one category, including elements from many categories.

Furthermore, Porter (2004) suggested a typology for online communities by first dividing them into two first-level categories: member-initiated and organisation-sponsored. According to Porter (2004), member-initiated communities are established and managed by members while organisation-sponsored communities are communities that are sponsored either by commercial or non-commercial (e.g. non-profit) organisations. Porter (2004) pointed out that these sponsoring organisations have key stakeholders and/or beneficiaries (e.g. customer) that are an inherent part of the sponsoring organisation's mission and goals. In the second level of Porter's (2004) proposed typology, online communities are categorised based on the general relationship orientation of the community. Relationship orientation refers to the type of relationship fostered among members of the community.

Chaffey (2006) approached categorisation slightly differently as he suggested that depending on a market sector, an organisation has a choice of developing different types of communities for business-to-customers; communities of purpose, position, or interest; and communities of profession for business-to-business. Moreover, Dholakia and Bagozzi (2004)



conceptualised online communities based on the distinction between network-based and small-group-based online communities. Furthermore, Porter (2004) divided the organisation-sponsored online communities into three categories: commercial, non-profit and government. Preece (2000) suggested online communities are made up of the following elements: people who interact socially as they strive to satisfy their own needs or perform special roles, such as leading or moderating; a shared purpose, such as interest, need, information exchange, or service, that provides a reason for the community; policies, in the form of tacit assumptions, rituals, protocols, rules, and laws that guide people's interaction; and finally, efficient computer systems to support and mediate social interaction and facilitate a sense of togetherness.

### **The Concept of Online Brand Community**

A brand community is a specialized, non-geographically bound community that is based on a structured set of social relationships among admirers of a particular brand (Muniz & O'Guinn, 2001). Brand communities are cohesive groups that reflect the brand's value (Kalman, 2005). Muniz and O'Guinn (2001) suggested three characteristics of brand communities: consciousness of kind, rituals and traditions, and moral responsibility. Moral responsibility is a felt sense of duty or obligation to the community as a whole, and to its individual members. These three characteristics also exist in traditional communities; however, brand communities are different from other communities in that the core of the community is a certain brand. Muniz and O'Guinn (2001) also proposed three roles of brand communities. First, brand communities serve as a means of representation for customers. Given the collective nature of communities, it becomes possible for customers, collectively, to have a stronger voice compared to acting individually. Second, brand communities are important resources of information for customers. Last of all, brand communities provide a great social benefits to customers. Customers' brand loyalty can be

heightened through the process of sharing experiences and opinions on regarding a particular brands (McAlexander, 2002). Several scholars suggest that active online brand communities benefit companies by making it easier to obtain information about and build relationships with customers (Oh & Kim, 2004).

### **Types of Online Brand Community**

Kang (2004), and Shim and Kim (2004) classified online brand communities into two types: company-led (enterprise-established) and consumer-led (user-voluntary). Company-led online communities are intentionally shaped by enterprises to establish closer relationships with customers. Nowadays, consumer power has led to great interest on the part of companies in consumers' attitudes and opinions. In the 1980 book, *The Third Wave*, futurologist Alvin Toffler (1980) coined the term 'prosumer' (p. 265). More recently, the word prosumer has come to mean consumer/provider, also known as a producers and consumers (Ritzer & Jurgenson, 2010). Enterprises want to use online communities to gather customer information and foster relationships with consumers who indicate a strong preference to their brands. In this type of community, companies usually provide the latest news or information of the brand and company; brand-related history and traditions; and, sometimes, information about company events. As companies' interests in relation-marketing strategies and prosumer (i.e. serious amateurs) marketing strategies increased, online brand communities were recognized as a highly efficient business tool.

A customer-led online brand community is voluntarily organized by customers with great interest in a particular brand or product serves as a platform on which interested people can share brand-related opinions and experiences. Members who have a rather strong willingness to participate in the community are one of the unique characteristics of this type of community.

Such communities can advocate for the brand and , in some cases, protect it from publicity-related problems. A customer-led online brand community is usually organized out of passion for the brand, rather than for commercial reason. Various activities, such as information sharing, style sharing, group buying, individual buying, selling, and goods exchange, are all evident in these communities.

To illustrate the differences between company-led and consumer-led online communities, we can consider the case of the Liverpool Football Club. Liverpool's company-led online community is accessible at <http://forums.liverpoolfc.com>, whereas the consumer-led community, known as the Red and White Kop, is accessible at <http://redandwhitekop.com/forum>.

### **Customer in the Online Brand Community**

Customers who participate in online brand communities vary in terms of their behaviours and level of participation according to their brand interest, personal characteristics, and social relationships with other members. Kozinets (2002) proposed two interdependent factors of relationship in online brand communities: the level of relationship one has with a consumption activity and the intensity of one's relationship with other members of the community. By these two factors, Kozinets outlined four types of online community members: insiders, devotees, minglers, and tourists. Insiders are the people who possess not only a strong interests in a consumption activity, but also strong social ties with other community members. On the other hand, devotees are the members with strong interest in a consumption activity, but less interest in forming deeper relationship with other members. They do not maintain strong social ties with other members; rather, they just exchange consumption-related information with others. Minglers have little interest in the consumption activity that is being discussed on the community, but establish strong social relationships with other members. Last of all, tourists do not have

strong ties with other members of the community or a strong interest in the consumption activity that is focused on in the community (Ballantine & Martin, 2004).

### **Motivation for Customers' Participation in Online Brand Communities**

In the modern society, many products with similar features are pouring into the market. Thus, consumers engage in information-seeking activity before and after they purchase a particular product. Before purchasing a certain brand or product, consumers desire more information to dispel uncertainty about making the purchase. During this period, customers usually look for the information about the price, specifications, strengths and weakness of the brand product; advanced users; and so on. After purchasing a product, consumers may head to the online brand community to obtain more information about their purchase. They may seek operating information, solutions to the problems that occur while using the product, and so on (Hennig-Thurau, Gwinner, Walsh, & Gremler, 2004). Since products are becoming more complicated, the brief product introduction provided by the company is not always sufficient for customers to fully understand the product. In addition, although they have a product manual, it is not easy to comprehend the full spectrum of product features and function. Moreover, it is difficult for companies to provide enough information in the manual to meet the needs of all customers. Therefore, customers began to resort to online brand communities to obtain information about the product before and after purchasing it. This is especially true for customers with little or no experience with the brand; such customers rely heavily on the comments and suggestions of seasoned users.

### **Readiness and Quickness of Searching Information**

First of all, using an online community is a quick and simple way to search for the information a consumer wants (Ridings & Gefen, 2004). The nature of the Internet allows anybody who wants

to obtain brand-related information to access to a Web site and obtain information anytime and anywhere. Customer centres or Q&A Web site provided by the company may sometimes provide customers with the information they desire. If not, the customers must send a letter or make a phone call to the appropriate person. From the customer's perspective, this is not only inconvenient, but also time and energy consuming. To obtain information from a Web site, one must simply type in the relevant keyword and click. If the relevant information is not available, one may upload the question online, such as in an online community there are many people in such communities that are willing to answer the question in real-time.

### **Practical and Customer-Centred Information**

The second feature of the information provided by online communities is that it is practical and customer-centred. There is a tendency for customers to perceive information provided by a company as commercial and centrally focused on profit (i.e. downplaying the shortcomings and accentuating the positive aspects of a product) (Fuller & Matzler, 2007). Thus, customers are becoming more sceptical and suspicious of the information provided by producers and sellers. On the other hand, information obtained from an online community is generally considered reliable. The information shared through online brand communities is usually based on individual consumer's experiences with the particular products quality, operating methods, etc. and not associated with profits. In online communities, people freely discuss not only the good and strong aspects of a brand, but also the bad and weak elements. This kind of authentic information is not easy to obtain from a source of information that is provided by companies. Owing to these characteristics of information in the online community, people tend to perceive information from users as more neutral, practical, and customer-centred and, therefore, more reliable than information provided by the company.

## **Richness of Information**

Finally, an abundance of information can be found within online brand communities. In these communities, specialists as well as anyone with interest in the matter can create information. While commercial or company Web pages contain only simple and condensed information on a given subject, online communities contain number of different opinions provided by various people.

According to Kim, Bae, and Kang (2008), through participating in online brand communities, members can share information and experiences related to the brand. However, this is a somewhat limited level of interaction. Building new social relationship with other people who have common interests is another motivation for customers to participate in online brand communities. The process of forming social relationships differs from that of exchanging brand-related information. Some brand communities place more importance on sharing brand-related information, while other brand communities try to encourage member's fellowship through offline gatherings.

## **Effects of Online Brand Communities**

### **Effects on Customers**

**Dramatic increase in customer knowledge.** With the emergence of online brand communities as an important information resources for consumers, the balance of power has changed in the market in terms of information (Kim, et al., 2008). Before the emergence of advanced information sharing activities among customers through the Internet, producers had much more knowledge about the particular brand. They had primary control over the circulation of brand-related information in the market. Customers were forced to rely only on the

information provided by the company and the minimal word-of-mouth information from other customers within their geographical region.

However, online brand communities, especially those that are well developed, have dramatically expanded the wellspring of information available to (Kim, et al., 2008). These Web sites effectively contain an aggregation of brand-related experiences and ideas of individuals from all over the world, which represents an enormous stock of knowledge. Now, customers possess far more knowledge on the brand, and sometimes even create more information about the brand than the producers and sellers.

**Active interaction among customers.** The online brand community is a channel in which people can meet other people and expand their social network. In modern society, many people are suffering from isolation (Tönnies, 2012). Participating in activities within the online community, such as information sharing and attending offline gatherings, presents community members with an opportunity to build social relationships, which would enrich and add meaning to their lives.

Moreover, online brand community members who gather together and build close relationships not only share information and build relationships but also conduct several types of economic activities with other members (Oh & Kim, 2004). Since an online brand community is a group of people with a common interests in a certain brand, members are likely to trade together. In addition, as a group grows and becomes more active the flow and power of word-of-mouth messages among customers become stronger both online and offline. With regard to the creation and spreading of brand-related information, this situation results in customers becoming more powerful and influential than companies.

**More powerful voice.** In online brand communities, members can have a much more powerful voice against companies and the government. Since abundant information about the brand is shared in the community, participating members can obtain a lot of professional brand-related knowledge and become more informed. Moreover, by virtue of the collective nature of these communities, customers are able to have a greater voice than ever (France & Muller, 1999). For example, by sharing individual customers' evaluations and damage reports of a particular brand with other people, online brand communities can engage the attention of many and work collectively to protect customer' rights and interests (Oh & Kim, 2004). That is, with the emergence of more knowledgeable customers and their increasing voice as a group, each individual customer now has a greater influence on producers than ever before, which results in companies giving more importance to the opinions of individual customers.

### **Effects on Companies**

**Emergence of more informed customers.** Company dominance in the creation and spreading of brand-related information has decreased, while customers' power has increased (Goldman, 2012). With the development of online brand communities, customers have a greater quantity and variety of information about the brand compared to the company (Yang, 2005). Online brand communities provide customers the chance to get together and share various brand-related information as well as personal opinions about the brand. The amount of information shared in the community is unlimited. Owing to the nature of virtual communities, community members are not only able to interactively communicate with other members, but can also accumulate all of this information online. In addition, as a result of the different background ( i.e. ages, jobs, past experiences, knowledge) of community members, various kinds of information are available about the brand. In some cases, as a group, community members have greater and



more detailed knowledge on the brand than do the producers and sellers. By sharing all this information and comparing or evaluating the brand from diverse points of view, customers are getting much more informed. However, more informed customers with great influence can present a substantial challenge for companies.

**Negative word of mouth Web sites.** Online brand communities can also be a source of false information and fraud. Online brand communities are practically open to public, so anybody who can access the Internet can post and spread any information. False information and rumours can be created rather easily in the online society and once any negative information is created, it can be shared easily and rapidly in an online community, which will eventually spread to offline communities.

In addition, not all online brand communities are favourable towards a given brand or company. Customers who are unfavourable toward a particular brand or company establish an anti-brand community and attack the weak points of the brand. A certain degree of anti-brand activities can help companies monitor customers' opinion and ultimately advance the brand. However, not all the information and opinions shared in anti-brand communities derive from sound and healthy critics; rather, some of it comes from abused or biased critics intent on proliferating baseless rumours (Oh & Kim, 2004). If this kind of negative and unhealthy information about the brand accumulates in the online community and is shared by numerous customers, it will bring great harm to the brand image. The patterns of emergence of information in the online society (i.e. online community) are different from that of other traditional mediums. In the online society, there is a tendency for rumours to emerge repeatedly and periodically because of the nature of the Internet (Oh & Kim, 2004). In contrast to mass media where information temporarily spreads and then disappears with time, information in the online society

shows repeated form of communication: appearing, then disappearing, then reappearing again. Consequently, once false information is created and circulates in the online society, it might show a repeated pattern of spread and diffusion. Regardless of whether this information is true, the brand's reputation and credibility, as well as sales, can be severely damaged. Therefore, for companies, especially for the providers who do not regularly attend to the on-goings of brand-related online communities, strongly connected and empowered online brand communities can be a real threat. In addition, Scott, Bradshaw, & Larkin (2013) conducted a case study about how one Facebook group's members used the Internet to provide a negative opinion regarding the broadcasting of a global sports event such as the 2010 Winter Olympics. Results of this study confirm that Internet users utilize a social networking site to 'virtually protest' current events. More detailed examinations of negative word of mouth communication in online social network are provided by Pfeffer, Zorbach, and Carley (2014) and Stich, Golla and Nanopolous (2014).

**Source of customer information.** For companies, online brand communities can be the most efficient source of information about customers' tastes, desires, needs, and perceptions about the brand in real time (Ballantine & Martin, 2004). An important role of marketing research is to understand the decision-making influences of particular consumers and consumer groups. To be successful in a competitive market where similar products are launched every other minute, customer information is critical. According to Kang (2005), customers tend to use customer service centres only when there is serious defect or flaw.

This implies that while existing offline feedback channels inform, companies of the problems associated with the basic functions of a products, they do not adequately reflect customer complaints not directly related to the product's basic function, but nonetheless affect customer satisfaction (Oh & Kim, 2004).

On the other hand, in the online community, it is easy for customers to express any personal opinions about the product, whether big or small. Consequently, companies can gain perspective on customers' criticisms of basic product function, as well as their more candid and detailed complaints and needs as a whole. Therefore, through observing what is going on in the online brand community and learning customers' big and small opinions on the brand and products, companies can devise more customer-oriented feedback and marketing strategies.

In addition, online brand communities provide companies with a profile of the most active customers. By using online brand communities as demographic indicators, (i.e. gender, age, or income), companies can use communication programs to selectively research the active buyers, which costs less than traditional media (Kalman, 2005) and allows for the establishment of better market segmentation.

Before the emergence of brand-related online communities, it was quite costly for companies to determine customers' needs and obtain customer feedbacks. However, by utilizing online brand communities as a marketing research tool, companies can save a huge amount of money and acquire richer and more detailed information about their customers.

**Building brand equity.** A strong online brand community has positive effects on members' brand attitudes and loyalty, which eventually become important factors in the construction of strong brand equity. Aaker (1991) conceptualizes brand equity as having four components: perceived quality, brand loyalty, brand awareness, and brand associations. These components comprise behaviours that extend beyond mere repurchase; rather, they reflect a relationship between the company and other consumers, as well as the community (Cross & Smith, 1995). Online brand communities directly affect all four of these components and are consistent with the trend toward broadening definitions of consumer brand loyalty in general. A

brand-friendly atmosphere naturally created by members in many online brand communities yields positive effects on customers' brand-related attitudes which ultimately leads to strong brand loyalty and commitment. Additionally, the more members get involved and interact with other members in the online brand community, the stronger affection they will gradually have towards the brand. Namely, members will be loyal to the brand through participating in the brand community, which makes it less likely that these customers will transfer to another brand (Yang, 2005).

**Acquiring advocates.** Brand community members can become the best promoters of the brand. Customers' brand attitude, brand loyalty, brand commitment, and brand awareness are more likely to be impacted by the opinion of someone who is unaffiliated with the company. Gruen and Ferguson (1994) refer to online brand community members as active loyalists: users of a brand who are committed, conscientious, and almost passionate about the brand. Through these active loyalists, diverse information accumulates and is shared in the online brand community. Consumers in online brand communities attempt to inform and influence other consumers about products and brands (Kozinets, 2002). Online brand community members propel the brand message and their enthusiasm for it into the market and act as a means for feedback from the market (Kalman, 2005).

Owing to the tendency for people to place greater trust in the information provided by group members relative to brand providers, the information provided by online brand communities is more influential and many active community members have become opinion leaders. Especially with regard to the consumer opinion of a new product, the information or comments provided by the opinion leaders have a much greater effect on the purchasing activities of other customers.

## **Theories of Engagement**

### **Sense of Community**

Sarason (1974) defined the psychological sense of community as a sense of mutual responsibility and purpose: a feeling of being a part of a group one can depend on and contribute to. According to Sarason, sense of community contributes to the affinity of community members; they feel that they belong together, are similar to each other, and like one another.

Sense of community (SOC) has an extended history in the community psychology literature (Blanchard, 2008). Sarason (1986) was one of the first researchers to identify that community members' feelings about each other and the community itself are important to the community's successful functioning. McMillan and Chavis (1986) further developed the SOC construct by defining it as an individual's feelings of membership, identity, belonging, and attachment to a group. The concept of SOC feelings of connection and belonging to a social group leads to important outcomes in face-to-face organizations and human communities. In work organizations, SOC increases job satisfaction and organizational citizenship behaviour (Blanchard, 2008).

### **Sense of Virtual Community (SOVC)**

Sense of community is gaining attention in virtual communities. Blanchard and Markus (2004) examined SOVC in a multiple sports newsgroup and found similarities between it and SOC as defined by McMillan and Chavis (1986); SOVC includes feelings of membership, integration of needs, and shared emotional connections. However, Blanchard and Markus (2004) also found distinct differences in their group's SOVC. The virtual group members did not report feeling that they influenced or were influenced by others, which would have been predicted based on McMillan and Chavis' (1986) framework. Blanchard and Markus' (2004) finding supports Obst

et al.'s (2002) finding that feelings of membership, which include an individual's feelings of identity with the community and its members, may not be the same in SOVC as SOC. The differences between SOC and SOVC, namely the stronger role of individual relationships and the weaker role of individual influences suggest that the processes of learning the identity of others and developing one's own identity are important. Members of online communities experience a SOVC that comes from the exchange of support within the community, the identity of other members and themselves, and interacting with others outside of the virtual community. Additionally, exchanging support and creating identity help create norms of behaviour in the group which in turn increase SOVC (Blanchard, 2008).

However, it is hard to define whether someone is a member of an online community. Visitors often become attached to their communities and visit them often (Hiltz & Wellman, 1997); sometimes, they become so dependent upon the community that they can be described as addicted (Hiltz, 1985). An online community is generally understood to consist of persistently interacting members. Likewise, Figallo (1998) suggested that online communities are those where members feel part of a larger social group, sense an interwoven Web of relationships with other members, have on-going exchanges with other members about commonly valued things, and have lasting relationships with others. Nevertheless, according to recent literature, lurkers (i.e. silent members) also have to be considered as part of the community (Katz & Aspden, 1997; Nonnecke & Preece, 2000; Nonnecke, Preece, & Andrews, 2004). Therefore, sense of community may represent the most important measure of whether someone is a member of the community.

## **Theories of Participation**

### **Trans Theoretical Model (TTM)**

The TTM is a preventative medicine approach that belongs to a rubric of state-based models of behavioural change and is the most widely applied stage-based model in the study of exercise behaviour (Adams & White, 2005). In this research model, exercise behaviour is divided into six different stages: pre-contemplation (no regular exercise with no intention to change current behaviour), contemplation (no regular exercise but some intention to change behaviour in the next six months), preparation (irregular exercise with intention to become more regularly active in the next 6 months), action (regular exercise maintained for less than six months), maintenance (regular exercise maintained for more than six months), and termination (Prochaska & Marcus, 1994).

Generally, only the first five stages are examined in exercise behaviour research (Buckworth & Dishman, 2002). However, the TTM would not provide functional meaning for research-practice paradigms concerning participation (Beaton & Funk, 2008). The frame work's focus is on the extinction of sedentary behaviour (Prochaska & Marcus, 1994) rather than the adoption of a specific behaviour such as participation.

### **Theory of Reasoned Action (TRA)**

The TRA was developed by Fishbein and Ajzen (1975) to examine the relationship between attitudes and behaviour. In the TRA, behavioural intentions rather than attitudes are considered the main predictors of behaviour. According to this theory, there are three components: behavioural intention (BI), attitude (A), and subjective norms (SN). The TRA suggests that a person's behavioural intention depends on the person's attitude about the behaviour and subjective norms ( $BI = A + SN$ ).

However, the aim of the TRA is to explain volitional behaviours. Its explanatory scope excludes a wide range of behaviours such as those that are spontaneous, habitual, impulsive,

craving-related, or mindless (Bentler & Speckart, 1979). Moreover, one confounding feature of the model is that behaviours cannot be separated from norms. Behaviours can sometimes restructure as a result of norms, and vice versa. Another limitation is that the theory supposes people are able to act on all their behavioural intentions; however, in reality, there are temporal and environmental constraints as well as other, unintended behaviours that limit behavioural expression. The theory of planned behaviour (TPB) aims to resolve such constraints.

### **Technology Acceptance Model (TAM)**

The Technology Acceptance Model (TAM), which has been used in information technology acceptance research on information technology users, is an expanded model of the relationship between attitudes towards behaviour and behavioural intentions in rational behaviour theory within the social psychology field. The TAM is recognised as a simple model, but is highly descriptive in explaining users' information technology acceptance and conduct during use (Kim, 2005). The TAM states that user acceptance depends on perceived usefulness and perceived ease of use. The TRA was criticised for designating the rather abstract concept of 'belief and appraisal' as the factor that affected behaviour. However, Davis improved the theory by proposing the TAM, which incorporates specified structural concept of perceived usefulness and perceived ease of use (Davis, 1989). The following outlines TAM research related to the Internet environment:

Teo and Lim (1999) investigated the motivations for individual Internet use within an organisation and proposed that three major motivations are related to the Internet use of an individual: belief in the usefulness of Internet for their tasks, beliefs about the enjoyment of Internet use, and beliefs about the ease of the use. To explain individual Internet use within an organisation, Teo and Lim proposed two beliefs (perceived usefulness and perceived ease of use)



as factors along with an entertainment factor suggested by Webster (1989). Webster explained that the use of a computer in the work environment is intrinsically motivating because it is entertaining. If the subjects of the current study, users of online sports communities, were neither consumers nor sports participants but just computer users, it would be suitable to use the aforementioned TAM. However, the subjects of the current study are both sports participants and computer users.

### **Theory of Planned Behaviour (TPB)**

Many studies of exercise behaviour have used the framework provided by the TPB, which is the most widely applied social psychological perspective (Courneya, Plotnikoff, Hotz, & Birkett, 2001). According to the theory of planned behaviour, it is suggested that the direct determinant of a given behaviour is the intention of the behaviour, and such intentions are decided by three possible factors (human action is guided by three kinds of considerations): beliefs about the likely outcomes of the behaviour and the evaluations of these outcomes (behavioural beliefs), beliefs about the normative expectations of others and motivation to comply with these expectations (normative beliefs), and beliefs about the presence of factors that may facilitate or impede performance of the behaviour and the perceived power of these factors (control beliefs). Behavioural beliefs produce a favourable or unfavourable attitude toward the behaviour; normative beliefs result in perceived social pressure or subjective norms; and control beliefs give rise to perceived behavioural control (Ajzen, 1991). As a measure of attitude and intention, the TPB can provide functional meaning across paradigms. However, the often-cited criticisms of the absence of consideration to known determinants such as past behaviour and motivation (Ajzen, 2001) indicate the TPB fails to holistically account for the phenomena (Beaton & Funk, 2008).

## **Participation**

Participation in a community has been considered a measurement of the community's success because it reflects member satisfaction and advances important community goals (Julian, Reischl, Carrick, & Katrenich, 1997). A lot of research has thus focused on developing mechanisms that promote participation, such as individual psychological benefit, sense of community, power, and involvement (Zimmerman & Rappaport, 1988).

Participation is highlighted in online communities as well. Community leaders must have the necessary skills to stimulate members involvement and participation, as well as to attract and retain new members (McWilliam, 2000). Since the measurement of community success is transitioning from quantitative to qualitative, member activity is becoming more important than the number of members in the community. Sense of community, participation, and involvement have been suggested as potential measurements in which to evaluate a community in terms of quality (Williams & Cothrel, 2000).

### **Levels of Participation**

Several researchers have surveyed online communities to determine why, how long, and to what extent people participate (Butler, 2001; Rojo & Ragsdale, 1997). According to Rojo and Ragsdale, online community users participate in several different ways. The first and most common type of participant browses the online community and consumes information, but does not contribute. The second type of participant is the one who does not find the specific type of information she or he is seeking and consequently wants to ask the other people a specific question. These two types of participants are called 'lurkers'. Some evidence suggests that lurkers represent 80 - 90% of an online community's population (Nonnecke & Preece, 2001; Butler, 2001). The third type of participant is one who not only browses and asks questions, but

who is daring enough to respond to other members' questions, engages in social interaction, and makes some intelligent contributions. The final type of participant can be considered an online community veteran who has formed strong ties to the community, is part of an established social network, post more comments, asks thought-provoking questions, answers complex questions, and is an active participant in community activities. These third and fourth types of participants are called 'contributors'.

### **The Reasons People Participate**

Research has found that lurkers are attracted to online communities because they desire information that is credible, relevant, and easy to find (Nonnecke & Preece, 2001; Preece, 2000). Enjoyment derived from sociability and interaction with others is an additional benefit of participation (Zhang & Hiltz, 2003). Contributors enjoy the same benefits as lurkers but are more strongly motivated to contribute, both intrinsically and extrinsically. Intrinsic motives for contribution include generalized reciprocity (Kollock and Smith, 2002) and moral obligation (Preece, 2000). In addition to altruistic motives, research has shown that in some cases, extrinsic motivation plays a role. Some research suggests that some contributors are motivated by self-interest or self-benefit, although this has not been demonstrated as the dominant motivation in the majority of cases (Wasko & Faraj, 2000).

### **Helping Behaviour in Online Communities**

Taylor-Greene et al. (1997) indicated that helping behaviour refers to an act performed voluntarily to help someone else when there is no expectation of receiving a reward of any form. Studies of online helping in Internet groups (Blanchard & Markus, 2004; McLure, Wasko, & Faraji, 2000; Subramani & Peddibhotla, 2004) suggest that helping behaviour, generalized reciprocity and community interest created by the on-going interaction of the members of these

online groups are important motivations for participation. Chu (2009) suggested that there are two constructs that reflect the nature of helping behaviour in online communities: information sharing and knowledge contribution.

**Information sharing.** Information sharing, as defined by Davenport, Eccles and Prusak (1998), refers to the exchange of problem-solving information from one organization member to another. Rafaeli, Raban, and Ravid (2007), Burnett and Buerkle (2004), Subramani and Peddibhotla (2004) suggested that helping behaviour is only provided in response to posts requesting assistance in online communities. Information sharing occurs in response to questions regarding problems in which the solution has already been determined. Raymond (2001) states that generous online behaviour, where people are willing to give out free help and information encourages reciprocity between members.

**Knowledge contribution.** Chu (2009) stated that knowledge contribution results from the capability to interpret and give meaning to information and desire to disseminate knowledge. These attributes result from available information sources, experience, skills, culture, character, personality, feelings, and other variables. Clemmensen (2005) and Subramani and Peddibhotla (2004) indicated that the provision of a response that extends beyond the answer constitutes interpersonal helping behaviour.

However, the aim of this study is not to explore differences between information sharing and knowledge contribution, but rather to understand how members are sharing knowledge, opinions, and information in the community. In recent studies of online communities (Aulawi, Sudirman, Suryadi, & Govindaraju, 2009; Chen, Chen, & Kinshuk, 2009), the term ‘knowledge-sharing’ instead of knowledge contribution and information sharing was used. Knowledge-sharing, which is a term of wide comprehension, will be used in this study.

### **Literature review summary**

In sum, an online community is generally understood as a specific form of social organising, an online network in which people that share an interest in a certain subject repeatedly interact inside certain online spaces. Moreover, it is reliant on user-generated content. Members may develop affective bonds and express a SOVC (Blanchard, 2007; Ellonen, Kosonen, & Henttonen, 2007). As noted earlier, there are various types of motivation for online community consumption, and these depend on the members' level of participation, needs, interest, and other variables. These motivations and the measurement of these motivations are discussed in the following chapter.

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## **CHAPTER 3 - STUDY 1**

### **Development of the Motivation Scale for Endurance-Sports Online Communities**

#### **(MS-ESOC)**

#### **Introduction**

The ability to measure consumer motivations using a psychometrically sound scale is fundamentally important to marketers. This study was designed to develop a valid, reliable scale to measure Endurance-Sports Online Communities (ESOC) motivation (i.e. triathlon, running, open-water swimming, and cycling online communities participation). An increasing number of people engage in online forum discussions, either as writers or as silent observers (Nicholas, 2007). According to a report issued by Nielsen.com (Nielsen, 2009), two-thirds of the world's Internet population have used an Internet forum in one way or another. This report also indicated that time spent in Internet forums is increasing at more than three times the rate of overall Internet usage.

Care must be taken to distinguish between a Web site and a forum. An Internet forum is a Web site capable of facilitating interpersonal communication, defined as occurring when people write and 'post' messages to a Web site. Communicative content on an Internet forum will revolve around a topic of mutual interest (Obst, Zinkiewicz, & Smith, 2002; Preece, 2000). These online communities are more likely characterised by a shared interest, rather than shared social characteristics (i.e. gender and socio-economic status) (Wellman & Gulia, 1999). A conversation on a particular topic is known as a thread. The number of people who can contribute (i.e. add something via writing) to a thread is without limitation. Similarly, the number of people who can read the thread without contributing is also potentially limitless.

The utility, success and ultimately the viability of an Internet forum is largely dependent upon both the quality and quantity of User-Generated Content (UGC) (Assmann, Sandner, & Ahrens, 2009). UGC refers to the data, information, or media on the Internet that is produced by the general public. UGC differs from Internet content that is produced by professionals (e.g. publicists, journalists, and advertising copywriters). Users are central to Internet forums because they can be both producers (i.e. writers) and primary consumers (i.e. readers) of the Web site's content (Arriga & Levina, 2008). If users do not engage in knowledge-sharing activities, then Internet forums would cease to exist (Hsu, Ju, Yen, & Chang, 2007). A Web site may include a variety of content, much of which is likely to be produced by the Web site owner. A Web site does not necessarily allow a user to generate content. By contrast, a forum is reliant upon UGC. A forum might be the only feature on a Web site, or the forum might exist within a Web site, whereas a Web site need not have a forum.

Prior sports management research into the use of the Internet for sports-related activities has focused on the sites' content (Carlson, Rosenberger, & Muthaly, 2003), effective Internet marketing strategies (Evans & Smith, 2004), the development of sports organizations to capitalise on their online products (Kitchin, 2006), online sports motivation and concerns (Hur, Ko, & Valacich, 2007), Web cohesion, Web commitment, attitudes towards a Web site, Web consumption (Seo, Green, Ko, Lee, & Schenewark, 2007), sport online motivation (Seo & Green, 2008), and brand awareness levels in virtual advertising (Tsuji, Bennett, & Leigh, 2009). The prior studies' participants were mostly selected from professional sports teams' Web sites. These Web sites are characterised by a large amount of professionally-generated content with little in the way of UGC.

Scholars in communication (Andrews, 2001; Baker & Ward, 2002; Koh, Kim, Butler, & Bock, 2007; Zahariadis, Pau, & Camarilo, 2011), information (Baker & Ward, 2002; Burnett & Buerkle, 2004; Savolainen, 2011), consumer behaviour (Hsu & Lu, 2007), and marketing literature (Dholakia, Bagozzi, & Pearo, 2004) have all researched online consumption; however, the study of online sports consumption is noticeably lacking (Seo & Green, 2008).

This study develops a valid and reliable scale to measure participant motivation in endurance sports online communities (ESOC), and it is the first to undertake this task. Endurance sports are a subset of sports characterised by prolonged athletic output over an extended distance, or for an extended period. These sports require a high level of muscle endurance. This is achieved primarily through aerobic activities.

Endurance sports are an appropriate focus for sports marketing and consumer behaviour literature for a number of reasons. First, participation in endurance sports is increasing. According to an IEG sponsorship report (2012), an affluent audience and rising interest in health and wellness are driving new deals across the endurance-sports landscape, and that activity is lifting sponsorship spending to new records. The IEG sponsorship report predicted that North American spending on marathons, triathlons, 5 kilometre running, and other endurance sports events will total \$102.1 million in 2012. This is the first time the category has earned more than \$100 million. Second, the contribution that endurance-sports make to the health and wellbeing of their participants is well recognised. According to Kirkcaldy, Shephard, and Siefen (2002), regular practice of endurance-sports is related to a more favourable self-image. They suggested that there are substantial associations between the regular practice of endurance-sports and attitudes, personality, scores for physical and psychological well-being, and the adoption of a healthy lifestyle. The endurance sports included in this study are the triathlon, cycling, running

and open-water swimming. These sports are amongst the most commonly engaged in activities in many countries.

Endurance sports are an under-researched aspect of the sports management and marketing fields. Most of the endurance-sports related research has been conducted by researchers in the medicine, sports and exercise science, applied physiology, sports medicine, biomechanics, and sport nutrition fields (Gerche, 2013; Jeukendrup, 2011).

A number of studies provided insight into online sports consumption of fans and/or participants. For example, Mahan, Seo, Jordan, and Funk (in press) investigated distance runners' online sport consumption. They examined the potential for social networking sites to mediate the effects of physical activity involvement on the level of regular exercise behaviour, and social life satisfaction. They found that the influence of running involvement on both running behaviour and social life satisfaction are partially mediated by the use of running-related social networking sites. A study by Stavros, Meng, Westberg and Farrelly (2013) identified four key motives for interacting on sport-related social media: passion, hope, esteem and camaraderie. Seo and Green (2008) explored the motivations for online sports consumption of National Football League (NFL) communities. This study lacks generalizability across all sports sites because it focuses on team sports, is USA-centric, and incorporates only one professional sports. This study did not adequately distinguish between participant motives to frequent their team's Web site and its forum. The study was focussed on sports fans' consumption, as opposed to sports participants' consumption.

Despite its limitations, the Motivational Scale for Sports Online Consumption (MSSOC) (Seo & Green, 2008) provides the conceptual basis for what is referred to throughout this study as the Motivation Scale for Endurance Sports Online Community (MS-ESOC). This research

starts with the premise that different types of sports (i.e. team sports and individual sports) and different ways of engaging with a sports (i.e. either as a participant or a fan) will affect users' motivations for participating in an online sports community. Put simply, these types of online communities; therefore, it is likely that their motivations to use online forums will also be different.

## **Methods**

The purpose of this study is to develop a valid and reliable scale to measure participant motivation in ESOCs. The study incorporates an adaptation of the Motivational Scale for Sports Online Consumption (MSSOC) (Seo & Green, 2008) and a subsequent empirical test for use in ESOC contexts. The four-phase qualitative component (literature review, item generation, content validity, and face validity) and the two-phase quantitative component (exploratory factor analysis and confirmatory factor analysis) mirror the methods and procedures used by Seo and Green (2008). Their scale is the most recently developed one with the aim of measure internal motivations for online sports consumption.

### **Qualitative Study**

**Phase 1: Literature review.** The qualitative phase of this study began with a review of the relevant literature. The purpose of the literature review was to assess whether the MSSOC motivational constructs were suitable for investigating ESOC. The literature search used both Google Scholar and Scopus. The key search terms were 'community', 'online community', 'forum', 'knowledge-sharing', and 'sports community'. Knowledge-sharing was included because this study was part of a wider study on OSC knowledge-sharing. Boolean combinations of these terms were also used.

The literature review provided support for including ten of the MSSOC motivational constructs in this ESOC study. In addition, the literature review identified technical knowledge-sharing and information sharing as additional motivational constructs suitable for the ESOC study. Knowledge-sharing is an activity through which knowledge is exchanged among individuals. Information sharing is the exchange of data among various people.

A three-person panel, whose members all possessed expertise in the consumer behaviours of sports participants and familiarity with online sports communities, evaluated these 12 constructs. The panel decided that 1) the team support construct should not be used, 2) knowledge-sharing and information sharing would replace the fan expression construct from the MSSOC, and 3) the information and technical knowledge constructs from the MSSOC should be renamed ‘information seeking’ and ‘technical knowledge seeking’. The panel made these decisions because endurance sports are mainly individual sports, and this study focuses on online communities that depend on users’ contributions such as posting.

The net result is that the 10 motivational constructs of the proposed Motivation Scale for Endurance-Sports Online Consumption (MS-ESOC) would be information seeking, information sharing, technical knowledge seeking, technical knowledge-sharing, entertainment, interpersonal communication, escape, pass time, fanship, and economic.

**Phase 2: Item generation.** The second phase in the scale development process was the generation of a list of items for each construct. Measures for each construct were sourced from items in the existing scales: technical knowledge seeking (He & Wei, 2009; James & Ridinger, 2002; Pintrich, Smith, Garcia, & McKeachie, 1991; Seo & Green, 2008), technical knowledge-sharing (He & Wei, 2009; Pintrich et al., 1991), information seeking (Korgaonkar & Wolin, 1999; Seo & Green, 2008), information sharing (He & Wei, 2009), entertainment (Chen & Wells,

1999; Seo & Green, 2008; Wann, Schrader, & Wilson, 1999), escape (Korgaonkar & Wolin, 1999; Seo & Green, 2008; Wann et al., 1999), economic (Korgaonkar & Wolin, 1999; Seo & Green, 2008), interpersonal communication (Chiu, Hsu, & Wang, 2006; Seo & Green, 2008; Wolfradt & Doll, 2001), passing time (Rubin, 1981), and fanship (Funk, Mahony, & Ridinger, 2002; Seo & Green, 2008). At the conclusion of this phase, 50 items remained in the proposed scale.

**Phase 3: Content validity.** The content validity for the two new constructs (i.e. information sharing and technical knowledge-sharing) and the nine retained constructs was then assessed. Content validity refers to “the degree to which an instrument has an appropriate sample of items for the construct being measured” (Polit & Beck, 2006, p. 489). In other words, content validity refers to the extent to which a measure represents all facets of a given construct.

Lawshe’s (1975) technique to establish content validity was used for this phase. A three-person panel evaluated each item as *essential*, *useful but not essential*, or *not necessary* to the performance of the construct. The three-person panel possessed expertise in sports management, sports communications, and scale development, as well as familiarity with endurance sports communities, both online and in the ‘real world’. The content validity ratio (CVR) was calculated by first subtracting the total number of panellists from the number of panellists who described an item as essential. This number was then divided by the total number of panellists. According to Lawshe, the CVR must be equal to or greater than 0.99 when the panel size is seven or less. This means that particular items would be retained in the study only if all three participating panellists identified the item as *essential*. At the conclusion of this phase, the scale consisted of 46 items: information seeking (5 items), information sharing (5 items), technical knowledge seeking (5 items), technical knowledge-sharing (5 items), entertainment (5 items),

interpersonal communication (5 items), escape (5 items), pass time (4 items), fanship (3 items), and economic (4 items).

**Phase 4: Face validity.** Face validity is a component of content validity. It is defined as the degree to which a questionnaire or other measurement appears to reflect the variable it has been designed to measure (Haynes, Richard, & Kubany, 1995). Evidence to support face validity is found when the items look like they will measure the relevant concept. The benefit of high face validity is that it enhances respondent cooperation because of its ease of use and clarity (Netemeyer, Bearden, & Sharma, 2003). To maximise the face validity of the initial MS-ESOC, 30 postgraduate students with expertise in sports and recreation reviewed the 46 items from Phase 3. Specifically, they were asked to: (a) categorise the items within each of the constructs, and (b) indicate their ability to comprehend each item.

There is no strict decision rule for item retention. Zaichkowsky (1994) recommends that items should be retained if at least 80% of the judges rated an item as at least somewhat representative of the construct. Similarly, Sharma et al. (1990) retained items that 70% of judges coded as representative (versus not representative) of ‘corporate excellence’. According to Hardesty and Bearden (2004), most researchers use 75% as the minimum cut-off for item retention. In this phase, the percentage of respondents who correctly classified an item exceeded 85%. Because of this face validity process, all 46 items were retained.

### **Quantitative Study**

Factor analysis is mainly exploratory or confirmatory, depending on the objectives of the researcher. Although both exploratory and confirmatory approaches seek to account for as much variance as possible in a set of observed variables and latent variables, exploratory factor analysis (EFA) is particularly appropriate for scale development when there is little theoretical



basis for specifying a number and certain patterns of common factors (Hurley et al., 1997). Thus, an EFA was deemed necessary as the appropriate analytical step to examine the factor structure of the scale. The efficacy of the proposed model and the psychometric properties of the scale were analysed using Predictive Analytics Software (PASW) 18 and Mplus 6.

Worthington and Whittaker (2006) suggest that EFA should be conducted before confirmatory factor analysis (CFA). This approach is evident within the sports management literature. For example, the Seo and Green (2008) study, upon which the MS-ESOC is based, conducted an EFA before their CFA. Allen, Drane, Byon, and Mohn (2010) also found two factors, which they termed 'cultural maintenance' through sports and adaptation to a multicultural environment through sports, using EFA with oblimin rotation before CFA on data obtained from 240 participants. In Hritz and Ross's (2010) study of sports tourism impacts, which was published in the *Journal of Sports Management*, they used pre-existing scales for social, economic, and environmental impacts, but they used an EFA approach.

The debate over when and how to use EFA and CFA is without consensus. CFA requires strong conceptual and empirical foundations. However, this study did not have sufficient strength to justify the CFA approach. The decision to use EFA in this study was a considered decision. The researcher opted for EFA for the following reasons: (a) some items/constructs never had never before been measured in the presence of the others, (b) most items were adapted and modified, and (c) the dimensionality of these items had never before been tested. In both EFA and CFA applications, the three basic steps- preparing the relevant covariance matrix, extracting the initial factors, and rotating to a terminal solution- are implicitly involved (Kim & Mueller, 1978).

### **Phase 5: Exploratory Factor Analysis (EFA) study**

**Participants.** Data were collected via an online survey. Links to the survey were posted on four ESOCs: Runner's World forum ([www.runnersworld.com](http://www.runnersworld.com)), CoolRunning Australia forum ([www.coolrunning.com.au](http://www.coolrunning.com.au)), Bicycles Network Australia forum ([www.bicycles.net.au](http://www.bicycles.net.au)), and Tritalk forum ([www.tritalk.co.uk](http://www.tritalk.co.uk)). Written permission from the owner/moderator of each online community was obtained prior to posting the invitation to participate. A total of 248 responses were collected. Of those, 198 surveys were found to be useable. Fifty responses were discarded due to incompleteness. Of the 198 participants, 161 were males (81.3%) and 37 were females (18.7). the ages of respondents ranged from 20 to 69 ( $M = 40$ ).

**Measurement.** The participants were asked to rate the extent to which they agreed or disagreed with each of the 46 items on the refined MS-ESOC. A 7-point Likert scale, ranging from 1 (*strongly disagree*) to 7 (*strongly agree*), was used.

**Data analysis.** There were two initial factoring options: 1) common factor model, and 2) principal components analysis. The basic difference between the two approaches is that the principal components are certain mathematical functions of the observed variables, while common factors are not expressible by the combination of the observed variables (Kim & Mueller, 1978, p. 11). The researcher used the principal components analysis (PCA) based on Hair, Black, Babin, Anderson, and Tatham's (2009) suggestions. Hair et al. argue that the goal of the PCA is to extract maximum variance from the data set with each component. In other words, the PCA was the preferred solution for this study because of its ability to reduce large numbers of variables (items) down to a smaller number of components (i.e. factors).

Following PCA, the oblique rotation method was applied. The goal of rotation is to simplify and clarify the data structure. The rotation step involves two major options: the

orthogonal rotation and the oblique rotation. Three procedures are available for orthogonal rotation in SPSS. These procedures are equamax, quartimax, and varimax. All of the orthogonal criteria restrict the transformation matrix so that the factors are uncorrelated, and oblique methods (i.e. direct oblimin and promax) allow the factors to correlate. According to Preacher and MacCallum (2003), it is always safer to assume that there is a lack of independence among items; therefore, the analysis used direct oblimin (oblique) rotation instead of orthogonal rotation.

The following criteria were employed to determine the number of factors and their items: (a) factor loading equal to or greater than .4 (Nunnally & Bernstein, 2004), (b) a scree plot (Cattell, 1966), and (c) an identified factor and retained items must be interpretable in the theoretical context (Hair et al., 2009). Cronbach's alpha values measured the reliability of the scale. The recommended .70 cut-off value was used to determine internal consistency (Tabachnick & Fidell, 2007).

After making the extraction decision, the researcher determined how many factors should be retained for rotation. The default in most statistical software packages is to retain all factors with eigenvalues greater than 1.0. However, there is criticism within the literature that this is among the least accurate methods for selecting the number of factors to retain (Velicer & Jackson, 1990, p. 10). Costello and Osborn (2005) suggest that the scree plot be examined. The scree plot test involves examining the graph of the eigenvalues and looking for the natural bend or breaking point in the data where the curve flattens out. The number of data points above the 'break' (i.e. not including the point at which the break occurs) is usually the number of factors to retain. This approach can be unclear if there are data points clustered near the bend. Accordingly, the researcher used both: (a) forced 10 fixed numbers of factors to extract from the data set, and (b) scree plot tests.

To verify that this study data set is suitable for factor analysis, the researcher assessed whether the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy value was .6 or above and determined that the Bartlett's test of sphericity value was significant (i.e. .05 or less). The KMO tests whether or not the partial correlations among the variables are small. Bartlett's test of sphericity examines the hypothesis that the variables are uncorrelated within the population. Field (2009) suggested that a value below .50 is 'unacceptable', in the .50s is 'miserable', in the .60s is 'mediocre', in the 70s is 'middling', in the 80s is 'meritorious', and in the .90s is 'marvellous'. Our KMO value was .851, which falls in the range of being meritorious. Bartlett's test was significant ( $p < .05$ ), reflecting the many correlation coefficients of .3 and above. In sum, the sample size is adequate for factor analysis, and the factor analysis is appropriate.

To determine how many components (factors) to retain, a number of issues were considered. Using Kaiser's criterion, components with an eigenvalue greater than one are acceptable. This information is in Table 2.

Table 2

*Initial Total Variance Explained*

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	<b>11.003</b>	23.920	23.920	11.003	23.920	23.920	6.713
2	<b>7.475</b>	16.251	40.171	7.475	16.251	40.171	5.531
3	<b>3.975</b>	8.641	48.812	3.975	8.641	48.812	4.958
4	<b>2.871</b>	6.242	55.054	2.871	6.242	55.054	5.302
5	<b>2.635</b>	5.727	60.781	2.635	5.727	60.781	6.634
6	<b>2.106</b>	4.579	65.360	2.106	4.579	65.360	4.223
7	<b>1.488</b>	3.234	68.594	1.488	3.234	68.594	5.876
8	<b>1.288</b>	2.801	71.395	1.288	2.801	71.395	3.647
9	<b>1.236</b>	2.688	74.082	1.236	2.688	74.082	4.854
10	<b>1.022</b>	2.221	<b>76.304</b>	1.022	2.221	76.304	1.780
11	.889	1.933	78.237				

In this phase, the first ten components recorded eigenvalues above 1. These ten components explain 76.30 percent of variance. However, retention of the fanship factor was not supported due to a cross loading and low factor loadings (see Table 3). The fanship factor was therefore removed from further consideration.

Table 3

*Pattern Matrix after Initial Dimension Reduction Process for EFA*

Item	Component									
	1	2	3	4	5	6	7	8	9	10
ECO4	.913									
ECO1	.901									
ECO2	.847									
ECO3	.816									
TKSH1	.484									
ESC5		.871								
ESC4		.870								
ESC2		.735								
ESC3		.685								
TKSK5			.923							
TKSK1			.901							
TKSK4			.875							
TKSK3			.641							.303
TKSK2	.356		.580							
ENT4				.860						
ENT1				.786						
ENT5				.781						
ENT2				.722						
ENT3				.415				.356		
IC1				.354			.306			
IFSH4					.931					
IFSH3					.883					
IFSH5					.849					
IFSH2					.843					
IFSH1					.804					
IFSK4						.929				
IFSK5						.906				
IFSK3						.724				
IFSK1						.613				
IFSK2			.351			.480				
IC5							.883			
IC4							.881			
IC2							.838			
IC3							.703			
ESC1		.369					.370			
PST4		.303						.787		
PST1								.768		
PST2								.763		
PST3		-.455						.527		
TKSH4									.802	
TKSH5									.788	
TKSH2									.736	
TKSH3					.381				.502	
FAN3	.453									.406
FAN1				.420						.457
FAN2	.370									.427

A number of iterations were conducted. In each iteration, one item at a time was eliminated. After each iteration, poor factor loading and cross loading scores dictated the next item to be eliminated. Eight more items were deleted based on their strength of loading or cross

loading: TKSH1, TKSK2, ENT3, IC1, IFSK2, ESC1, PST3, and IFSH1. For each factor, the four items with the strongest loadings were retained, thereby providing a more parsimonious scale.

The *pass time* factor would comprise only three items. Field (2009) recommends presenting both the pattern matrix and structure matrix if researchers have used oblique rotation because of the ability to interpret the loadings in these tables differently. The pattern matrix and structure matrix are presented in Tables 4 and Table 5 respectively.

Table 4

*Final Pattern Matrix for EFA*

Item	1	2	3	4	Factor 5	6	7	8	9
TKSH4	.863								
TKSH5	.852								
TKSH2	.795								
TKSH3	.575								
ESC5		.961							
ESC4		.959							
ESC3		.806							
ESC2		.744							
IFSK4			.922						
IFSK5			.919						
IFSK3			.776						
IFSK1			.560						
IC5				.928					
IC4				.904					
IC2				.812					
IC3				.789					
ECO1					.932				
ECO4					.930				
ECO2					.873				
ECO3					.817				
TKSK5						.923			
TKSK1						.909			
TKSK4						.872			
TKSK3						.696			
IFSH4							.907		
IFSH3							.869		
IFSH5							.848		
IFSH2							.788		
ENT4								.902	
ENT1								.830	
ENT5								.807	
ENT2								.707	
PST4									.917
PST1									.898
PST2									.874



Table 5

*Final Structure Matrix for EFA*

	Factor								
	1	2	3	4	5	6	7	8	9
TKSK5	<b>.941</b>						.530		
TKSK4	<b>.938</b>				-.359		.521		
TKSK2	<b>.901</b>				-.351		.518		
TKSK3	<b>.752</b>				-.344		.607		
ESC4		<b>.959</b>						-.359	.531
ESC5		<b>.959</b>		-.309				-.332	.551
ESC3		<b>.840</b>		-.320					.503
ESC2		<b>.834</b>						-.346	.545
IFSK4			<b>.917</b>						
IFSK5			<b>.906</b>						
IFSK3			<b>.806</b>						
IFSK1			<b>.688</b>						
IC5				<b>.954</b>					
IC4				<b>.949</b>					
IC2				<b>.843</b>					
IC3				<b>.803</b>					
ECO4					<b>.950</b>				
ECO1					<b>.928</b>				
ECO3					<b>.879</b>				
ECO2					<b>.879</b>				
TKSK1						<b>.924</b>			
TKSK5						<b>.912</b>			
TKSK4						<b>.884</b>			
TKSK3						<b>.746</b>			
IFSH4	.459						<b>.961</b>		
IFSH5	.470						<b>.920</b>		
IFSH3	.448						<b>.902</b>		
IFSH2	.556						<b>.866</b>		
ENT4		.396						<b>.917</b>	
ENT5		.371						<b>.886</b>	
ENT1		.352						<b>.878</b>	
ENT2		.301						<b>.779</b>	
PST4		.575							<b>.949</b>
PST2		.560							<b>.912</b>
PST1		.521							<b>.906</b>

Table 6 displays the item-to total correlations and Cronbach's alpha scores of MS-ESOC within EFA.

Table 6

*Item-to Total Correlations and Cronbach's Alpha of MS-ESOC within EFA*

Factor	Item	Item-to-total correlation	Cronbach's Alpha
Information sharing	INFS2	.804	.944
	INFS3	.829	
	INFS4	.944	
	INFS5	.871	
Information seeking	INF1	.551	.830
	INF3	.631	
	INF4	.804	
	INF5	.767	
Technical knowledge-sharing	TKSH2	.787	.901
	TKSH3	.801	
	TKSH4	.698	
	TKSH5	.854	
Technical knowledge seeking	TK1	.841	.893
	TK3	.621	
	TK4	.792	
	TK5	.808	
Entertainment	ENT1	.765	.892
	ENT2	.645	
	ENT4	.843	
	ENT5	.824	
Interpersonal communication	IC2	.730	.909
	IC3	.660	
	IC4	.908	
	IC5	.910	
Economic	ECO1	.862	.930
	ECO2	.786	
	ECO3	.806	
	ECO4	.905	
Escape	ESC2	.730	.918
	ESC3	.712	
	ESC4	.915	
	ESC5	.918	
Pass time	PST1	.793	.916
	PST2	.806	
	PST4	.883	

The data in Table 6 show very strong item-to total correlations, ranging from .551 for INF1 to .944 for INFS4. Information sharing, economic, escape, technical knowledge seeking, entertainment, interpersonal communication, technical knowledge-sharing, pass time, and information seeking subscales of the MS-ESOC all had high reliability. Cronbach's alpha ranged from .830 for information seeking to .944 for information sharing. At the conclusion of the EFA process, the MS-ESOC comprised 35 items across nine factors.

**Phase 6: Confirmatory Factor Analysis (CFA).** Having explored the factor structure of the MS-ESOC through EFA, a pattern of dimensionality was evident. Therefore, it is appropriate to test that structure using CFA (Netemeyer et al., 2003). The measurement model was estimated first to examine the loadings of measures to their respective factors and to inspect the correlations among the nine latent factors.

**Participants.** The participants for this study were recruited from 20 endurance-sports online communities. These were slowtwitch.com, transitions.org.au, beginnertriathlete.com, trifuel.com, swimmingforums.com, 10kswimmer.com, openwaterswimming.eu, bldsa.org.uk, cyclingforums.com, velonews.com, thehubsa.co.za, bikeforums.net, redbikereview.com, cyclingforum.com, cycling.net.au, coolrunning.com, runnersworld.co.uk, mapmyrun.com, runningtimes.com, and tunningroom.com. Importantly, the four communities used in the EFA study were not utilised in this phase of the study. This was to ensure a more robust evaluation of the factor-structure and psychometric properties of the EFA-lead scale development process (Costello & Osborne, 2005).

Data were again collected using an online questionnaire. Initial recruitment occurred via a message posted by the researcher to each endurance-sports online community. As in the case of the EFA study, written permission from the owner/moderator of each online community was obtained prior to posting the invitation to participate. The invitation included a link to the online survey.

There were 529 responses, but 170 cases were excluded because they were incomplete. Of the 359 participants, 306 were male (85.2%), and 53 were female (14.8%). The respondents' ages ranged from 21 to 70 ( $M = 40$ ). In terms education level, there were 26 (7.2%) high school or equivalent degree holders, 38 (10.6%) college degree holders, 134 (37.3%) bachelor's degree

holder, 92 (25.6%) master's degree holders, 42 (11.7%) doctoral degree holders, and 27 (7.5%) professional degree holders (i.e. MD, JD, etc.). The ethnic composition of the sample consisted of 328 Caucasian (91.4%), 7 multiracial (1.9%), 4 Hispanic (1.1%), 3 Asian (0.8%), 3 Latino (0.8%), 3 Pacific Islander (0.8%), and 11 non-respondents (3.1%). There were 220 (61.3%) married, 73 (20.3%) single, 25 (7%) living with another, 18 (5%) separated, 4 (1.1%) widowed, and 8 (2.2%) non-respondents. Participants were located all over the world, including North America (33%), Oceania (31%), Europe (23%), and South Africa (4%).

**Instrument.** The instrument in this phase of the study was essentially comprised of the nine-factor EFA-generated MS-ESOC output. Eight constructs were measured using 4-item subscales, and one (pass time) construct was measured using 3-item subscales. The participants were asked to rate the extent to which they agreed or disagreed with each of the items on the refined MS-ESOC. A 7-point Likert scale, ranging from 1 (*strongly disagree*) to 7 (*strongly agree*), was utilized (see the appendix).

**Data analysis.** A basic assumption of CFA is multivariate normality (Lam, Zhang, & Jensen, 2005). An assessment of multivariate kurtosis (Mardia's coefficient = 230.590; normalised estimate = 42.926) did not support the assumption of multivariate normality. Byrne (2001) suggested that normalised estimate values greater than five indicate departures from normality. Based on the above, it was decided that the robust maximum likelihood (MLM) estimator was the best choice in this case. Satorra and Bentler (1994) recommend using the MLM estimator when the multivariate normality assumption is violated.

The next step in data analysis was to test the reliability and validity of the measures. Reliability analysis is a measure of the internal consistency of indicators for a construct (Hair et al., 2009). The purpose of reliability analysis is to determine how well a set of items taps into

some common sources of variance (Viswanathan, 2005), and it is frequently measured with inter-item correlations and Cronbach's alpha. Inter-item correlations in the range of .40 to .50 are recommended for the valid measuring of a construct.

Construct validity is the extent to which a set of measured items actually reflects the theoretical latent construct those items are designed to measure (Hair et al., 2009). It is assessed with the factor loadings, construct reliability, and Average Variance Extracted (AVE), which provides 'the overall amount of variance in the indicators accounted for by the latent construct' (Hair et al., 1998, p. 621). Construct reliabilities should exceed .7 (Hair et al., 2009), and AVE by each construct should exceed the variance due to the measurement error for that construct. Ideally, the AVE value should exceed .50 for a construct. This indicates that more than 50% of the indicators' variance is explained by the latent construct.

The next step was to test a measurement model including all the constructs of the MS-ESOC (see Figure 2). To establish construct validity, the researcher examined the relationship between the items and their latent constructs (i.e. information seeking, information sharing, technical knowledge seeking, technical knowledge-sharing, entertainment, pass time, escape, interpersonal communication, and economic factors), as well as correlations between the nine constructs. The results of the measurement model test determine how well the indicators capture their specified constructs (Hair et al., 1998).

Both Bentler (2007) and Hair et al. (2009) recommend a combination of indicators so that the weaknesses of each index are compensated for. The data analysis focused on examining (a) model fit indices for the measurement model and the validity of the measurement instrument, (b) model fit indices for the higher-order model, and (c) a proposition of a competing model. The cut-off criteria for fit indices (i.e. RMSEA less than .06, SRMR less than .10, and CFI greater

than .95) were those recommended by Hu and Bentler (1999). Both theory and modification indexes were used to develop and compare competing models. The third step was to test the second-order model (see Figure 4).

**Results: Model 1.** A CFA was used to test the factor structure of the MS-ESOC. The initial measurement model (M1) for the MS-ESOC is displayed in Figure 2. The scale psychometrics for M1 are displayed in Table 7.

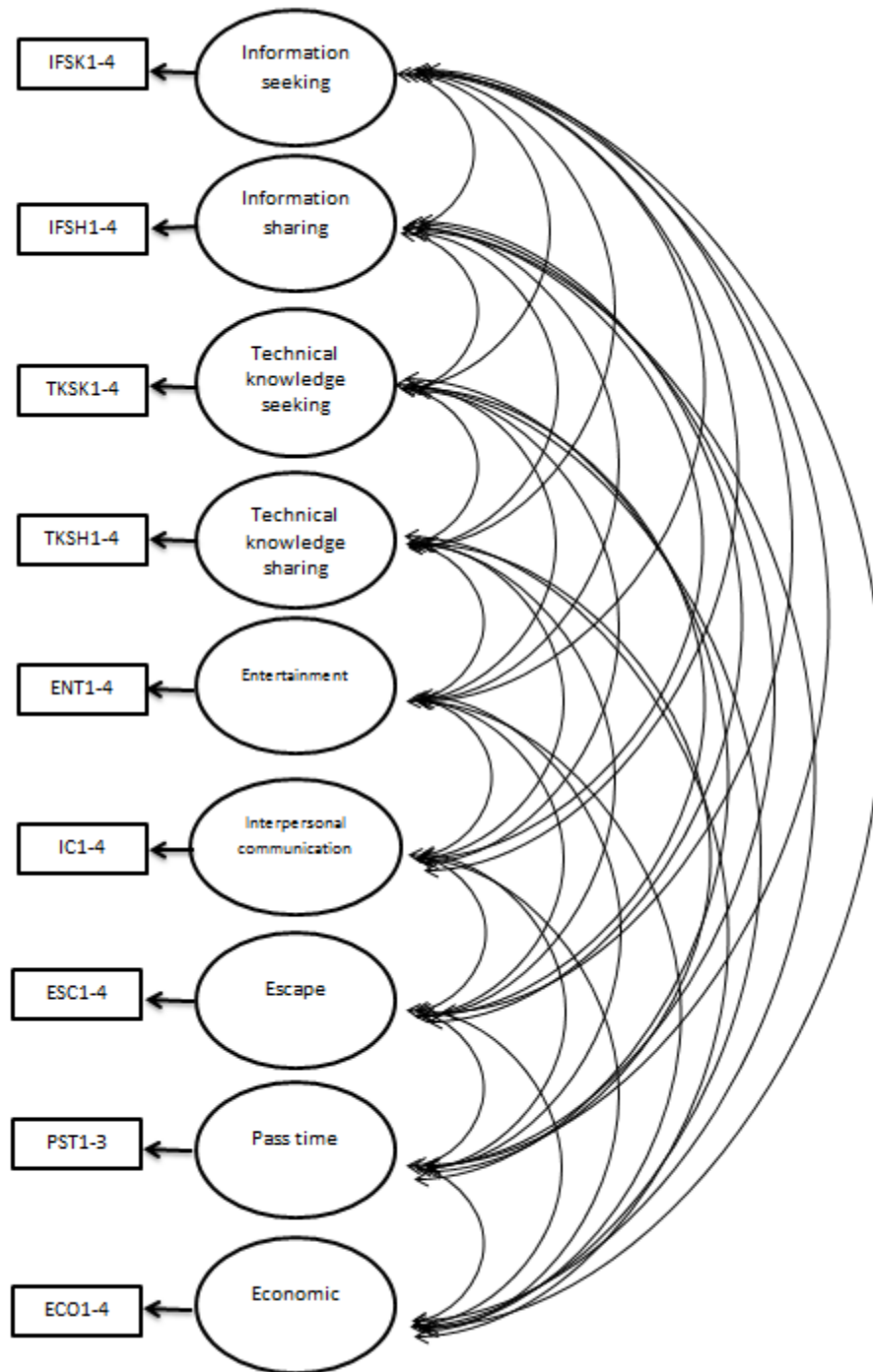


Figure 2. Measurement model (M1) for the MS-ESOC.

Table 7

*Scale Psychometrics for Measurement Model (M1)*

Construct/Factor	Item	Factor Loading	AVE	Construct Reliability
Information Seeking (IFSK)	IFSK1	.584	.446	.761
	IFSK2	.642		
	IFSK3	.781		
	IFSK4	.650		
Information Sharing (IFSH)	IFSH1	.894	.708	.906
	IFSH2	.893		
	IFSH3	.831		
	IFSH4	.738		
Technical Knowledge Seeking (TKSK)	TKSK1	.817	.602	.858
	TKSK2	.755		
	TKSK3	.704		
	TKSK4	.822		
Technical Knowledge-sharing (TKSH)	TKSH1	.765	.612	.863
	TKSH2	.835		
	TKSH3	.725		
	TKSH4	.800		
Entertainment (ENT)	ENT1	.782	.405	.726
	ENT2	.648		
	ENT3	.591		
	ENT4	.488		
Interpersonal Communication (IC)	IC1	.419	.406	.744
	IC2	.324		
	IC3	.952		
	IC4	.809		
Escape (ESC)	ESC1	.726	.490	.793
	ESC2	.653		
	ESC3	.656		
	ESC4	.759		
Pass Time (PST)	PST1	.756	.587	.810
	PST2	.719		
	PST3	.820		
Economic (ECO)	ECO1	.906	.573	.838
	ECO2	.766		
	ECO3	.776		
	ECO4	.530		

*Note.* All loadings are significant ( $p < .01$ ).



Table 7 shows the scale psychometric results for M1. The loadings ranged from a low of .324 for IC2 to a high of .952 for IC3. AVE ranged from .405 for ENT to .708 for IFSH, and construct reliability ranged from .726 for ENT to .906 for IFSH. Table 8 displays the correlations among the latent factors.

Table 8

*Initial CFA: Correlations Among Latent Factors*

	IFSK	IFSH	TKSK	TKSH	ENT	IC	ESC	PST	ECO
IFSK	1.00								
IFSH	.672**	1.00							
TKSK	.991**	.595**	1.00						
TKSH	.667**	.938**	.711**	1.00					
ENT	.397**	.309**	.344**	.256**	1.00				
IC	.162**	.509**	.107	.434**	.489**	1.00			
ESC	.125*	.140**	.106	.101	.693**	.476**	1.00		
PST	.056	.060	.036	-0.021	.618**	.388**	.810**	1.00	
ECO	.143**	.235**	.134**	.294**	.131*	.361**	.249**	.172**	1.00

\* $p < .05$ . \*\* $p < .01$ .

There are some notable features within Table 8. Some factors are too highly correlated, for example, information seeking and technical knowledge seeking motives ( $r = .991, p < .01$ ), and information sharing and technical knowledge-sharing motives ( $r = .938, p < .01$ ). Others are insufficiently correlated, including interpersonal communication and technical knowledge seeking motives ( $r = .107, p > .05$ ), escape and technical knowledge seeking motives ( $r = .106, p > .05$ ), escape and technical knowledge-sharing motives ( $r = .101, p > .05$ ), pass time and information seeking motives ( $r = .056, p > .05$ ), pass time and information sharing motives ( $r$

= .060,  $p > .05$ ), pass time and technical seeking motives ( $r = .036$ ,  $p > .05$ ), and pass time and technical knowledge-sharing motives ( $r = -0.021$ ,  $p > .05$ ) (see Table 3.7).

The fit indices for the measurement model (M1) were poor. The SRMR value of .086 was less than the .10 cut-off associated with good models. The RMSEA value of .074 was higher the recommended .06 threshold. Both the CFI (.837) and TLI (.815) were below the .95 target criteria for a good model fit.

**Results: Model 2.** When combined with a conceptual consideration of the problematic factors, the initial measurement model (M1) was modified in three ways. First, ‘information seeking’ was combined with ‘technical knowledge seeking’. Second, ‘information sharing’ and ‘technical knowledge-sharing’ were also combined. Third, TKSK3, IFSK4, IFSH4, TKSH3, ENT4, IC1, IC2, ESC3, ECO4, IFSK2, TKSK2, IFSH1, and TKSH4 items were removed based on model modification indices and low factor loadings.

The modified measurement model (M2) ( $\chi^2 = 294.86$ ,  $df = 155$ ,  $p < .01$ ) possessed better model fit indices than M1 ( $\chi^2 = 362.25$ ,  $df = 188$ ,  $p < .01$ ). The CFI (.952) was slightly higher than the cut-off of .95, and TLI (.941) was slightly lower than the recommended cut-off of .95. The RMSEA (.050) was good and the SRMR (.047) was also acceptable. All items loaded significantly on their respective constructs. Item loadings ranged from .658 for ENT2 to .931 for ECO1. The modified measurement model (M2) is displayed in Figure 3. The scale psychometrics for M2 are displayed in Table 9.

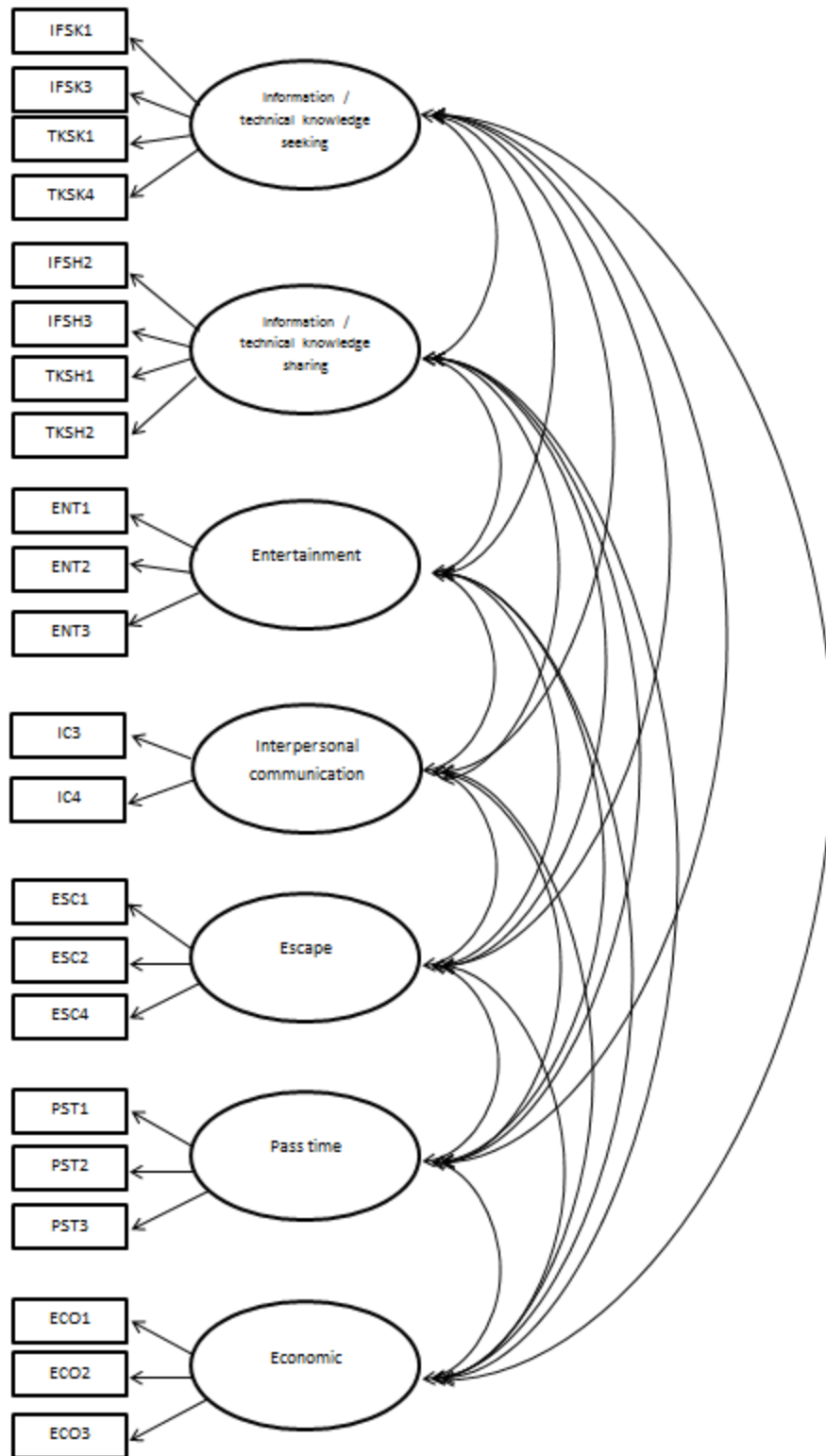


Figure 3. Measurement (M2) Model for the MS-ESOC.

Table 9

*Scale psychometrics for measurement model (M2)*

Construct	Items	FL	AVE	Construct Reliability
Information/technical knowledge seeking	IFSK1	.603	.591	.850
	IFSK3	.793		
	TKSK1	.803		
	TKSK4	.852		
Information/technical knowledge-sharing	IFSH2	.871	.662	.887
	IFSH3	.822		
	TKSH1	.752		
	TKSH2	.806		
Entertainment	ENT1	.821	.475	.726
	ENT2	.655		
	ENT3	.567		
Interpersonal Communication	IC3	.901	.731	.844
	IC4	.806		
Escape	ESC1	.757	.494	.745
	ESC2	.659		
	ESC4	.689		
Pass time	PST1	.764	.588	.811
	PST2	.727		
	PST3	.808		
Economic	ECO1	.923	.670	.858
	ECO2	.749		
	ECO3	.773		

*Note.* All loadings are significant ( $p < .01$ ).

The key features of Table 9 show the scale psychometric results for M2. The loadings ranged from a low of .567 for ENT3 to a high of .923 for ECO1. AVE ranged from .475 for ENT to .731 for IC, and construct reliability ranged from .726 for ENT to .887 for IFSH.

The correlations among the latent factors within M2 are displayed in Table 10.

Table 10

*Correlations Among Latent Factors in M2*

	IFTKSK	IFTKSH	ENT	IC	ESC	PST	ECO
IFTKSK	1.00						
IFTKSH	.581**	1.00					
ENT	.356**	.347**	1.00				
IC	.162*	.509**	.489**	1.00			
ESC	.117	.157*	.699**	.693**	1.00		
PST	.033	.039	.562**	.618**	.850**	1.00	
ECO	.076	.236**	.130*	.131*	.216**	.164**	1.00

\* $p < .05$ . \*\* $p < .01$ .

*Test of the second-order-factor model.*

Table 10 reveals many significant correlations. The exceptions to this are as follows: escape and information/technical knowledge seeking motives ( $r = .117, p > .05$ ), pass time and information/technical knowledge seeking motives ( $r = .033, p > .05$ ), pass time and information/technical knowledge-sharing motives ( $r = .039, p > .05$ ), and economic and information/technical knowledge seeking ( $r = .076, p > .05$ ). The second-order-factor model of the MS-ESOC was tested next, and the results are displayed in Figure 4.

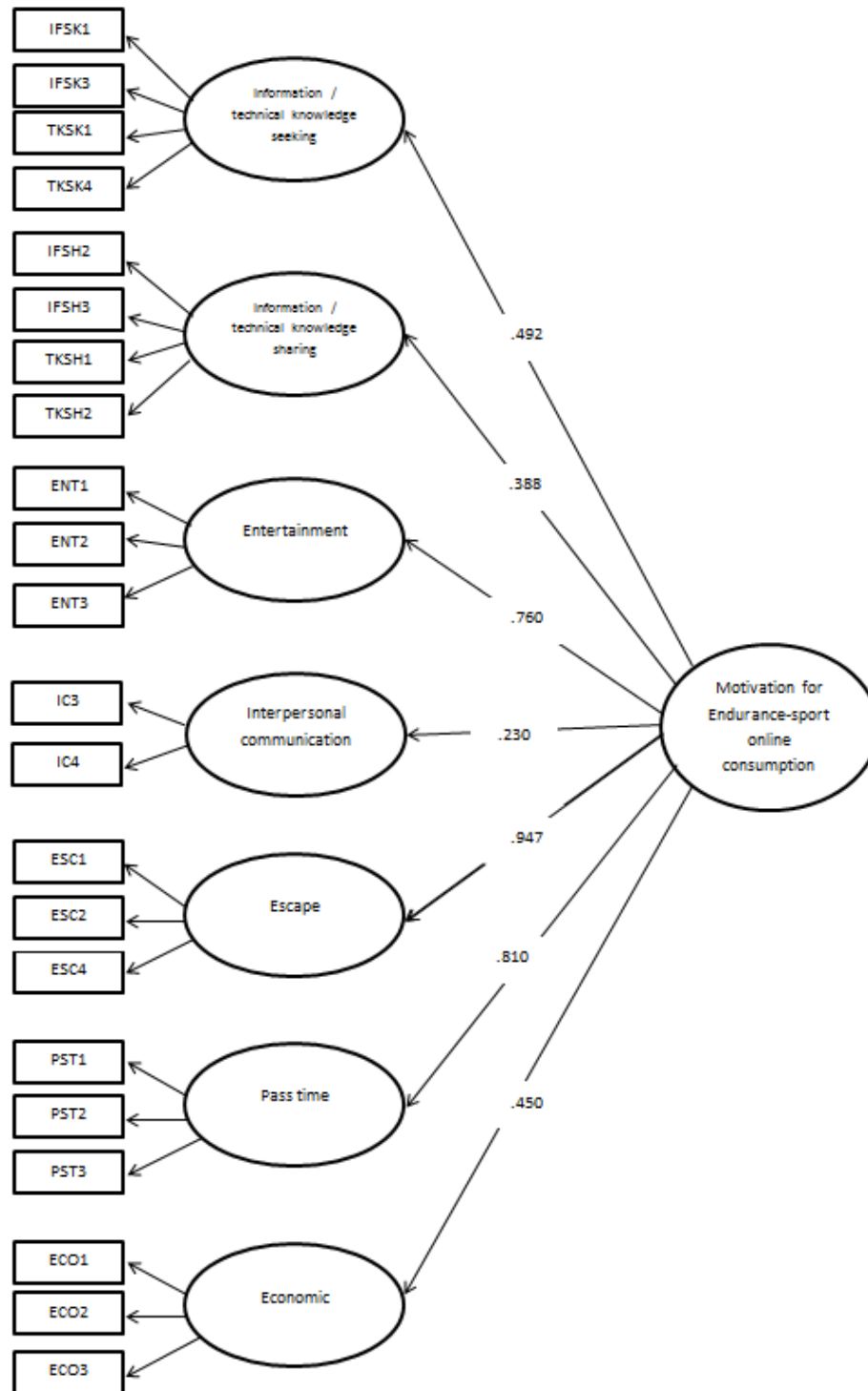


Figure 4. Second-order factor model for MS-ESOC.

Note. All loadings are significant ( $p < .01$ ).

The second-order factor analysis produced a noteworthy finding. Seven loadings of first-order factors on second-order factors were significant: .492 for information and technical knowledge seeking, .388 for information and technical knowledge-sharing, .760 for entertainment, .230 for interpersonal communication, .947 for escape, .810 for pass time, and .450 for economic motives. This indicates that users may not visit ESOCs for interpersonal communication reasons. The model fit to the data was acceptable as CFI (.938) and TLI (.927) were only slightly lower than the rules of thumb for good models (see Table 11).

Table 11

*Model-Fit Indexes of Measurement and Second-Order Models*

Model	$\chi^2$	Df	<i>p</i>	RMSEA	CFI	TLI	SRMR
Measurement Model 1	362.25	188	< .01	.074	.837	.815	.086
Measurement Model 2	294.86	155	< .01	.050	.952	.941	.047
Second-Order Model	412.34	164	< .01	.056	.938	.927	.071

The final version of the MS-ESOC is summarised below in Table 12.

Table 12

*MS-ESOC Latent Variables and Items*

Constructs/Variable	Items
Information and technical knowledge seeking	I use this forum because I am able to obtain a wide range of cycling information. I use this forum because I can learn about things happening in the cycling world. I use this forum because I want to know the technical aspects of cycling. I ask the forum members to clarify technical aspects of cycling.
Information and technical knowledge-sharing	I use this forum because I enjoy sharing my information with other members. I use this forum because I enjoy helping others by sharing my information. I use this forum because I want to share cycling strategies. When I use this forum, I often try to explain technical aspects of cycling to members.
Entertainment	I use this forum because it is exciting. I use this forum because it is cool. I use this forum because it is amusing.
Interpersonal communication	I use this forum because I won't be alone. I spend a lot of time interacting with some members in this forum.
Escape	I use this forum because I can escape from reality. I use this forum because I can forget about work. One of main reasons I use this forum is that doing so makes me forget about my problem
Pass time	I use this forum because it gives me something to do to occupy my time. I use this forum because it passes the time away, particularly when I'm bored. I use this forum during my free time.
Economic	I use this forum because I am able to make purchases on the classified section of the forum. When I want to buy cycling item, I used this forum to search for bargain prices. I use this forum because it is great place to sell my needless cycling equipment.

*Note.* The word 'cycling' was used among only cycling online communities. Each word

'running', 'triathlon', 'swimming' was used among each appropriate community.

### Discussion

The MS-ESOC is a valid and reliable measure of users' motives for using endurance-sports online communities. The seven constructs/factors (i.e. information and technical knowledge seeking, sharing, entertainment, interpersonal communication, escape, pass time, and economic) within the MS-ESOC are largely consistent with previous research on sports online consumption



(Seo & Green, 2008). The entertainment, escape, pass time and economic subscales consist of three items. The information/technical knowledge seeking and sharing subscales consist of four items. Interpersonal communication subscale consists of two items in the final MS-ESOC measure.

Despite the similarities between Seo and Green's (2008) MSSOC and the MS-ESOC, there are a number of noteworthy differences, the most important of which are 1) number of constructs and 2) the sharing construct. The first difference between the two scales is the number of constructs. The MSSOC consists of 10 constructs of motivation, including fanship, interpersonal communication, technical knowledge, fan expression, entertainment, economic, pass time, information, escape, and support. Each subscale had three items. The MS-ESOC consisted of seven constructs, including information and technical knowledge seeking (4 items), information and technical knowledge-sharing (4 items), entertainment (3 items), interpersonal communication (2 items), escape (3 items), pass time (3 items), and economic (3 items). Fanship, fan expression and (team) support may not appropriate within individual sports such as endurance-sports online communities. That is why the MS-ESOC consist of only seven constructs.

The second difference between the MSSOC and the MS-ESOC is sharing motives. According to the literature review, the sharing motivation is key to any online community. However, the MSSOC does not include sharing motivations in their scale for online consumption. On the other hand, information sharing motives and technical knowledge-sharing motives are contained in the MS-ESOC. Additionally, users may not visit ESOC for interpersonal communication purposes, even if some National Football League (NFL) fans the Web sites for purposes of interpersonal communication (Seo & Green, 2008).

In addition to these differences between the MSSOC and the MS-ESOC, it is important to note that ESOC users' seeking and sharing motives are not as complicated as originally anticipated. The information seeking and technical knowledge seeking factors are highly correlated, and the same is true for the respective sharing factors. Therefore, the researcher combined the two seeking factors (information seeking and technical knowledge seeking) into one seeking factor (information-knowledge seeking). The researcher also combined the two sharing factors (information sharing and technical knowledge-sharing) into one sharing factor (information-knowledge-sharing). Information and technical knowledge are apparently the same among ESOC users. Even if information and technical knowledge are different concepts, ESOC users do not distinguish between the two. Future studies should examine this further.

The results of the EFA and CFA procedures in this study indicate that the MS-ESOC instrument is valid and that the instrument can be used to test why people participate in ESOC. The MS-ESOC is a reasonable tool for sports community stakeholders or sports community entrepreneurs, who develop or manage online sports communities.

The development of the ME-ESOC provides significant opportunities for future research. This study purposely focussed on a small number of endurance sports. The scale's versatility beyond cycling, running, swimming, and triathlon forums can only be determined by studies of other endurance sports types. The translation of this scale into languages other than English and its use non-English speaking forums would assist in assessing the scale's versatility. An examination of the scale's utility within individual sports online communities (e.g. tennis and golf) is also encouraged.

This study examines motivation in its aggregate form. The MS-ESOC dimensions also have the ability to be used independently in focussed studies of each dimension. Future research

could focus on one or more of the particular dimensions. Such an approach might also be complemented by qualitative approaches, including digital ethnography (netnography).

In explaining the absence of a content motive within their scale, Seo and Green (2008) write that ‘content is important only inasmuch as it supports users’ motives’ (p. 105). Subsequent studies should investigate the extent to which ESOC content ‘matches’ the factor structure of the MS-ESOC. The UGC-nature of the ESOC underpins this suggestion. Put simply, if the content is UGC, it should surely reflect the motives of the users or at the very least, those who contribute content to the forum. A study that combines the insight of a content analysis and a survey of user motives would be a valued addition to the field. This leads to another suggestion for future research, which is to identify the motivational differences between contributors and lurkers. Such a study would recognise that online communities have two distinct sub-groups: those who write and those who do not. It is unlikely that these two group would share the same motivation.

A more thorough knowledge of user motivations can inform the design/structure of the online forum. More specifically, this includes the development of sub-forums that would effectively group or cluster threads of a similar nature. Forum moderators could also use an understanding of user motivation to guide decisions on thread relevance (e.g. is the comment ‘on topic’) and to assess whether members are transgressing expectations through sharing inappropriate (e.g. abusive) content. In summary, the MS-ESOC is a psychometrically sound scale with the capacity to provide insight into both existing and potential online forum participants.

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## **Study 2 Preface**

The purpose of this study is to identify motivational differences between lurkers and contributors (i.e. posters) within an ESOC. This is a logical progression from Study 1 because it demonstrates the utility of the MS-ESOC. It is too easily forgotten, and perhaps not even recognised that that online communities rely upon (visible) posters and the (invisible) lurker. In this research I want to bring some light' to lurkers, and hope that understanding their motives, and differentiating them from posters will provide forum owners with an enhanced capacity to develop these communities.

## **CHAPTER 4 - STUDY 2**

### **Motivational Differences between Lurkers and Posters:**

#### **A Study of Endurance Sport Online Communities**

##### **Introduction**

The purpose of this study was to identify the motivational differences between lurkers and contributors. Certainly, we know that they differ in at least one respect: contributors post while lurkers do not. Lurkers have elaborated several reasons for this behaviour: they feel that they do not need to post, want to find out more about the group before participating, feel they are being helpful by not posting, cannot make the software work correctly in order to post, or believe that the community is a poor fit for them (Preece, Nonnecke, & Andrews, 2004). Preece et al. (2004) identified that information seeking is a key motivation for going online for both lurkers and contributors. However, these groups have different attitudes toward an online community. Contributors believe that they received more benefit from the online community and that their needs were better met (Preece et al., 2004). Overall, lurkers have revealed a higher need for information acquisition from an online community than those who contributed (Mathwick, Wiertz, & De Ruyter, 2008).

Although lurker and contributor behaviours and attitudes appear different, previous research has not examined underlying issues of motivation that may explain these differences. An understanding of motivations can explain lurker behaviour and can assist online community stakeholders to better address lurker needs, perhaps even converting them into contributors.

This study employed survey data from both lurkers and posters. Specifically, seven motivational factors were compared across lurker and poster groups within endurance-sports

online communities (ESOC). To clarify the difference between lurkers and posters, ‘low frequency (once a month or less) posters’, ‘mid frequency (posting once a week) posters’, and ‘high frequency (posting once or more a day) posters’ were examined as a separate group, to verify whether the differences are gradual, or whether they are also significant between lurkers and the various levels of posters.

### **Background Literature**

The main reason for an individual to use an online community is to gain information (Dholakia & Bagozzi, 2004; Gagne, 2009; Goldsmith & Horowitz, 2006; Hur, Ko, & Valacich, 2007; Moore & Serva, 2007). In these communities, content and information is almost exclusively user-generated. User-generated content (UGC) is a content source that draws more members to the community (Hagel & Armstrong, 1999). UGC has been cited as a social resource in online communities (Rheingold, 1993). A consistent finding in the UGC literature is that a small percentage of users typically provide the majority of the content (Lampe, Wash, Velasquez, & Ozkaya, 2010). In other words, most users do not contribute to the online communities they visit. These non-contributors are referred to as lurkers.

Two theoretical models have been used to explain why most online community users do not contribute. The tragedy of the commons model (Ostrom, 1991) has its origins in economics, and argues that when a good can be freely consumed without constraints, there is little motivation for individuals to contribute to the maintenance of that good (Ostrom, 1991). Another theoretical model is social loafing (Karau & Williams, 1993), which suggests that individual contributions to a group effort are reduced when that effort is not seen as unique, or as the size of the group grows (Karau & Williams, 1993).

Additionally, there have also been studies that have assessed why people contribute content, rather than why they do not. Lampe and Johnston (2005) explored how new user participation was affected by feedback from other users regarding subjective norms. Wang and Fesenmaier (2004) looked at why participants of an online travel community chose to contribute their time and efforts to fostering that community. Results indicated that community participation in the travel sector was driven largely by social and hedonic benefits, and the level of active contribution could be explained by instrumental, efficacy, and expectancy related incentives.

The literature suggests that online communities are places where people go to find emotional support and a sense of belonging (Blanchard & Markus, 2004; Ellonen, Kosonen, & Henttonen, 2007; Forster, 2004; Sutanto, Kankanhalli, & Tan, 2011). Early studies of online communities identified socio-emotional content as a key type of communication (Rice & Love, 1987). Just as information is exchanged in both directions, individuals desire to give, as well as provide social support (Ridings, Gefen, & Arinze, 2006). People actively participate in order to help others and contribute to the community, and may also do so to build their own reputations (Zacharia & Maes, 2000). The desire to exchange social support is, therefore, another important motivator in the use of online communities. Additionally, individuals have been found to be motivated to use online communities to conduct online shopping activities (Figallo, 1998; Hagel & Armstrong, 1999). This may include actually buying and selling through a 'buy & selling board' in the community or seeking information about particular product, such as the best items to buy, or where to shop. This information can also be considered a subset of the desire to exchange the types of information discussed above. Passtime (Rubin, 1981), escape (Korgaonkar & Wolin, 1999), and interpersonal communication (Wolfradt & Doll, 2001) have also been

identified as motivational factors for online community use. Lurkers also participate in online community, but in different ways. Lurkers invest time, but not reputation or empathy, because no one knows what they are doing (Takahashi, Fujimoto, & Yamasaki, 2003). The rewards for this temporal investment are limited to learning something new or reading something interesting. This is the difference between contributors and lurkers.

The level of user participation is a critical factor in the survival of online communities. Nonnecke and Preece (2000) have suggested that individuals participating in online communities can be broadly divided into two types: posters and lurkers. Lurkers are defined as those online community members who only read the contributions of others (Nonnecke & Preece, 2000). In contrast, posters not only read the contributions of others but also contribute content to the online community or online forum (Chen & Chiu, 2008). Put simply, without contributors, there would be nothing to read. Preece (2001) proposed that the number of posted messages indicates the degree to which people are engaged with the community, and should be taken as a determinant of the online community's success. The most common measures of an online community's success include unique visitors, page views, session time, registered members, postings per day/week/month, read-to-post ratio, page additions and revisions (in member-generated content), total number of users, repeat visits, and frequent visitors (Cothrel, 2000). However, a large portion of members in online communities are passive, rather than active posters (Nonnecke & Preece, 2001). It has been reported that over 90% of members in some large online groups, such as the Multiple Sports Newsgroup (MSN) and AOL, are lurkers (Katz, 1998).

Lurking has been considered a problem within online communities for some time (Rafaeli, Ravid, & Soroka, 2004). Lurkers have been criticised for being free-riders (i.e. non-contributing, resource-taking members) (Smith & Kollock, 1999). Nonnecke and Preece (2001),

however, have suggested that lurkers are valuable, and other researchers have argued that lurking is a normal behaviour (Nonnecke & Preece, 2000; Nonnecke, Preece, & Andrews, 2004; Ridings et al., 2006). Lurkers are a part of the community's traffic, contribute to server volume, and can react to advertising and selling within the community. They participate by reading others' posts, and may spend significant amounts of time doing so.

Preece, Nonnecke, and Andrews (2004) have suggested that the community context is key when assessing whether lurking is a problem. Large online communities can withstand a high proportion of lurking because a lower proportion of contributors is sufficient to maintain the viability of the communication forum. Smaller communities, however, are less likely to be able to sustain the same proportion of lurkers. In these circumstances, the volume of posts from contributors does not reach the threshold of sustainability.

Nonnecke, Preece, and Andrews (2004) have conducted a series of studies about lurkers. They found lurking to be the result of a complex set of actions, rationales, and contexts. The reasons for lurking fell into various categories, ranging from personal to work-related reasons (Nonnecke & Preece, 2001). In later studies (Nonnecke et al., 2004), they found that lurking was a post-joining habit rather than a conscious decision. The biggest reason for lurking was that the information-seeking needs of users could be satisfied without posting. However, these studies only investigated lurking behaviour in old, technology-focused online communities, such as email lists and chat rooms. The present study, however, investigated members' motivations for participating in online sports communities (i.e. online forums and message boards). Online forums are prominent in terms of allowing asynchronous interactions, through which participants can join the discussions at their convenience, unlike other methods requesting synchronous interaction (e.g. chat rooms). Forums have also been reported as relatively easy to use, accessible,



and observable (Im & Chee, 2006). The primary aim of Study 2 was to identify the motivational differences between lurkers and contributors within an ESOC.

## **Method**

### **Participants**

Participants were recruited from 21 endurance-sports online communities (see appendix).

Because there was no universal list of such communities, making random sampling from a list of all ESOCs impossible, the researcher included only active communities with a minimum traffic volume, minimum number of different users posting, and a high proportion of messages with responses. Thus, the researcher used the following specific criteria, proposed by Ridings et al. (2006): (a) the forum must have at least 10 postings per day over a randomly selected three-day period, (b) the forum must have at least 15 different individuals posting over a randomly selected three-day period, and (c) at least 80 % of postings must have at least one reply over a randomly selected three-day period. These criteria were chosen to ensure that the ESOC represented a large group of people who was actively communicating with one another. Popular Web search engines, such as Google and Alexa (Web traffic information Web site), were used to identify potential ESOCs. Generic such terms such as 'sports', 'community', 'forum', and 'discussions', were used as search terms. Ultimately, 20 ESOCs from four different sports (cycling, running, swimming, and triathlon) were chosen for this study. These were: slowtwitch.com, transitions.org.au, beginnertriathlete.com, trifuel.com, swimmingforums.com, 10kswimmer.com, openwaterswimming.eu, bldsa.org.uk, cyclingforums.com, velonews.com, thehubsa.co.za, bikeforums.net, redbikereview.com, cyclingforum.com, cycling.net.au, coolrunning.com, runnersworld.co.uk, mapmyrun.com, runningtimes.com, and runningroom.com. There were 529 responses, but 170 cases were excluded because they were incomplete. Of the 359 respondents,

306 were male (85.2%), and 53 were female (14.8%). The age of respondents ranged from 21 to 70 ( $M = 40$ ). In terms of level of education, there were 26 (7.2%) high school or equivalent degree holders, 38 (10.6%) college degree holder (the decision to separate bachelor and college degree holders was made because this is a global study, and there is no worldwide standardisation of degrees; the researcher wanted to provide every opportunity for participants to note their level of education, even if their tertiary education institutions did not award bachelor's degrees), 134 (37.3%) Bachelor's degree holders, 92 (25.6%) master's degree holders, 42 (11.7%) doctoral degree holders, and 27 (7.5%) professional degree holders (i.e. MD, JD, etc.). The ethnic composition of the sample was 328 Caucasians (91.4%), 7 multiracial individuals (1.9%), 4 Hispanics (1.1%), 3 Asians (0.8%), 3 Latinos (0.8%), 3 Pacific Islanders (0.8%), and 11 non-respondents (3.1%). Relationship statuses were as follows: 220 (61.3%) married, 73 (20.3%) single, 25 (7%) living with another, 18 (5%) separated, 4 (1.1%) widowed, and 8 (2.2%) non-respondents.

## **Measures**

The MS-ESOC developed within Study 1 was used in Study 2. The seven factors (22 items) were information/technical knowledge seeking (information seeking 1, information seeking 3, technical knowledge seeking 1, technical knowledge seeking 4), information technical knowledge-sharing (information sharing 2, information sharing 3, technical knowledge-sharing 1, technical knowledge-sharing 2), entertainment (entertainment 1, entertainment 2, entertainment 3), interpersonal communication (interpersonal communication 3, interpersonal communication 4), escape (escape 1, escape 2, escape 4), pass time (pass time 1, pass time 2, pass time 3), and economic (economic 1, economic 2, economic 3).

Respondents were instructed to indicate the extent to which the statements provided in the questionnaire described their personal experience with their ESOC. All items were rated on a seven-point Likert scale, ranging from *strongly disagree* (1) to *strongly agree* (7).

While there is general agreement within the academic community on the definition of a lurker, there is no such agreement on the best way to measure lurking. Researchers often apply a strict interpretation of the operational definition of lurking. For example, Nonnecke and Preece (2001) operationalised lurkers as participants who had sent no messages during a three-month period. Other researchers have used a less strict approach. In these studies, lurkers were operationalised as forum participants with three posts or fewer over a 12-week period (Nonnecke & Preece, 2000). The researcher characterised low frequency posters as lurkers in this study (Nonnecke & Preece, 2001; Rafaeli et al., 2004). Consistent with Nonnecke and Preece (2006), the survey used a single question to distinguish ESOC participation levels. Participants were asked to select their posting behaviour from these options: about once per day, about once per week, about once a month or less, and never.

### **Data analysis**

First, composite variables were created for each of the seven dimensions using only the best performing items as identified through EFA and CFA, described in Study 1. An ANOVA and *t*-test were then conducted in SPSS 19 to explore (a) composite variable mean differences within each group, and (b) mean differences between lurkers and contributors on the ESOC composite variables. For the SPSS mean difference analysis, lurkers and contributors were placed into four groups. Group 1 were the heaviest online community posters (i.e. once per day or more). Group 2 posted about once per week, while Group 3 comprised individuals who reported posting once per month or less. Therefore, Groups 1, 2, and 3 can be all considered contributors. Finally,

Group 4 comprised lurkers who reported no posting activity whatsoever. The lurker-contributor analysis used Mplus 6 software package.

## **Results**

Of the 359 participants, 34 were lurkers (9.5 %) and 325 were posters (90.5 %). Lurkers were more likely to be female (19 females and 15 males). The ages of lurkers ranged from 27 to 50, whereas the ages of posters ranged from 21 to 70. However, there were no other statistically significant differences between the two groups with regard to other demographic variables, such as level of education, marital status, Internet use, or ethnicity.

In the following paragraphs, we discuss motivational differences within each of the four user groups. Such an approach allows for the use of a motivational profile of ESOC users based on their levels of contribution. whether *t*-tests show the results to be statistically significant does not mean the effects are important in practical terms. Field (2009) suggested that effect size must be reported in mean comparison studies; therefore, we used Field's (2009) guidelines in which effect size (*r*) represents a large effect if it is above .5. The motivational differences within Group 1 are summarised in Table 13.

Table 13

*Means, Std. Error Mean (SE), Degree of Freedom (df), p Value, t-Score, and Effect Size (r) for Group 1*

Pair	Factor	Mean (n = 115)	SE	df	p	t	r
1	ITKSK	5.49	.10	114	.00	2.53	.23
	ITKSH	5.30	.09				
2	ITKSK	5.49	.10	114	.46	8.56	.63
	ENT	4.37	.09				
3	ITKSK	5.49	.10	114	.00	8.83	.64
	ESC	3.91	.12				
4	ITKSK	5.49	.10	114	.05	5.74	.47
	PST	4.47	.13				
5	ITKSK	5.49	.10	114	.39	13.69	.79
	ECO	3.14	.15				
6	ITKSK	5.49	.10	114	.41	8.40	.62
	IC	4.02	.14				
7	ITKSH	5.30	.09	114	.32	7.48	.57
	ENT	4.37	.09				
8	ITKSH	5.30	.09	114	.26	8.55	.63
	ESC	3.91	.12				
9	ITKSH	5.30	.09	114	.21	4.92	.42
	PST	4.47	.13				
10	ITKSH	5.30	.09	114	.42	12.82	.77
	ECO	3.14	.15				
11	ITKSH	5.30	.09	114	.00	9.18	.65
	IC	4.02	.14				
12	ENT	4.37	.09	114	.00	4.21	.37
	ESC	3.91	.12				
13	ENT	4.37	.09	114	.00	-8.9	.08
	PST	4.47	.13				
14	ENT	4.37	.09	114	.09	7.64	.58
	ECO	3.14	.15				
15	ENT	4.37	.09	114	.00	2.58	.23
	IC	4.02	.14				
16	ESC	3.91	.12	114	.00	-5.39	.45
	PST	4.47	.13				
17	ESC	3.91	.12	114	.23	4.27	.37
	ECO	3.14	.15				
18	ESC	3.91	.12	114	.00	-.72	.07
	IC	4.02	.14				
19	PST	4.47	.13	114	.11	7.40	.57
	ECO	3.14	.15				
20	PST	4.47	.13	114	.00	3.13	.28
	IC	4.02	.14				
21	ECO	3.14	.15	114	.07	-4.83	.41
	IC	4.02	.14				

On average, Group 1 (the heaviest online community posters) had an information/technical knowledge-sharing motive ( $M = 5.30$ ,  $SE = .09$ ) that was significantly greater than their economic motive ( $M = 3.14$ ,  $SE = .15$ ,  $t(114) = 12.82$ ,  $p = .42$ ,  $r = .77$ ). This group reported no significant differences between entertainment ( $M = 4.37$ ,  $SE = .09$ ) and pass time ( $M = 4.47$ ,  $SE = .13$ ,  $t(114) = -.89$ ,  $p < .05$ ,  $r = .08$ ). The motivational differences within Group 2 are summarised in Table 14 below.

Table 14

*Means, Std. Error Mean (SE), Degree of Freedom (df), p Value, t-Score, and Effect Size (r) for Group 2*

Pair	Factor	Mean ( <i>n</i> = 110)	SE	<i>df</i>	<i>p</i>	<i>t</i>	<i>r</i>
1	ITKSK	5.54	.10	109	.00	5.94	.49
	ITKSH	5.07	.10				
2	ITKSK	5.54	.10	109	.00	11.56	.73
	ENT	4.37	.10				
3	ITKSK	5.54	.10	109	.00	13.63	.79
	ESC	3.76	.12				
4	ITKSK	5.54	.10	109	.00	9.11	.65
	PST	4.15	.13				
5	ITKSK	5.54	.10	109	.00	11.21	.72
	ECO	3.55	.15				
6	ITKSK	5.54	.10	109	.00	10.50	.70
	IC	3.72	.16				
7	ITKSH	5.07	.10	109	.00	7.64	.58
	ENT	4.37	.10				
8	ITKSH	5.07	.10	109	.00	10.86	.71
	ESC	3.76	.12				
9	ITKSH	5.07	.10	109	.00	6.64	.53
	PST	4.15	.13				
10	ITKSH	5.07	.10	109	.00	9.44	.66
	ECO	3.55	.15				
11	ITKSH	5.07	.10	109	.00	8.62	.63
	IC	3.72	.16				
12	ENT	4.37	.10	109	.00	6.19	.50
	ESC	3.76	.12				
13	ENT	4.37	.10	109	.07	1.80	.17
	PST	4.15	.13				
14	ENT	4.37	.10	109	.00	4.75	.41
	ECO	3.55	.15				
15	ENT	4.37	.10	109	.00	6.68	.40
	IC	3.72	.16				
16	ESC	3.76	.12	109	.00	-3.98	.35
	PST	4.15	.13				
17	ESC	3.76	.12	109	.24	1.19	.11
	ECO	3.55	.15				
18	ESC	3.76	.12	109	.81	.024	.02
	IC	3.72	.16				
19	PST	4.15	.13	109	.00	3.48	.31
	ECO	3.55	.15				
20	PST	4.15	.13	109	.01	2.65	.24
	IC	3.72	.16				
21	ECO	3.55	.15	109	.36	-.91	.09
	IC	3.72	.16				

The motivational differences within Group 3 are summarised in Table 15. There were no significant differences between entertainment and pass time, escape and economic, escape and interpersonal communication, and economic and interpersonal communication.



Table 15

*Means, Std. Error Mean (SE), Degree of Freedom (df), p Value, t-Score, and Effect Size (r) for Group 3*

Pair	Factor	Mean ( <i>n</i> = 100)	SE	<i>df</i>	<i>p</i>	<i>t</i>	<i>r</i>
1	ITKSK	5.54	.09	99	.00	8.13	.61
	ITKSH	4.41	.12				
2	ITKSK	5.54	.09	99	.00	12.19	.75
	ENT	3.98	.12				
3	ITKSK	5.54	.09	99	.00	11.64	.74
	ESC	3.72	.14				
4	ITKSK	5.54	.09	99	.00	7.39	.57
	PST	4.36	.14				
5	ITKSK	5.54	.09	99	.00	16.15	.83
	ECO	3.03	.14				
6	ITKSK	5.54	.09	99	.00	19.25	.87
	IC	2.54	.12				
7	ITKSH	4.41	.12	99	.01	2.83	.26
	ENT	3.98	.12				
8	ITKSH	4.41	.12	99	.00	3.57	.32
	ESC	3.72	.14				
9	ITKSH	4.41	.12	99	.78	.28	.03
	PST	4.36	.14				
10	ITKSH	4.41	.12	99	.00	7.45	.57
	ECO	3.03	.14				
11	ITKSH	4.41	.12	99	.00	13.21	.78
	IC	2.54	.12				
12	ENT	3.98	.12	99	.05	1.95	.18
	ESC	3.72	.14				
13	ENT	3.98	.12	99	.01	-2.79	.25
	PST	4.36	.14				
14	ENT	3.98	.12	99	.00	5.60	.46
	ECO	3.03	.14				
15	ENT	3.98	.12	99	.00	10.15	.69
	IC	2.54	.12				
16	ESC	3.72	.14	99	.00	-5.48	.46
	PST	4.36	.14				
17	ESC	3.72	.14	99	.00	4.24	.37
	ECO	3.03	.14				
18	ESC	3.72	.14	99	.00	7.55	.58
	IC	2.54	.12				
19	PST	4.36	.14	99	.00	7.51	.58
	ECO	3.03	.14				
20	PST	4.36	.14	99	.00	11.13	.72
	IC	2.54	.12				
21	ECO	3.03	.14	99	.00	3.09	.28
	IC	2.54	.12				

The motivational differences within Group 4 are summarised in Table 16.

Table 16

*Means, Std. Error Mean (SE), Degree of Freedom (df), p Value, t-Score, and Effect Size (r) for Group 4*

Pair	Factor	Mean ( <i>n</i> = 34)	SE	<i>df</i>	<i>p</i>	<i>t</i>	<i>r</i>
1	ITKSK	5.13	.20	33	.00	7.87	.59
	ITKSH	3.11	.24				
2	ITKSK	5.13	.20	33	.00	3.54	.31
	ENT	4.48	.17				
3	ITKSK	5.13	.20	33	.00	7.98	.60
	ESC	3.50	.23				
4	ITKSK	5.13	.20	33	.00	3.71	.33
	PST	4.36	.18				
5	ITKSK	5.13	.20	33	.00	10.07	.69
	ECO	2.16	.17				
6	ITKSK	5.13	.20	33	.00	9.39	.66
	IC	2.15	.23				
7	ITKSH	3.11	.24	33	.00	-5.30	.44
	ENT	4.48	.17				
8	ITKSH	3.11	.24	33	.20	-1.30	.12
	ESC	3.50	.23				
9	ITKSH	3.11	.24	33	.00	-3.92	.34
	PST	4.36	.18				
10	ITKSH	3.11	.24	33	.00	3.55	.32
	ECO	2.16	.17				
11	ITKSH	3.11	.24	33	.00	4.82	.41
	IC	2.15	.23				
12	ENT	4.48	.17	33	.00	6.83	.54
	ESC	3.50	.23				
13	ENT	4.48	.17	33	.32	1.02	.09
	PST	4.36	.18				
14	ENT	4.48	.17	33	.00	9.21	.65
	ECO	2.16	.17				
15	ENT	4.48	.17	33	.00	8.48	.62
	IC	2.15	.23				
16	ESC	3.50	.23	33	.00	-5.48	.46
	PST	4.36	.18				
17	ESC	3.50	.23	33	.00	4.81	.41
	ECO	2.16	.17				
18	ESC	3.50	.23	33	.00	4.20	.37
	IC	2.15	.23				
19	PST	4.36	.18	33	.00	8.18	.61
	ECO	2.16	.17				
20	PST	4.36	.18	33	.00	7.00	.55
	IC	2.15	.23				
21	ECO	2.16	.17	33	.96	.05	.00
	IC	2.15	.23				

Notably, the economic motivation was very low in all four groups. This result stems from the fact that the selling or buying of sporting equipment was relatively unimportant in ESOCs. Interpersonal communication motivation was relatively higher in Groups 1 and 2 than Groups 3 and 4. Interpersonal communication was not an important motivation for low-frequency contributors. However, it remained an important motivation for high-frequency contributors.

The next phase compared factor means across each of the four groups (the heaviest online community posters, once per week posters, once per month or less posters, and lurkers). The comparison of factor means across the four groups is shown in Table 17.

Table 17

*Composite Variable Mean Differences for Four Groups*

	Group 1 ( <i>n</i> = 115)	Group 2 ( <i>n</i> = 110)	Group 3 ( <i>n</i> = 100)	Group 4 ( <i>n</i> = 34)	F	<i>p</i>	$\eta^2$
Seeking	5.49 <sup>a</sup>	5.54 <sup>a</sup>	5.54 <sup>a</sup>	5.13 <sup>a</sup>	1.54	.21	.01
Sharing	5.30 <sup>a</sup>	5.07 <sup>a</sup>	4.41 <sup>b</sup>	3.11 <sup>c</sup>	39.17	.00	.25
Entertainment	4.37 <sup>ab</sup>	4.37 <sup>ab</sup>	3.98 <sup>a</sup>	4.48 <sup>b</sup>	3.72	.01	.03
Escape	3.91 <sup>a</sup>	3.76 <sup>a</sup>	3.72 <sup>a</sup>	3.50 <sup>a</sup>	.98	.40	.01
Pass time	4.47 <sup>a</sup>	4.15 <sup>a</sup>	4.36 <sup>a</sup>	4.33 <sup>a</sup>	1.14	.33	.01
Economic	3.14 <sup>a</sup>	3.55 <sup>a</sup>	3.03 <sup>a</sup>	2.16 <sup>b</sup>	7.90	.00	.06
Interpersonal communication	4.02 <sup>a</sup>	3.72 <sup>a</sup>	2.54 <sup>b</sup>	2.15 <sup>b</sup>	29.13	.00	.20

There was no statistically significant difference within ‘information/technical knowledge seeking’ scores across the four groups:  $F(3, 355) = 1.54, p = .21$ . The actual difference in mean

scores between the groups was also quite small. Post-hoc comparisons using the Tukey's HSD test indicated that the mean scores for Group 1 ( $M = 5.49$ ,  $SD = 1.10$ ), Group 2 ( $M = 5.54$ ,  $SD = 1.17$ ), Group 3 ( $M = 5.54$ ,  $SD = .88$ ), and Group 4 ( $M = 5.13$ ,  $SD = 1.08$ ) did not differ significantly from each other (see superscript *a*).

In the case of 'information/technical sharing', there was a statistically significant difference among the four groups. Group 4 was significantly different from Groups 1, 2, and 3. Group 3 were different significantly from Groups 1, 2, and 4. Group 2 is significantly different from Groups 3 and 4 (see superscript *a*, *b*, and *c*). In contrast to these differences, Groups 1 and 2 were homogenous with respect to their motivations for information/technical knowledge-sharing (superscript *a*).

Within the 'entertainment' dimension, the Tukey's HSD test indicated that the mean score for Group 3 was significantly different from that of Group 4. Group 1 and Group 2 did not differ significantly from either Groups 3 or 4 (see superscript *a* and *b*). The level of motivation for both 'escape' and 'pass time' did not differ across any of the groups (see superscript *a*). With the 'economic' dimension, Group 4 scores were significantly lower than Groups 1, 2, and 3. No other differences emerged. Lastly, the means score for Group 1 did not differ from that of Group 2 within the 'interpersonal communication' dimension. Similarly, Group 3 did not differ from Group 4. However, Groups 1 and 2 were significantly different from Groups 3 and 4 (see superscript *a* and *b*).

The next method used to explore motivational differences between lurkers and contributors used the Mplus statistical package. A 4-group comparison similar to that conducted in SPSS was not possible in Mplus due to group sizes, nor was a straight comparison of lurkers with all those who reported any posting behaviour. According to Muthén and Muthén (2007),

large differences in the sample size may affect the results. Unfortunately, the sample size of lurkers ( $n = 34$ ) was much smaller than that of posters ( $n = 325$ ), so it was impossible to examine lurkers and posters as initially planned. Furthermore, the standard errors of the model parameter estimates may not be trustworthy for some parameters due to the number of parameters exceeding the sample size in one of the groups (Muthén & Muthén, 2007). Because the researcher was unable to compare the group of 325 posters with the group of 34 lurkers, these two groups were made more equal in sample size by combining those who had posted ‘once a month or less’ with the lurkers. This was done because Nonnecke and Preece (2000) defined lurker by their level of participation, and individuals who never posted or posted on a minimal level (i.e. individuals who did not post during the last three months) were also considered lurkers. The study by Nonnecke and Preece supports the present combination of the two groups (i.e. individuals who had never posted and individuals who posted once per month or less).

The posters group was chosen as a reference group in the Mplus input. This was reflected in the coding (1 = contributors, 2 = lurkers) in the grouping syntax line. The mean difference between the lurkers group was -.042 on the information/technical knowledge-seeking factor, .044 on the pass time factor, -.837 on the information/technical knowledge-sharing factor, -.261 on entertainment, -1.094 on the interpersonal communication factor, -0.143 on the escape factor, and -.472 on the economic factor. The result of the two-group comparison is shown in Table 18.

Table 18

*Mean Difference between Two Groups*

Factors	Posters ( <i>n</i> = 225)	Lurkers ( <i>n</i> = 134)	<i>p</i>
Seeking	0	-0.042	.72
Sharing	0	-0.837	.00
Entertainment	0	-0.261	.02
Interpersonal communication	0	-1.094	.00
Escape	0	-0.143	.22
Pass time	0	0.044	.71
Economic	0	-0.472	.00

\* Mean scores for posters group are constrained by zero to compare lurkers group means

The two groups did not differ on seeking, escape, and pass time factors, but differed on sharing, entertainment, interpersonal communication, and economic factors. The sharing, entertainment, interpersonal communication, and economic motives were lower for lurkers. A series of chi-square difference tests were conducted to confirm that the means of the latent factors were not equal between posters and lurkers. In the chi-square analysis, one of the sub-dimension means was freely estimated in Models 2, 3, 4, 5, 6, and 7. The latent factor means fit indices for all eight models are summarised in Table 19.

Table 19

*Latent Factor Means-Fit Indices*

Model	Chi-Square	<i>df</i>	CFI	TLI	RMSEA	SRMR
1-Equal Means Model	886*	413	.867	.852	.080	.123
2-IFTKSK Sub-Dimension Freed	884*	412	.868	.852	.080	.121
3-IFTKSH Sub-Dimension Freed	870*	412	.871	.856	.079	.097
4-ENT Sub-Dimension Freed	886*	412	.867	.851	.080	.122
5-IC Sub-Dimension Freed	870*	412	.872	.856	.079	.109
6-ESC Sub-Dimension Freed	886*	412	.867	.851	.080	.123
7-PST Sub-Dimension Freed	884*	412	.868	.852	.080	.122
8-ECO Sub-Dimension Freed	884*	412	.868	.851	.080	.120

\* $p < .01$ 

The key feature in Table 19 is that two of the models provide a better fit than the equal means model in which all factor means were constrained to be equal. When the means of the information/technical knowledge-sharing and the interpersonal communication factors were freed for the posters and lurkers, the model proved to be a better fit, indicating that the means were probably different on those dimensions within the population. Chi-square difference tests compared the equal means model to each of the models in which one sub-dimension was estimated freely. The results are summarised in Table 20.

Table 20

*Latent Factor Means – Model Comparison*

Model Comparison	Chi-Square Difference	<i>df</i> Difference
1 vs. 2	2	1
1 vs. 3	16*	1
1 vs. 4	0	1
1 vs. 5	16*	1
1 vs. 6	0	1
1 vs. 7	2	1
1 vs. 8	2	1

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\* $p < .05$

Table 20 indicates that Models 3 and 5 provide a better fit than the base equal means model where all dimension means were constrained to be equal. The models fit better if the means of information/technical knowledge-sharing and interpersonal communication dimensions were estimated freely for the poster and lurker groups. This test indicated that the means were probably different for these dimensions within the population.

In summary, interpersonal communication motives were relatively higher in the poster group. Interpersonal communication was not an important motive for low-frequency contributors. Selling or buying sports equipment was relatively unimportant in ESOCs. The sharing motive was relatively higher in the poster group than in the lurker group.



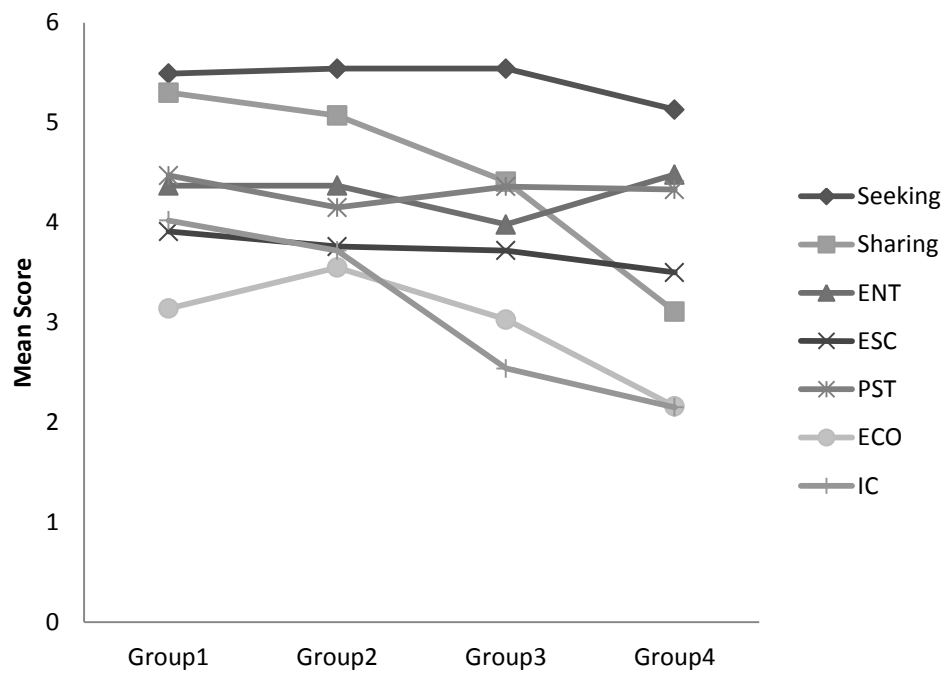
## Discussion

The results of the present investigation lead to a number of interesting conclusions concerning motivational differences between posters and lurkers in ESOC. The first conclusion involves factor mean differences within each of four groups through paired *t*-tests. In Group 1 (posting once or more per day in ESOC), the information/technical knowledge seeking factor was defined as the most important reason to use ESOCs, and the economic factor was less important. Consistent with the Group 1 analyses, the information/technical knowledge-seeking factor got the highest score from all four groups. Group 2's (posting once per week) factor means order showed similar patterns to Group 1. In Group 3 (posting once per month or less), order of factor means showed similar pattern as Groups 1 and 2. However, the actual factors mean scores had drastically fallen, with the exception of the seeking factor. Lastly, factor means Group 4 showed significantly different results from Groups 1 and 2. The information/technical knowledge-sharing factor means ranked fifth out of the seven factors, and the entertainment factor ranked second. In sum, the information/technical knowledge-seeking motive was the main reason why ESOC users used ESOC. The economic and interpersonal communication motives were relatively unimportant factors in endurance-sports online community consumption. The order of factor means scores is shown in Table 21 and Figure 5.

Table 21

*Order of Mean Score within Each Group*

Order	Group 1	Group 2	Group 3	Group 4
1	Seeking	Seeking	Seeking	Seeking
2	Sharing	Sharing	Sharing	ENT
3	PST	ENT	PST	PST
4	ENT	PST	ENT	ESC
5	IC	ESC	ESC	Sharing
6	ESC	IC	ECO	ECO
7	ECO	ECO	IC	IC



*Figure 5. Means of motivational factor for four groups of different participation levels.*

The second conclusion can be drawn through an examination of factor mean differences among the four groups through an ANOVA. Information/technical knowledge-sharing, interpersonal communication, and economic factor mean scores were significantly different among the four groups. Conversely, information/technical knowledge seeking, entertainment, escape, and pass time factors were not statistically different among groups.

The third conclusion concerns the factor mean differences between two (poster and lurker) groups more equal in sample size through a combination of Groups 3 and 4. Mplus 6 was used to determine factor mean differences across the two groups. The results showed significant differences between the two groups for the information/technical knowledge-sharing, interpersonal communication, and economic factor mean scores. This result supported the outcomes of the two previous investigations.

The results of this study suggest a number of avenues for future research. The factors affecting information and technical knowledge-sharing are central to the understanding of user-generated content. ‘Delurking’, the process of transitioning from lurker to contributor, is an obvious starting point. Studies with this focus could consider the factors affecting the decision to delurk. These factors may include traits or dispositions of the individual (e.g. enhanced perceived competency) or the online community itself (e.g. sociability or usability). With respect to both the factors affecting information and technical knowledge-sharing and delurking, the psychological sense of community defined as a feeling of being a part of a group one can depend on and contribute to appears to be a relevant antecedent. To foster this sense, we need to broaden our definition of participation and take up the challenge of studying participation in all its forms, using combined ethnographic and large sampling approaches.

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### **Study 3 Preface**

This research combines sense of online/virtual community with the well-established theory of planned behaviour to explain knowledge-sharing behaviours. Information/knowledge-sharing is the main constituent component of any online community, and that without the rich content (i.e. shared knowledge) online communities are of limited value (Chiu, Hsu, & Wang, 2006). This is a logical progression from Study 1 and Study 2 because it extends the focus from motivation to intention and behaviours, thereby providing a more holistic insight into the behaviour of ESOC consumers. In this research I was drawn to the use of sense of community, not just because of its scholarly appeal, but also because I believe that one of the great outcomes of the Internet is its ability to bring together otherwise disconnected people.



## **CHAPTER 5 - Study 3**

### **Knowledge-sharing Behaviour Within an Endurance-Sports Online Community**

#### **Introduction**

In this chapter, a theoretical model is developed to examine knowledge-sharing behaviour and sense of virtual community (SOVC) in endurance-sports online community (ESOC). For the purpose of this study, the Theory of Planned Behaviour (TPB) is used as the theoretical framework to test knowledge-sharing behaviour in an ESOC context. The chapter is organised as follows. First, background literature is reviewed and the methods sections is presented. Then, results are presented and discussed.

#### **Background Literature**

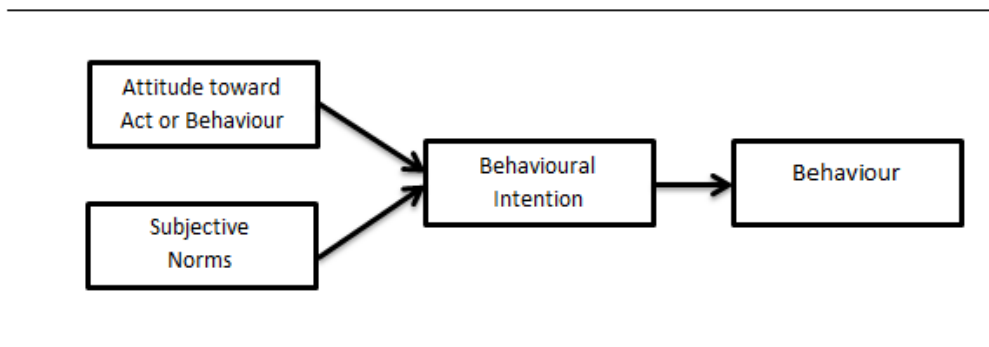
Knowledge-sharing refers to an individual disseminating his/her acquired knowledge to other members within an online community (Ryu, Ho, & Han, 2003). Prior research has highlighted the various factors that affect an individual's willingness to share knowledge, such as extrinsic and intrinsic motivation (Bock, Zmud, Kim, & Lee, 2005), personality (Jadin, Gnambs, & Batinic, 2013), costs and benefits (Chai & Kim, 2010), incentive systems (Ajmal, Helo, & Kekäle, 2010), and community climate (Kankanhalli, Tan, & Wei, 2005). Therefore, the researcher could hypothesise that individual knowledge-sharing behaviour will be guided by both personal characteristics and their environment.

To explore knowledge-sharing behaviour in an ESOC, the researcher drew on the TPB to conceptualise the research model for this study. The TPB is a widely accepted model for explaining individual behaviour. Furthermore, SOVC is added to the base TPB to account for both personal characteristics and environmental factors. More details are discussed below.

## Social Psychology Models

The Theory of Reasoned Action (TRA; Fishbein & Ajzen, 1975) and the TPB (Ajzen, 1991) have been used extensively to examine predictors of individual behaviour and intention (Chatzisarantis & Hagger, 2005; Cunningham & Kwon, 2003; Dzewaltowski, Noble, & Shaw, 1990; George, 2004; Hansen, Muler Jensen, & Stubbe Solgaard, 2004; Sheppard, Hartwick, & Warshaw, 1988). No study has yet applied these theories to knowledge-sharing behaviour within an online sports community. These theories are reviewed in an attempt to develop an extended theoretical model of knowledge-sharing behaviour within an ESOC.

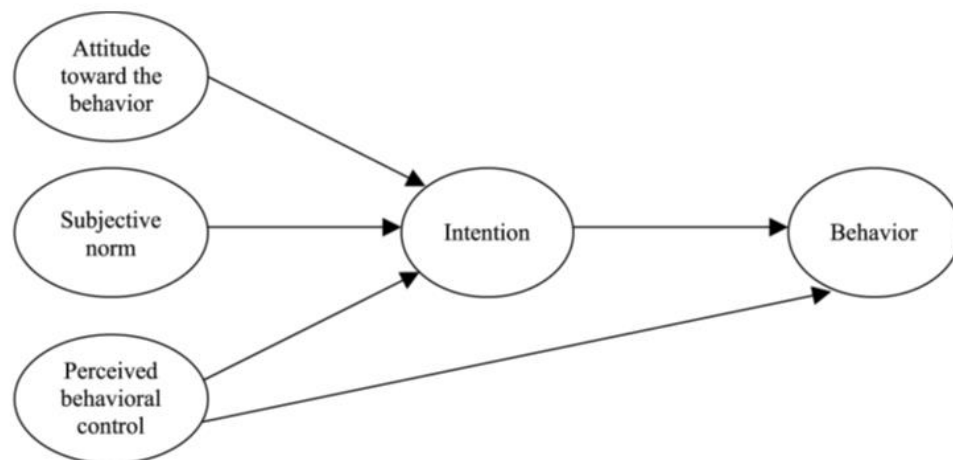
TRA was developed by Fishbein and Ajzen (1975) as a framework to explain behaviour. TRA models use the behavioural intention (BI) construct as the main predictor of behaviour. The other components of this theory are attitude (A) and subjective norms (SN). TRA suggests that a person's behavioural intention depends on the person's attitude towards the behaviour and their SN ( $BI = A + SN$ ). TRA is illustrated in Figure 6.



*Figure 6.* The theory of reasoned action.

Essentially, the aim of the TRA is to explain volitional behaviours. Its explanatory scope excludes a wide range of behaviours, such as those that are spontaneous, habitual, impulsive, the

result of cravings, or mindless (Bentler & Speckart, 1979). In other words, the TRA is limited by the assumption that when an individual forms an intention to act, the individual will be free to act. Objectively, constraints, such as limited time, ability, or environmental limits, as well as unconscious habits, limit the freedom to act (de Bruijn, 2011). As a result, Ajzen (1985) introduced TPB. Perceived Behavioural Control (PBC) was added to the TRA to form the TPB. PBC is defined as the perception of how difficult it is to perform a behaviour (Ajzen, 2002). Although online communities are a relatively user-friendly technology, users still need to have basic Internet skills to use it. Compared with conventional communication methods, such as telephones, online community users mainly chat with others virtual space on the Internet. This may arouse their control anxiety and negatively influence their behavioural intention. This assumption was supported by Jiang and Benbasat's (2004) findings that audio and video chat can give users more perception of control than text chat. TPB is illustrated in Figure 7.



*Figure 7.* The theory of planned behaviour.

## **Theory of Planned Behaviour**

The TPB has been one of the most influential theories in explaining and predicting a wide range of behaviours (Lu, Zhou, & Wang, 2009). The TPB has been the basis for several studies of Internet behaviour (Fusilier & Durlabhji, 2005; George, 2004; Pavlou & Fygenson, 2006), and has become one of the most widely used conceptual frameworks used in behavioural studies in sports (de Bruijn, Verkooijen, de Vries, & van den Putte, 2012; Hamilton & White, 2008; Nigg, Lippke, & Maddock, 2009).

The TPB assumes that individuals' behaviours are determined by behavioural intention and PBC. Behavioural intention is determined by attitude toward behaviour, SN, and PBC (Ajzen, 1985). Attitude toward behaviour reflects one's favourable/unfavourable feelings about performing behaviour. SN reflect one's perception of relevant others' opinions on whether or not he or she should perform a particular behaviour. PBC reflects one's perceptions of the availability of resources or opportunities necessary for performing the behaviour (Ajzen & Madden, 1986). The TPB also has limitations. This theory assumes people are rational and make systematic decisions based on available information as well as ignore unconscious motives. The TPB also assumes that PBC, which is not clearly defined and is hard to measure, predicts actual behavioural control (Ozer & Yilmaz, 2011). However, the TPB is an appropriate theoretical framework for the current study, given that behaviours in the context of online communities are volitional. The purpose of this study is to investigate ESOC members' attitudes, intentions, and behaviours.

Many studies of exercise behaviour have used the TPB framework, which is the most widely applied social psychological perspective (Courneya, 2001). Recently, some researchers found empirical support for using TPB as a theoretical framework for explaining one's intention

to share knowledge (Bock et al., 2005). Therefore, the TPB is used as the underlying framework for the current study. The following sections look more closely at the TPB and the three determinants of behavioural intention: attitude, SN, and PBC.

**Attitude.** Attitude is the degree to which a person has a favourable evaluation of the behaviour in question (Ajzen, 1991). According to Armitage and Conner (2001), the more favourable the attitude toward the behaviour, the stronger the individual's intention to perform the behaviour should be. Attitude has long been shown to influence behavioural intentions (Ajzen, Fishbein, & Heilbroner, 1980).

The literature supports the impact of attitude on behavioural intentions. The attitude-behaviour relationship framework has been examined in the fields of psychology and consumer behaviour (Fazio & Williams, 1986; Fishbein & Ajzen, 1975). The relationship between these two broad constructs has frequently been analysed, questioned, and revised (Kraus, 1995). Early research focused on two main concepts. First, researchers examined whether specific attitudes could predict specific behaviour. According to these investigations, attitudes sometimes predict future behaviour and sometimes they do not. The second concept focuses on identifying moderating variables that affect the attitude-behaviour relationship. Variables such as inducement (Ajzen & Fishbein, 1973), various personality factors (Zanna, Olson, & Fazio, 1980), and individuals' interest in a specific issue, have been shown to influence the attitude-behaviour relationship.

However, the aim of this study is not to predict behaviour based on attitudes, but rather to understand how attitudes relate to behavioural intentions and how sense of community moderates these attitudes and behaviours. According to the TPB, the more favourable one's attitude toward

sharing knowledge, the higher his behavioural intention to share knowledge will be. This statement is the basis for the first hypothesis.

H1: Positive knowledge-sharing attitude influences members' intention to share knowledge in an online sports community.

**Subjective Norms (SN).** SNs reflect one's desire to act in the way that others act or how one thinks one should act (Ajzen, 1991). In other words, SN are based on how others think about an individual's specific behaviour and whether an individual should perform it. For example, if significant others approve of doing something, an individual is more likely to intend to perform it; conversely, if they disapprove of doing something, an individual is less likely to intend to perform it.

SN reflect participant perceptions of whether the behaviour is accepted, encouraged, and implemented by the participant's circle of influence. Chiu, Hsu, and Wang (2006) found that SN were positively related to knowledge-sharing behaviour in communities. It is predicted that positive subjective sharing norms will be related to greater intention to share knowledge in online communities. Accordingly, it is hypothesized that:

H2: Positive SN influence members' intention to share knowledge.

**Perceived Behavioural Control (PBC).** In addition to attitudes and SN, the concept of PBC was added to the TPB by Ajzen (1985). PBC is the person's beliefs about the possession of the opportunities and resources needed to engage in the behaviour (Ajzen, 1985). In other words, PBC reflects a person's perception of how difficult it would be to undertake a behaviour (Ajzen, 1991).

PBC originates from Self Efficacy Theory (SET), and was proposed by Bandura and Adams (1977), and derived from Social Cognitive Theory, which is a theory of psychological

functioning that emphasizes learning from the social environment (Bandura, 2001). According to Bandura and Adams (1977), expectations, such as motivation, performance, and feelings of frustration associated with repeated failures, determine affective and behavioural reactions. According to Ajzen (1991), PBC together with intention can be used directly to predict behaviour. Given two individuals with the same level of intention to engage in a behaviour, the one with more confidence in his or her abilities is more likely to succeed than the one who has doubts (Ajzen, 2002). In terms of an online sports community, if a person is self-confident about sharing knowledge about a sports-related source, he/she may feel positively about his/her sharing intention and behaviour in online sports community usage. Thus, the following hypotheses are proposed:

H3: PBC will positively influence knowledge-sharing intention

H4: PBC will positively influence actual knowledge-sharing behaviour in an online sports community.

**Behavioural Intentions.** According to Bradburn, Sudman, and Wansink (2004), a good predictor of behaviour is consistency of behavioural intentions and attitudes toward the object. In addition, social psychologists tend to view intentions as the mediating factor between attitudes and behaviours (Ajzen & Cote, 2008). According to Ajzen and Cote, behavioural intention is the immediate antecedent of behaviour, and is a fundamental measure of future action. Furthermore, Fishbein and Ajzen (1975) suggested that intention is assumed to capture the motivational factors that influence behaviours. Thus, an individual's intention to share knowledge within an ESOC highly determines individuals' behaviour to share knowledge with other members. Therefore, the following hypothesis is proposed:

H5: Positive knowledge-sharing intention influences knowledge-sharing behaviour in an online sports community.

As reviewed above, this study has primarily focused on identifying the numerous factors that affect knowledge-sharing behaviour in an ESOC. To deepen our understanding of knowledge-sharing in an ESOC, the following sections look more closely at the knowledge-sharing literature.

### **Knowledge-sharing in Online Environments**

Knowledge-sharing behaviour in an online environment is defined as disseminating one's acquired knowledge to other members using computer-mediated communication (CMC) tools as a means of information exchange (Wasko & Faraj, 2005). Researchers have argued that knowledge-sharing in online contexts deeply intertwines social, relational, and technological factors. For this reason, a more holistic literature review is required to better understand this social behaviour (Wasko & Faraj, 2005). Knowledge-sharing occurs within an online environment that is networked, digital, and full of information (Kollock, 1999). Members in these social environments consist of a larger, loosely knit, geographically distributed group of people who often exchange information with 'electronic weak ties' (Constant, Sproull, & Kiesler, 1996, p. 119) without apparent external reward. These characteristics render important changes in the production/contribution function of knowledge as a public good (Kalman, Monge, Fulk, & Heino, 2002). Consequently, several studies have examined various socio-psychological, technological, and contextual factors that influence knowledge-sharing in online communities (Chen, Chen, & Kinshuk, 2009; Chiu et al., 2006; Wasko & Faraj, 2005). Different perspectives, such as the utilitarian/rational actor and normative/relational perspectives, have been applied to understand the knowledge-sharing behaviour in online environments. For example, many



scholars have posited that individuals engage in this type of social interaction (i.e. knowledge-sharing) based on a utilitarian expectation that their contributions/participation will lead to both extrinsic and intrinsic rewards.

Kollock (1999) proposed that the contribution of information to online communities is driven by four types of egoistic motivational factors, including anticipated reciprocity, reputation, a sense of efficacy, and attachment to a community. Wasko and Faraj (2005) categorised motivational factors into tangible (extrinsic) returns, such as personal gain, a search for answers, and valuable information; and intangible (intrinsic) returns, such as enjoyment and social interaction with other community members. Other researchers have also demonstrated that extrinsic motivations (status and reputation) and intrinsic motivation (enjoyment and creativity) have significant effects on intention to participate in online discussion forums (Yang, Li, Tan, & Teo, 2007) and online travel communities (Wang & Fesenmaier, 2004).

The researcher postulates that knowledge-sharing is deeply embedded in social contexts, and that social and relational factors play a significant role in shaping attitudes and behavioural intention pertaining to knowledge-sharing. Wasko and Faraj (2005) found that individuals occupying central positions in community social networks are more likely to be active contributors. Studies have also found that individuals are more willing to contribute knowledge when they have a high level of community attachment or a sense of belonging (Haythornthwaite, Guziec, Robins, & Shoemaker, 2000).

According to McMillan and Chavis (1986), sense of belonging is a key concept of Sense of Community (SOC). They defined SOC as ‘a feeling that members have of belonging, a feeling that members matter to one another and to the group, and a shared faith that members’ needs will be met through their commitment to be together’ (p. 9). Others have defined SOC as an

environment in which people interact in a cohesive manner, continually reflecting upon the work of the group while always respecting the differences individual members bring to the group (Graves, 1992). Alternatively, SOC could be a result of interaction and deliberation by people brought together by similar interests and common goals (Westheimer & Kahne, 1993). These definitions suggest the most essential elements of community are mutual interdependence among members, sense of belonging, connectedness, trust, interactivity, common expectations, shared values and goals, and overlapping histories among members.

Researchers have conducted extensive research regarding SOC (Bellah, Madsen, Sullivan, Swidler, & Tipton, 1985; Fairley & Tyler, 2012; Haythornthwaite et al., 2000; Rheingold, 1993). They suggest that the dimensions of community differ from setting to setting so that sense of community is setting specific. One such setting is virtual/online. Based on the definitions of community provided above, one can expect that members of online communities may have feelings of belonging, relationships, interactivity, trust, recognition, identification, and commonality of expectation- in this case, seeking (sharing) knowledge (information). SOVC can be defined in terms of five constituent dimensions (Blanchard, 2007): recognition, support, identification, relationship, and emotional attachment/obligation.

### **Sense of Virtual Community**

Virtual communities are a different environment as compared to offline communities due to physical proximity, anonymity, and etc. These differences raise doubt as to whether the traditional SOC measures should be used in virtual settings. Most studies on SOVC either established their own model by means of a qualitative approach (Blanchard & Markus, 2004), adapted the original Sense of Community Index (SCI) (Blanchard, 2007, 2008) or measured the concept differently (Koh & Kim, 2003). Koh and Kim (2003) suggested that there are three

dimensional (membership, influence, immersion) measurements of SOVC. However, their measure was quite different from prior SOC or SOVC studies since they included a scale of immersion, which is not included in any other conceptualisations of SOC or SOVC. Also, they only used two of McMillan and Chavis' (1986) dimensions of SOC (membership and influence). Obst, Smith, and Zinkiewicz's (2002) study suggested that these two dimensions may not be as important in SOVC as in SOC. In addition, four items of immersion measure individual's actual behaviours. For example, 'I have missed classes or work because of my virtual community activities', 'I spend much time online in my virtual community', and 'I spend more time than I expected navigating my virtual community'. Many people have different perceptions about the meaning of SOC and SOVC. In an academic context, SOC and SOVC are considered attitudes toward belonging to a community, rather than actual behaviour. Therefore, it is not certain that Koh and Kim's measure of SOVC overlaps sufficiently with other researchers' conceptualisation of SOVC, since the immersion dimension fails to measure people's attitude (i.e. sense and feeling of community) toward online communities.

Blanchard and Markus (2004) examined SOVC in Multiple Sports Newsgroup (MSN), and found similarities to McMillan and Chavis' (1986) SOC, including feelings of membership, integration of needs, and shared emotional connections. However, Blanchard and Markus (2004) found distinct differences in their group's SOVC. The virtual group members did not report feeling that they influenced or were influenced by others, which would have been expected by McMillan and Chavis' (1986) framework. Blanchard and Markus' finding is consistent with Obst et al.'s (2002) finding that feelings of membership, which includes individual's feelings of identity with the community and its members, may not be the same in SOVC as SOC. The differences between SOC and SOVC, namely the stronger role of individual relationships and the

weaker role of individual influences, suggest that the processes of learning the identity of others and the development of identity of oneself are important. Sense of belonging, which can be interchangeable with SOC in an online community, is the motivation that drives users to participate in it (Yoo, Suh, & Lee, 2002). It is logical to assume that the more an individual considers himself or herself as a member of an online community, the more likely an individual will develop a positive perception toward the community and possess a continued intention to share knowledge within the online community (Jin, Cheung, Lee, & Chen, 2007). Thus, the following hypothesis is proposed:

H6: SOVC will positively influence knowledge-sharing intention in an online sports community.

The TPB and SOVC constructs with all hypotheses are provided in Figure 8.

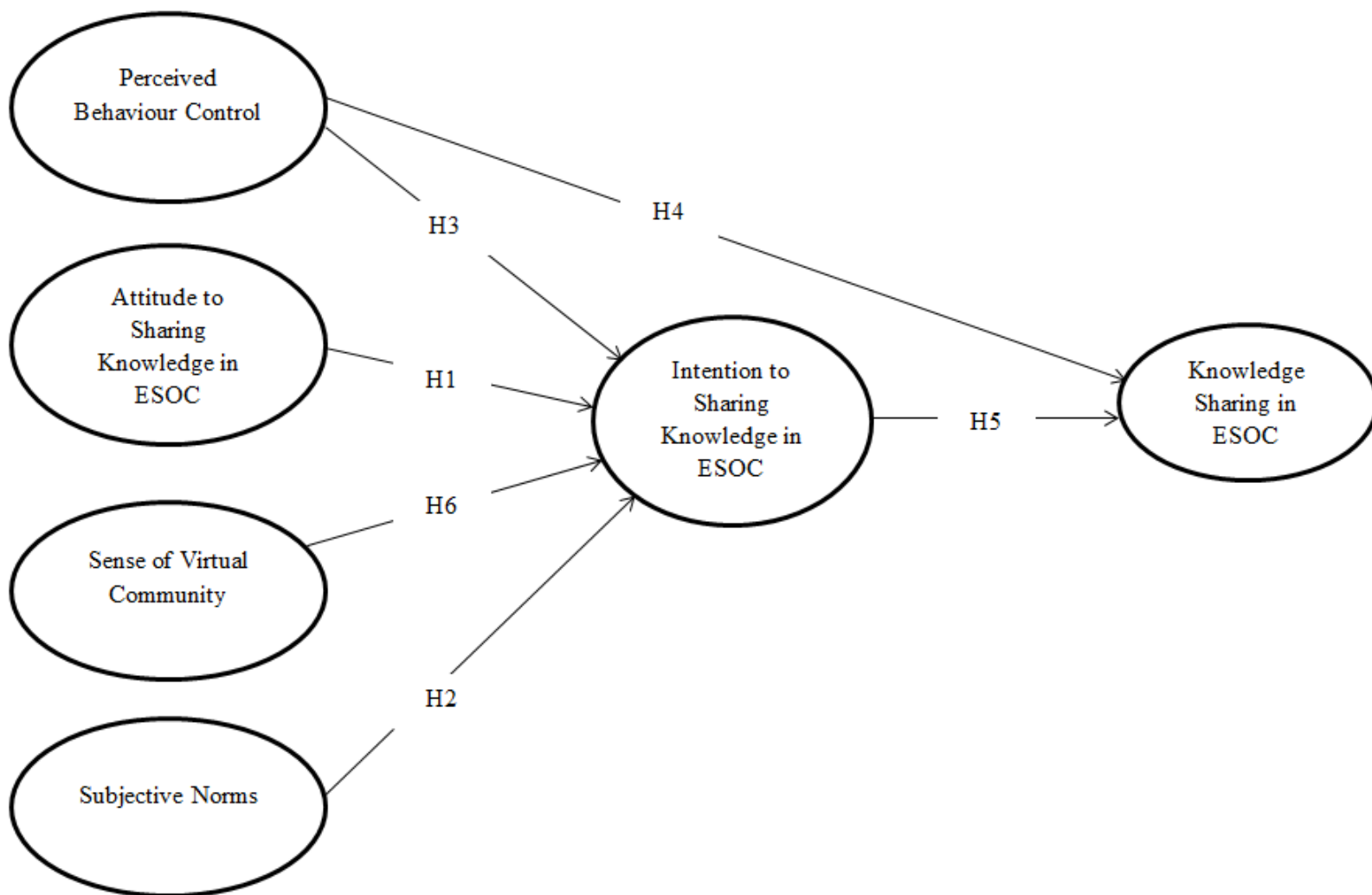


Figure 8. TPB and SOVC constructs, paths and hypotheses.

## **Methods**

### **Participants**

The population of interest of this study is ESOC users. This research included only active communities with a minimum traffic volume, a minimum number of different users posting, and a high proportion of messages with responses. The following specific criteria proposed by Ridings et al. (2006) were used, (a) the forum must have at least 10 postings per day over a randomly selected three-day period, (b) the forum must have at least 15 different individuals posting over a randomly selected three-day period, and (c) at least 80% of postings must have at least one reply over a randomly selected three-day period. These criteria were chosen to make sure that the ESOC represented a large group of active communicators. Popular Web search engines, such as Google and Alexa (a Web traffic information Web site), were used to identify ESOCs. Generic such terms, such as ‘sports’, ‘community’, ‘forum’, and ‘discussions’ were used in the search engines. Ultimately, 20 ESOCs addressing different endurance sports (cycling, running, swimming, and triathlon) were chosen for this research. The list of ESOCs is presented in Appendix C.

Due to the large number of users, and the irregular frequency with which they visit an ESOC, the questionnaire was posted on 20 ESOCs for four weeks. An invitation was posted on 20 ESOCs to request users’ participation in this research. From those ESOCs, 529 users agreed to participate. However, 170 cases were excluded due to incomplete questionnaires. Completed surveys were received from 359 respondents. All information regarding initial recruitment messages, invitations, letter of permission for survey, and ethics approval from Auckland University of Technology are reported in Appendix B.

### **Measure**

A Web survey was developed to explore relationships among related TPB and SOVC constructs. The benefits of Web surveys are extensive, including overcoming time and space boundaries, ease of data entry, and low cost (Batinic, Reips, & Bosnjak, 2002). A decision was made to collect data through a Web survey because of the geographic distribution of online communities to be studied. Selected ESOCs' members are geographically scattered around the world, including in the USA, Europe, South Africa, Asia, and Oceania. Thus, a Web survey was the most convenient method to reach members globally. However, the Web survey created a number of challenges for the researcher to consider. Perhaps the most difficult challenge related to sample bias. Sample bias is defined as participants who are not equally balanced or objectively represented in the group sample (Field, 2009). The researcher attempted to address potential sample bias by multiple submissions and non-response by programming (i.e. duplicate protection limiting one user to one response), and cleaning the data.

The questionnaire is based on the constructs in TPB and SOVC – attitude, intention, behaviour, SNs, PBC, and SOVC. These constructs were measured and explicated by adopting items that have been developed and validated from Ajzen (2003), Chen, et al. (2009), Bock et al. (2005), Wasko and Faraj (2005), and Blanchard (2008) (see Table 22 and 23). Participants were asked to rate the extent to which they agreed or disagreed with each of the 33 items on the five TPB dimensions and the SOVC construct. All statements were rated on a 7-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*).

The measures used in this study mostly conformed to unidimensional models that were invariant across groups and time (de Bruijn et al., 2012; Hsu, Yen, Chiu, & Chang, 2006; Pavlou & Fygenson, 2006), except SOVC (Blanchard, 2007). Measurement items do not differ much amongst SOVC, Sense of Community Index (SCI) and SOC because SOVC was developed

through a qualitative research process based on a SCI and SOC (McMillan & Chavis, 1986). Upon review, SOVC has had dimensionality issues since its conception. Chipuer and Pretty (1999) suggested that the SCI should be used as a unidimensional measure due to low reliability. In sports management literature, Fairley and Tyler (2012) conducted a qualitative study about SOC regarding fans, but they did not use SOC as a multidimensional measure. While Blanchard and Markus (2004) conceptualised and suggested five dimensions, it is also reasonable to analyse the use of a unidimensional measure through an analytic process based on prior studies of SCI and SOC. The oddity of measuring a single construct with 18 items is acknowledged, but was appropriate given the unique circumstance. It was deemed appropriate to assess the psychometrics of the 18 items before moving ahead.

The measure of SN included two items that consisted of normative beliefs and a corresponding motivation-to-comply statement. SN have been measured using three to seven items in the sports literature (Kwan & Bryan, 2010; Plotnikoff, Lippke, Courneya, Birkett, & Sigal, 2010; Theodorakis, 1994). However, this study used measured SN with two items, adopted from several Internet studies to reflect the influence of significant others' opinions on users. Two item scales have been generally used in Internet literature, such as information systems, Internet research, computers in human behaviour (George, 2004; Lu et al., 2009; Zhou, 2011), health psychology literature (Abraham & Sheeran, 2004; Courneya, Plotnikoff, Hotz, & Birkett, 2001; Motl et al., 2002), and sports-related literature (Chatzisarantis & Hagger, 2005; Mannetti, Pierro, Higgins, & Kruglanski, 2012; Nigg et al., 2009; Rhodes & Courneya, 2005). Furthermore, some researchers suggested that SN can be measured from a single item (Hagger, Chatzisarantis, & Biddle, 2001). Although the use of a single item to measure SN is quite common and consistent



with the TPB , it is important to recognize that single-item statements are likely to be influenced by measurement error that cannot be statistically corrected (Wanous, Reichers, & Hudy, 1997).

Attitude is measured using four items that consisted of belief and corresponding value statements. Intention is measured by three items. The items were developed as suggested by Bock, et al. (2005) and Chen et al. (2009). Sharing behaviour is measured by three items (Chen et al., 2009; Wasko & Faraj, 2005). The measure of PBC included three items (Chen et al., 2009). SOVC is measured by 18 items. However, the five dimensions of the SOVC have been shown to lack reliability and were not used as five dimensional measurement models. Examples of TPB items and SOVC items are presented in Table 22, and 23.

Table 22

*TPB Constructs, Items and Sources*

Construct	Indicator variables	Source
Knowledge-sharing behaviour	I usually spend a lot of time sharing knowledge with other members in this forum. I actively share my knowledge with other member in this forum. I usually respond to others' comments on my messages.	(Bock et al., 2005; Chen et al., 2009; Chiu et al., 2006)
Knowledge-sharing intention	I will post knowledge on this forum. I will happily share my knowledge on this forum There is high possibility that I would post knowledge on this forum in the near future (within 6 months)	(Aulawi, Sudirman, Suryadi, & Govindaraju, 2009; Chen et al., 2009)
Knowledge-sharing attitude	Sharing knowledge over this forum is a good idea. Sharing knowledge over this forum is a wise idea. Sharing knowledge over this forum an idea I like. Using this forum to share knowledge would be pleasant.	Developed based on (Ajzen, 2003)
Perceived behavioural control	I am capable of sharing my ideas over this forum. Sharing ideas over the forum is entirely within my control. I have the ability to share sports-related subject over this forum.	(Chen et al., 2009; George, 2004)
Subjective norms	People who are important to me think that I should share my knowledge with other members in this online community. People who influence me think that I should use this online community.	(Ajzen, 2003; Chen et al., 2009; George, 2004)

Table 23

*SOVC Items* (Blanchard, 2008)

---

I think this group is a good place for me to be a member.
Other members and I want the same thing from this group.
I can recognize the names most members in this group.
I feel at home in this group.
I care about what other group members think of my actions.
If there is a problem in this group, there are members here who can solve it.
It is very important to me to be a member of this group.
I expect to stay in this group for a long time.
I anticipate how some members will react to certain questions or issues in this group.
I get a lot out of being in this group.
I've had questions that have been answered by this group.
I've gotten support from this group.
Some members of this group have friendships with each other.
I have friends in this group.
Some members of this group can be counted on to help others.
I feel obligated to help others in this group.
I really like this group.
This group means a lot to me.

---

Prior TPB research (Ajzen, 2003; Bock et al., 2005; Chen et al., 2009; Wasko & Faraj, 2005) used 'group', 'buying', and 'people' to the most items. For this study, these references were changed to 'forum', 'sharing knowledge', and 'member'. In addition, Chen et al. (2009) developed items of knowledge-sharing intention within online learning communities: (a) I will

always provide my know-where or know-whom at the request of other members in the online learning community, and (b) I will try to share my expertise from my education or training with other members in an effective way. These two items were modified due to double-barrelled (or double-direct) questions. This occurs when a researcher asks a question that touches upon more than one issue. This may result in inaccuracies in the attitudes being measured for the question, as the respondent can answer only one of the two questions, and cannot indicate which one is being answered. All construct definitions and sources are presented in Table 24.

Table 24

*Construct Definitions and Sources*

Construct	Definition	Source
Knowledge-sharing behaviour	An actual behaviour through which knowledge (i.e. information, skills, or expertise) is exchanged among people of community.	(Aulawi et al., 2009)
Knowledge-sharing intention	The degree to which one believes that one will engage in an explicit and implicit knowledge-sharing act.	(Ajzen, 1991)
Knowledge-sharing attitude	The degree of one's positive feelings about sharing one's knowledge.	(Ajzen, 2003)
Perceived behavioural control	A person's perception of the ease or difficulty of performing the behaviour of interest.	(Ajzen, 1991)
Subjective norms	Expectations that valued others have about how we will behave. The perceived social pressure to engage or not to engage in behaviour.	(Ajzen, 2002; Pavlou & Fygenson, 2006)
Sense of (virtual) community (SOC)	A feeling that members have of belonging, a feeling that members matter to one another and to the group, and a shared faith that members' needs will be met through their commitment to be together (in virtual world).	(McMillan & Chavis, 1986)

## **Data Analysis**

The purpose of Study 3 is to propose and test a structural equation model (SEM) that identifies relationships between variables that contribute towards knowledge-sharing behaviour within an ESOC. SEM is a family of statistical procedures that seeks to explain the relationships among multiple variables. Its focus is on the structure of interrelationships expressed in a series of equations, similar to a series of multiple regression equations (Hair et al., 2009). Bentler and Chou (1987) suggested that the ratio of participants to estimated parameters should exceed 10:1. Therefore, the size of the sample was adequate to estimate the model (359 samples: 33 items).

Before moving forward with an exploration of the relationship among the focal constructs, the SOVC construct was first analysed to determine dimensionality. The SOVC (Blanchard, 2007) scale was developed through participant observation and member interview as the primary method of data collection. The SOVC scale has never been subject to quantitative analysis. For this reason, a quantitative procedure, such as the measurement model test, is logically necessary before the SOVC is used in this study.

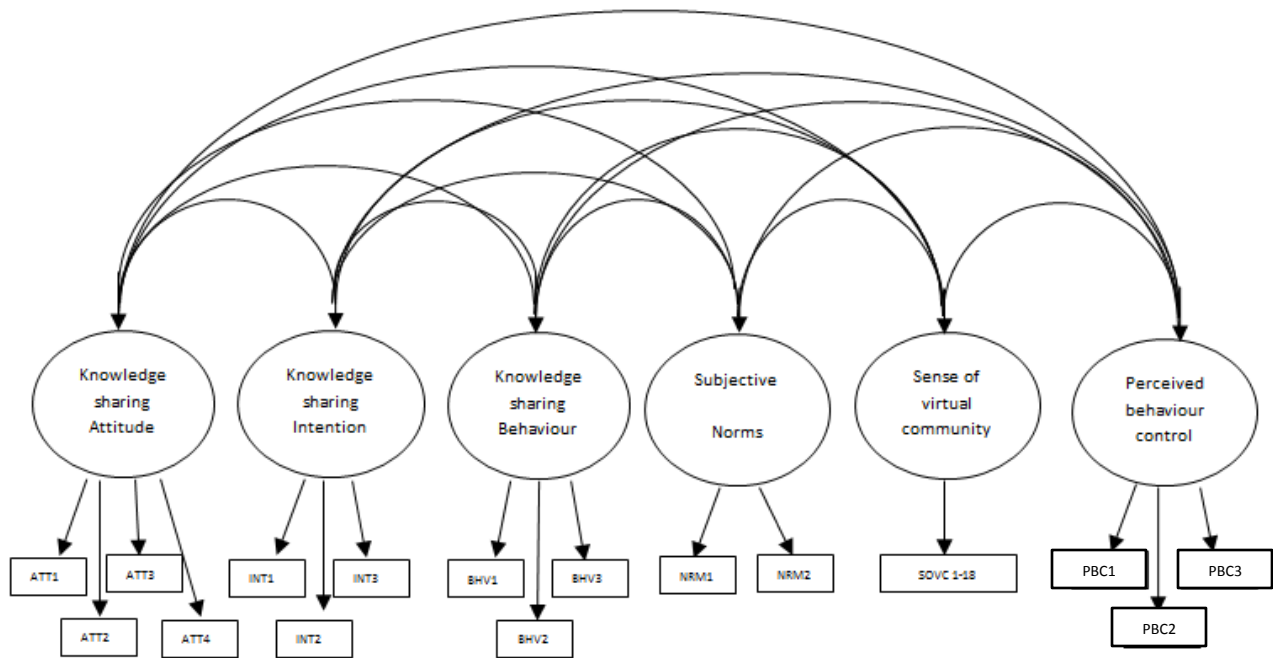
Construct validity is the extent to which a set of measured items actually reflects the theoretical latent construct those items are designed to measure (Hair et al., 2009), and is measured with factor loadings, construct reliability, and AVE. AVE analysis provides the overall amount of variance in the indicators explained by the latent construct (Hair et al., 2009), and it is recommended that AVE value exceed .50. Construct reliabilities should exceed .70 (Hair et al., 2009). Both Bentler (2007) and Hair et al. (2009) recommend using a combination of indicators to compensate for the weaknesses of each index.

The data analysis focused on examining (a) model fit indices for the measurement model and the validity of the measurement instrument, (b) model fit indices for the higher-order model,

and (c) a proposition of a competing model. The cut-off criteria for fit indices recommended by Hu and Bentler (1999) were used (i.e. RMSEA less than .06, SRMR less than .10, and CFI greater than .95). Both theory and modification indexes were used to develop competing models and compare them.

Next, the two-step SEM procedure was used to test the theoretically based relationships among the latent variables. By isolating measurement mis-specification from structural problems and correcting the mis-specification errors before testing the structural model, the two-step procedure obtains a better model fit (Kline, 2010). The first step involved using confirmatory factor analysis (CFA) to test an overall measurement model. CFA tested the construct validity of the measurement model. The overall measurement model (M1) displayed in Figure 9 consisted of six unidimensional latent variables (i.e. SN, attitude, intention, behaviour, PBC, and SOVC) that were interrelated.

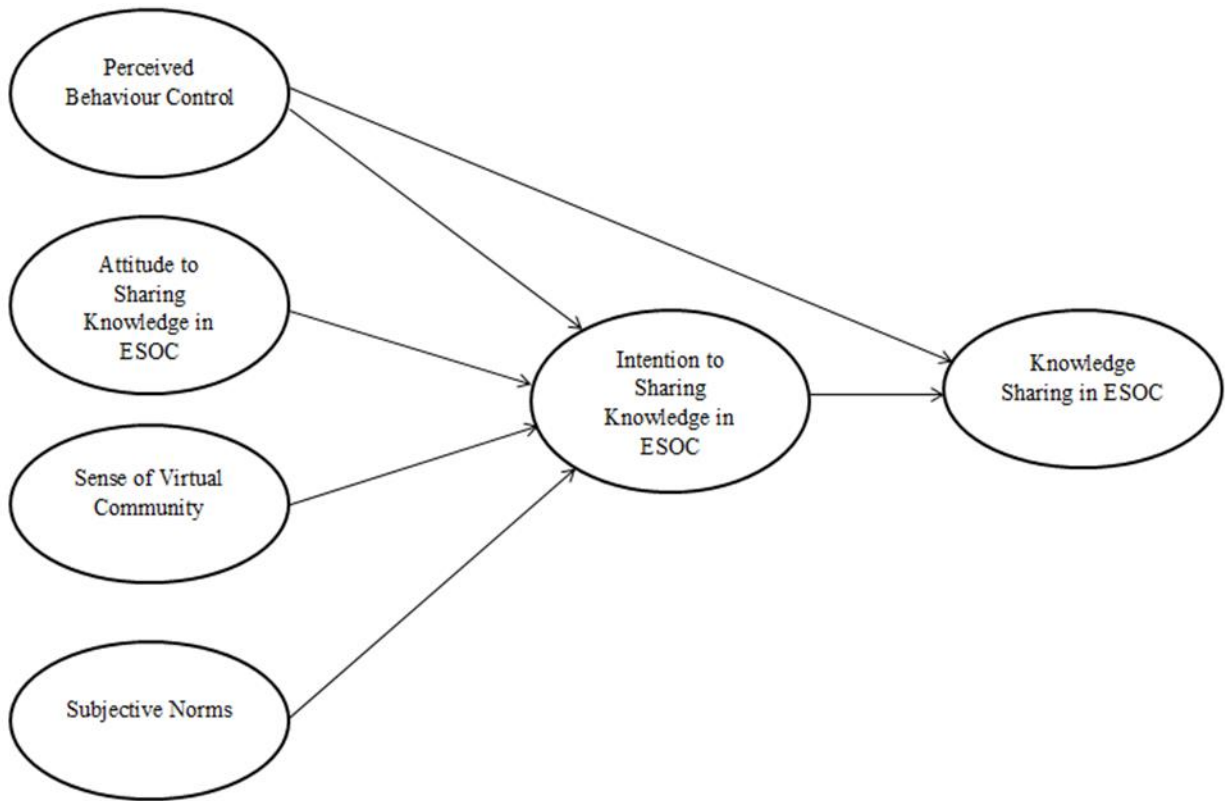
The debate over when and how to use EFA and CFA is without consensus. CFA requires strong conceptual and empirical foundations. The researcher opted for CFA for the following reasons: (a) items/constructs have been measured in the presence of each other before, and (b) most items were adapted from previous research.




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*Figure 9.* Measurement model (M1) for TPB and SOVC.

The second step involved using SEM to test a structural model. SEM tested the specific paths that influenced sharing behaviour within an ESOC. The structural model depicted in Figure 10 consists of theoretically based relationships among the exogenous (i.e. independent variables not receiving, but emanating paths) and endogenous (i.e. dependent variables receiving paths) latent variables.



*Figure 10.* TPB and SOVC relationship to behaviour.

The chi-square statistic tests absolute fit of the model to the data, but it is sensitive to sample size and often inflates Type 1 error for the detection of small and potentially meaningless differences in nested models (Hair et al., 2009). Thus, other indices were used to judge model fit. The root-mean-square error of approximation (RMSEA) represents closeness of fit (Hu & Bentler, 1999). The comparative fit index (CFI), the Tucker-Lewis index (TLI), and standardized root mean square residual (SRMR) were also used.

A key assumption of CFA is multivariate normality (Lam, Zhang, & Jensen, 2005). An assessment of multivariate normality (see Table 25) did not support the assumption of multivariate normality. Based on the above, the researcher used robust maximum likelihood (MLM) estimator. Satorra and Bentler (1994) suggested using the MLM estimator when the multivariate normality assumption is violated.

## **Results**

### **Descriptive Statistics**

Of the 359 participants, 306 were male (85.2%), and 53 were female (14.8%). The age of respondents ranged from 21 to 70 ( $M = 40$ ). There were 26 (7.2%) high school or equivalent degree holders, 38 (10.6%) college degree holders, 134 (37.3%) bachelor's degree holders, 92 (25.6%) master's degree holders, 42 (11.7%) doctoral degree holders, and 27 (7.5%) professional degree holders (i.e. MD, JD, etc.). The ethnic composition of the sample consisted of 328 Caucasian (91.4%), 7 multiracial (1.9%), 4 Hispanic (1.1%), 3 Asian (0.8%), 3 Latino (0.8%), 3 Pacific Islander (0.8%), and 11 non-respondents (3.1%). The majority of respondents were Caucasians. There were 220 (61.3%) married, 73 (20.3%) single, 25 (7%) cohabiting, 18 (5%) separated, 4 (1.1%) widowed, and 8 (2.2%) non-respondents.

The overall means and standard deviations for the items on the questionnaires are provided in Table 25. The test result of multivariate normality for the questionnaire items are also provided in Table 25.



Table 25

*Summary Descriptive and Multivariate Distributional Statistics*

Questionnaire		M	SD	
Subjective norms (2 items)		3.12	1.28	
Attitude (4 items)		5.66	.90	
Intention (3 items)		5.53	1.28	
Behaviour (3 items)		4.61	1.33	
Perceived behavioural control (3 items)		5.89	.75	
Sense of virtual community (18 items)		5.00	.85	
Test	Value	Z-score	P-value	Chi-square
Skewness	329.248	72.165	.000	
Kurtosis	1555.758	24.527	.000	
Skewness and Kurtosis			.000	5809.309

**Measurement Model Analysis of SOVC**

The scale psychometrics for the initial measurement model (M1) of SOVC is displayed in Table 26. The loadings ranged from .465 for SOVC14 to .794 for SOVC18. The AVE is .424 and construct reliability is .928. The fit indices for M1 were poor. The SRMR value of .069 is less than the .10 cut-off associated with good models. The RMSEA value of .098 is higher than the recommended .06 threshold. Both the CFA (.825) and TLI (.801) are below the .95 target criteria for good model fit. Consequently, the M1 was modified by removing the problematic 14 items (SOVC 2, 3, 4, 5, 6, 7, 9, 11, 12, 13, 14, 15, 16, 18) based on lower factor loading (SOVC 2, 3, 5, 6, 9, 11, 13, 14, 15), AVE score, construct reliability score, model fit indices, and conceptual considerations (SOVC 4, 7, 12, 16, 18). It is not correct to eliminate or retain an item based on the statistical evidence alone. There are two aspects that need to be considered which are a)

statistical validity and b) theoretical/conceptual validity. For the former, the researcher must assess more than the magnitude of the loading. Before retention/elimination of each item, the researcher took into account the theoretical and conceptual importance of the item and its effect on the validity of construct.

Table 26

*Scale psychometrics for measurement model (M1) of SOVC*

Construct/Factor	Item	Factor loading	AVE	Construct Reliability
Sense of Virtual Community	SOVC1	.793	.424	.928
	SOVC2	.566		
	SOVC3	.488		
	SOVC4	.740		
	SOVC5	.588		
	SOVC6	.593		
	SOVC7	.762		
	SOVC8	.772		
	SOVC9	.548		
	SOVC10	.777		
	SOVC11	.571		
	SOVC12	.636		
	SOVC13	.495		
	SOVC14	.465		
	SOVC15	.584		
	SOVC16	.648		
	SOVC17	.733		
	SOVC18	.794		

The data, illustrated by the score,  $\chi^2 = 3.215$ ,  $df = 5$ ,  $p < .01$ , RMSEA = .058, CFI = 1.00, TLI = 1.01, SRMR = .011, represented a good fit for the modified measurement model (M2). Factor loading, AVE, and construct reliability for M2 are provided in Table 27.

Table 27

*Scale psychometrics for measurement model (M2) of SOVC*

Construct/Factor	Item	Factor loading	AVE	Construct Reliability
Sense of Virtual Community	SOVC1	.838	.593	.878
	SOVC8	.813		
	SOVC10	.771		
	SOVC17	.789		

The loadings ranged from .771 for SOVC10 to .838 for SOVC1. AVE is .593, and construct reliability is .878. The fit indices for M2 were good. In brief, many SOVC construct items were not retained due to cross loading and low factor loadings, as well as items not supporting on their own factors. Other items (attitude, intention, behaviour, PBC, and SN) were supported on their own factors. Based on the high factor loading score, model fit indices, AVE, construct reliability score, and the theoretical context, five items were retained. However, no items were retained from three dimensions (recognition of members, identity/identification, and relationship with other members). Only four items from two dimensions (exchange support and attachment/obligation) were retained. The subject of this study is a relatively large online community. Members may not recognize or identify other members' names or nicknames due to the large number of members. Relationships with other members may not be retained based on a lack of member identification. This is discussed in the next chapter.

### **Confirmatory Factor Analysis (CFA)**

The scores,  $\chi^2 = 1357.21$ ,  $df = 480$ ,  $p < .01$ , RMSEA = .071, CFI = .842, TLI = .826, SRMR = .069, represented a bad fit for the six-factor measurement model (M1) displayed in Figure 9. Factor loading, AVE, and construct reliability for M1 are provided in Table 28.

Table 28

*Scale psychometrics for measurement model (M1)*

Construct/Factor	Item	Factor Loading	AVE	Construct Reliability
Subjective Norms	NRM1	.849	.712	.831
	NRM2	.838		
Attitude	ATT1	.845	.519	.807
	ATT2	.711		
	ATT3	.771		
	ATT4	.513		
Intention	INT1	.904	.630	.834
	INT2	.635		
	INT3	.819		
Behaviour	BHV1	.614	.534	.764
	BHV2	.961		
	BHV3	.550		
Perceived Behavioural Control	PBC1	.467	.220	.458
	PBC2	.476		
	PBC3	.464		
Sense of Virtual Community	SOVC1	.838	.593	.878
	SOVC8	.813		
	SOVC10	.771		
	SOVC17	.789		

The researcher removed two items (ATT4 and PBC2) based on low factor loadings and model fit indices, and then the model (M1) was re-estimated. The model (M2) represented a good fit to the data ( $\chi^2 = 210.39$ ,  $df = 153$ ,  $p < .01$ , RMSEA = .046, CFI = .969, TLI = .960, SRMR = .040). Factor loading, AVE, and construct reliability for M2 are provided in Table 29.

Table 29

*Scale psychometrics for measurement model (M2)*

Construct/Factor	Item	Factor Loading	AVE	Construct Reliability
Subjective Norms	NRM1	.809	.716	.834
	NRM2	.882		
Attitude	ATT1	.807	.672	.860
	ATT2	.785		
	ATT3	.866		
Intention	INT1	.870	.740	.895
	INT2	.845		
	INT3	.865		
Behaviour	BHV1	.710	.592	.811
	BHV2	.906		
	BHV3	.672		
Perceived Behavioural Control	PBC1	.728	.517	.682
	PBC3	.710		
Sense of Virtual Community	SOVC1	.848	.592	.878
	SOVC8	.807		
	SOVC10	.767		
	SOVC17	.785		

\*All items are  $p < .01$

The inter-factor correlations presented in Table 30 were significant ( $p < .001$ ) and ranged between .26 and .93. Intentions and behaviours correlation is very high (.93), because this is a higher order model. The inter-factor correlations indicated that the relationships among the latent variables were small to large in magnitude. The magnitude of the correlations demonstrated that it was feasible to test a theoretically based structural model to describe the interrelationships. The revised measurement model (M2) is presented in Figure 11.

Table 30

*Inter-factor Correlations Among the Eight Latent Variables in the Measurement Model (M2)  
Tested with CFA*

Factor	1	2	3	4	5	6
1. Subjective norms	-					
2. Attitude	.30*	-				
3. Intention	.30*	.71*	-			
4. Behaviour	.33*	.64*	.93*	-		
5. Perceived behavioural control	.26*	.75*	.77*	.70*	-	
6. Sense of virtual community	.39*	.69*	.60*	.59*	.60*	-

\* $p < .001$

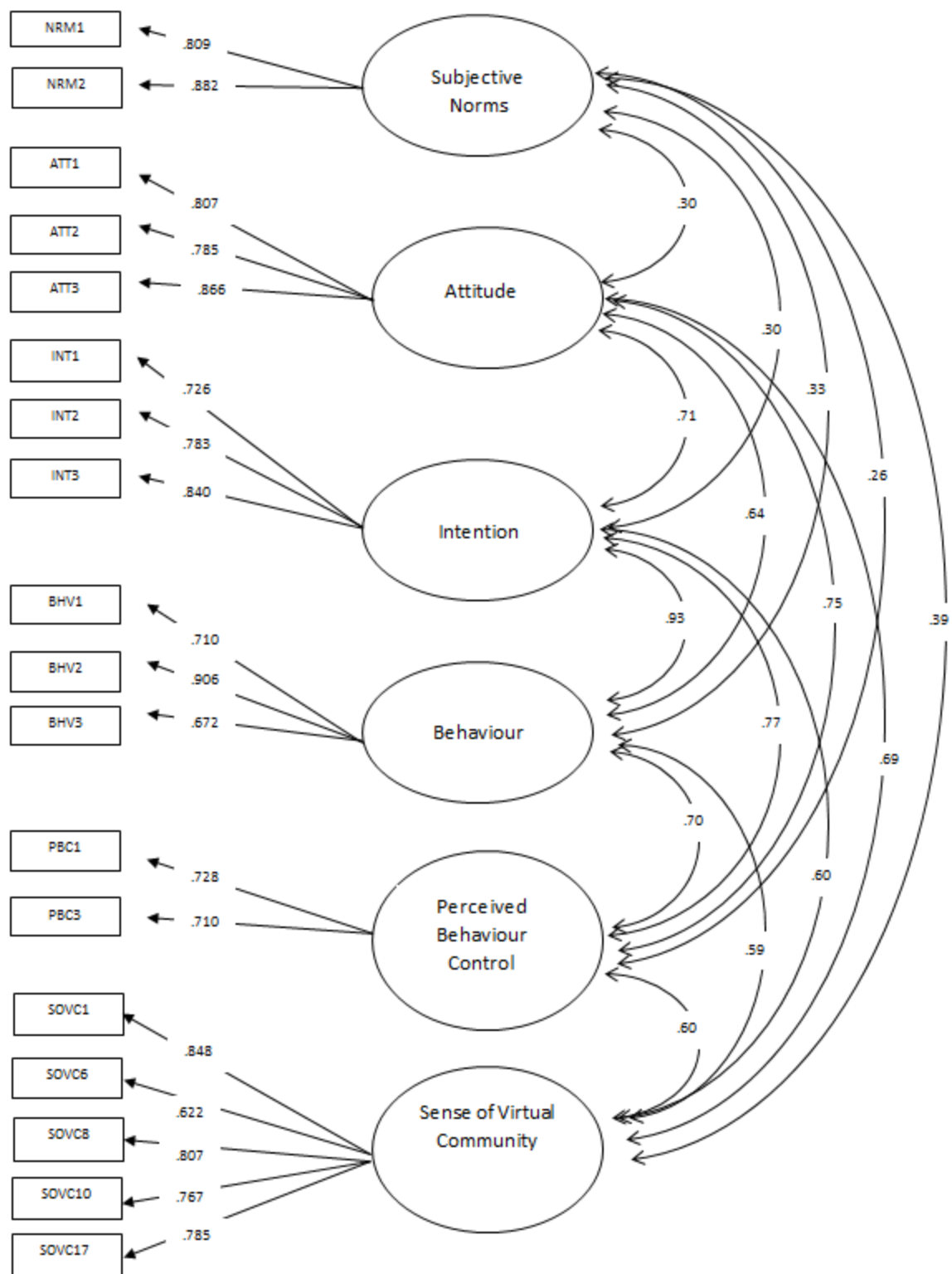


Figure 11. Modified measurement model (M2) for TPB and SOVC.

Sports management researchers are increasingly concerned with testing for measurement invariance (Gucciardi, Jackson, Coulter, & Mallett, 2011; Zhu, Sun, Chen, & Ennis, 2012); that is, determining if items used in survey-type instruments mean the same things to members of different groups. Measurement invariance is critically important when comparing groups. If measurement invariance cannot be established, then the finding of a between-group difference cannot be interpreted. One does not know if it is due to a true attitudinal difference, or to different psychometric responses to the scale items. On the other hand, the suitability of a single-group measurement model is usually assessed using CFA. A model is considered suitable if the covariance structure implied by the model is similar to the covariance structure of the sample data, as indicated by acceptable model fit indices. Thus, CFA was used to test the suitability of measurement model. There is a critical assumption that the scale captures the same trait in all of the groups. If that assumption holds, then analyses of those scores are acceptable. However, if that assumption is not true, analyses do not yield meaningful results. In this study, groups can be divided into posters/lurkers, or men/women. However, Study 2 and several researchers suggested that posters have different motivational factors compared to lurkers. Therefore, the assumption is inappropriate in this study.

### **Structural Equation Modelling (SEM)**

The structural model, which was developed in several phases, led to the comparison of model fits and chi-square difference tests between the different versions of the structural model. The results from these comparative analyses are presented in Table 32. The initially proposed structural model which is presented in Figure 10, had good model fit indices ( $\chi^2 = 215.06$ ,  $df = 123$ ,  $p < .01$ , RMSEA = .046, CFI = .968, TLI = .960, SRMR = .042). Figure 12 represents the SEM of TPB and SOVC constructs. However, path coefficients from PBC and SOVC to behaviour are .101



and .089. Path from SN to intention is .020. The direct, indirect and total effects amongst constructs presented in Table 31

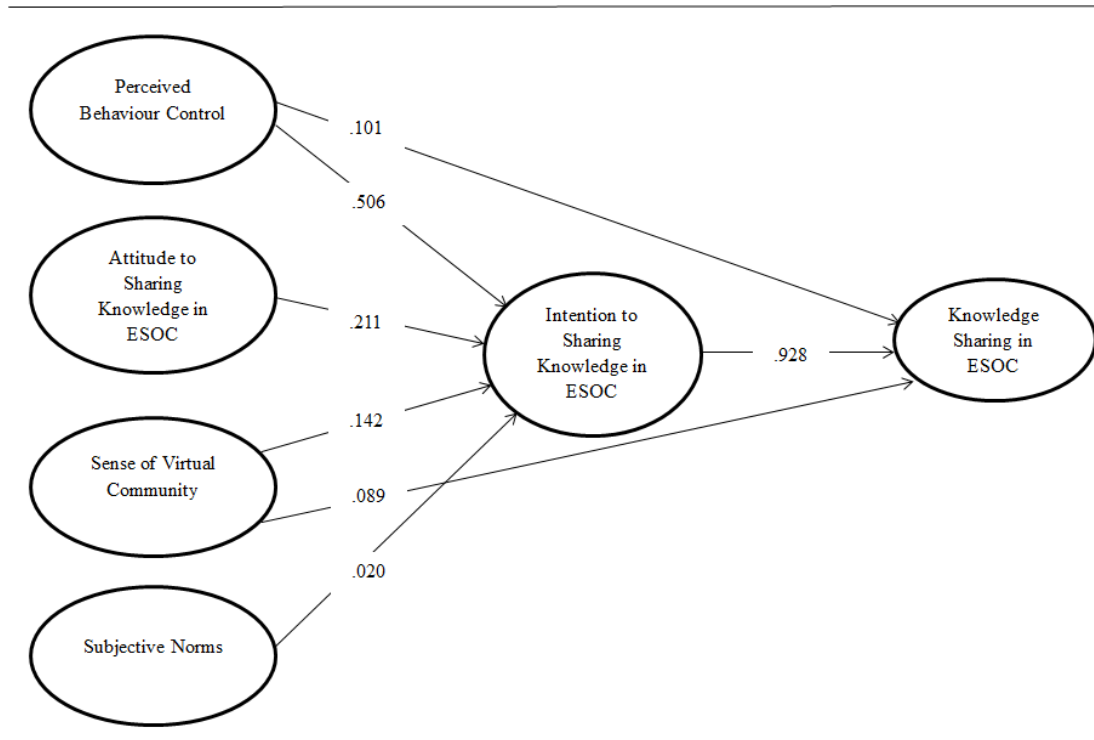


Figure 12. TPB and SOVC model illustrating the path coefficients among the exogenous and endogenous latent variables.

Table 31

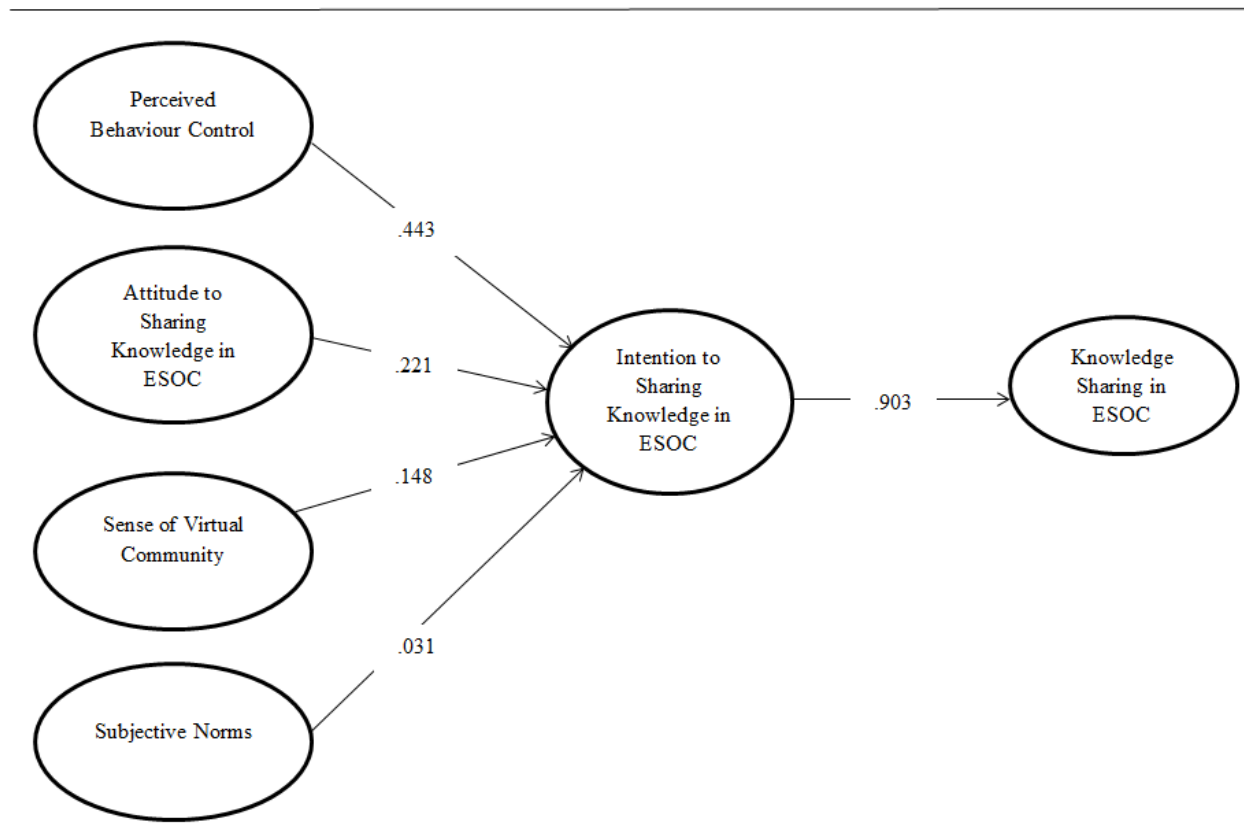
*Direct, Indirect and Total Effects Amongst the Constructs*

Relations	Direct Effects	Indirect Effects	Total Effects
Attention to Behaviour		0.206***	0.206***
SOVC to Behaviour		0.148*	0.148*
PBC to Behaviour	-0.060***	0.499**	0.439**
SN to Behaviour		0.056***	0.056***

\* sig.  $p < 0.05$  / \*\* sig.  $p < 0.01$  / \*\*\* not substantial

There are many research articles that have provided empirical evidence that TPB works just fine and have no empirical problems, so it is reasonable to test and report the results of initial SEM model without any modifications. However, there is no page limit in a thesis, so offering both initial and modified model seems like a compromise.

Based on these results, it was decided to add the path from SOVC to behaviour (M2), omit the path from PBC to behaviour from the base model and the path from SOVC to behaviour (M3), and delete SN from the structural model (M4). The base model (M1) represented the hypothesized structural model of this study. Figure 13 represents the path coefficients of M3.



*Figure 13.* M3 model illustrating the path coefficients among the exogenous and endogenous latent variables.

Even if M2 and M3 show good model fit indices, there were statistically insignificant ( $p = .17$ ) effects between PBC and knowledge-sharing behaviour, and SN and intention ( $p = .16$ ).

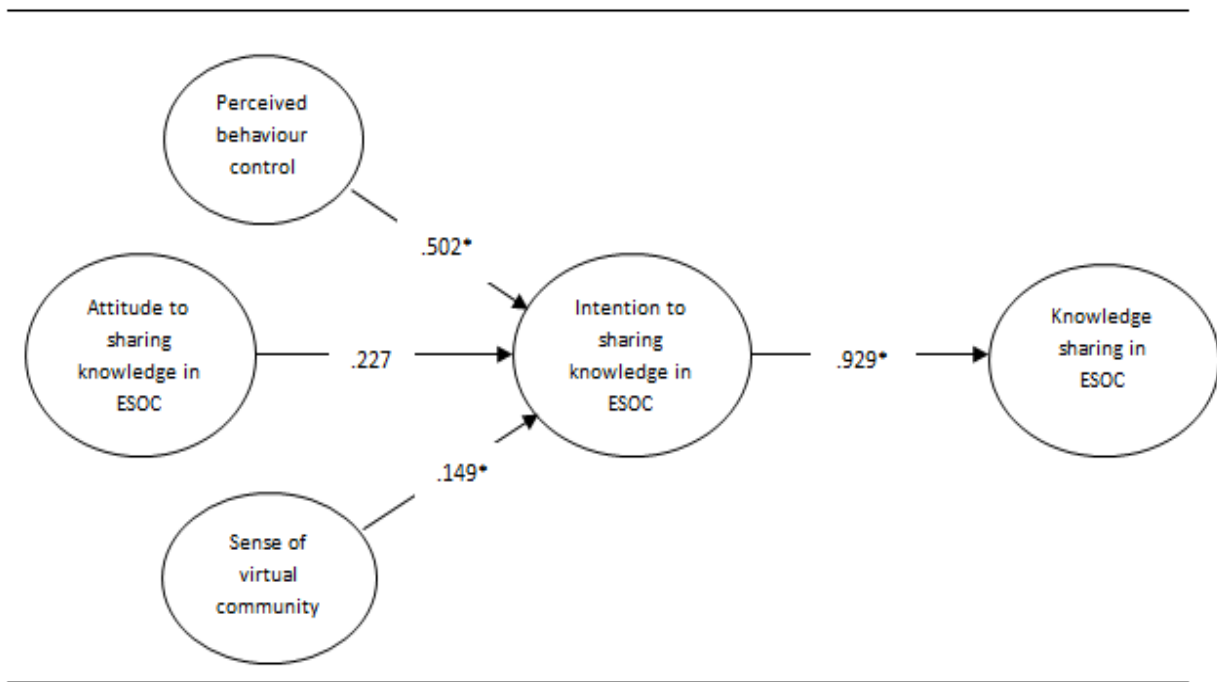
Table 32

*Structural Equation Model Chi-square Difference Test across Models*

Model	$\chi^2$	$df$	RMSEA	CFI	TLI	SRMR
Base model (M1)	215*	123	.046	.968	.960	.042
M2	213.*	122	.046	.968	.960	.040
M3	215*	124	.045	.968	.961	.042
M4	176*	97	.048	.968	.961	.042
Model Comparison	$\chi^2_{diff}$	$df$ difference				
M1 vs. 2	-2	-1				
M1 vs. 3	0	1				
M1 vs. 4	-39	-26				

\*  $P < .005$ .

Through a series of modifications, the last model (M4) was selected as the final model ( $\chi^2 = 175.73$ ,  $df = 97$ ,  $p < .01$ , RMSEA = .048, CFI = .968, TLI = .961, SRMR = .042). Figure 14 represents the final model. In this model, the path from PBC to knowledge-sharing in an ESOC was omitted.



\* $p > .01$

*Figure 14.* Final structure model illustrating the path coefficients among the exogenous and endogenous latent variables.

There were significant direct effects between (a) PBC and intention to share knowledge, (b) intention to share knowledge and knowledge-sharing behaviour, and (c) SOVC and knowledge-sharing behaviour. While there were statistically insignificant ( $p = .07$ ) effects between attitude and knowledge-sharing and intention to share knowledge in an ESOC, the paths in the final structural model were retained due to strong theoretical evidence. In this study, the path between SN and intention dimensions was statistically insignificant ( $p = .16$ ). The role of SN in online communities may not be as important as the researcher initially proposed. In addition, there were significant ( $p < .01$ ) correlations among the exogenous latent variables such as PBC, attitude, and SOVC.

## Discussion

The major purpose of this study was to propose and test a structural equation model that identifies relationships between variables that contribute towards knowledge-sharing behaviour within an ESOC. Research hypotheses were developed to characterize the relationships between variables: sharing attitude, sharing intention, sharing behaviour, SN, PBC, and SOVC. For each hypothesis, it was expected that sharing attitude, SOVC, SN, and PBC would positively influence members' intention to share knowledge in an ESOC. It is also expected that intention to share knowledge and PBC would positively influence members' sharing behaviour in an ESOC. The result of this study suggested that four hypotheses (H1, H3, H5, and H6) were supported, and two (H2 and H4) were not supported (Table 33).

This study supports current literature, which suggests that intention was clearly the best predictor of actual knowledge-sharing in an ESOC. PBC is also a good predictor of intention to share knowledge in an ESOC, but not a good predictor of actual knowledge-sharing behaviour in an ESOC. Attitude toward sharing knowledge in an ESOC and SN were theoretically good predictors of sharing intention, but both SN ( $p = .16$ ) and sharing attitude ( $p = .07$ ) were statistically insignificant paths. However, sharing attitude was retained in the final structural model due to a strong theoretical support. Table 33 shows the results of the hypotheses and research findings.

Table 33

*Knowledge-sharing Behaviour Hypotheses and Research Findings*

Path	Hypothesis	Findings
Attitude → Intention	Sharing attitude positively influences members' intention to share knowledge on online sports community.	Supported
SN → Intention	Subjective norms positively influences members' intention to share knowledge.	Not Supported
PBC → Intention	Perceived behavioural control positively influences knowledge-sharing intention	Supported
PBC → Behaviour	Perceived behavioural control positively influences actual knowledge-sharing behaviour on online sports community.	Not Supported
Intention → Behaviour	Intention to sharing knowledge positively influences knowledge-sharing behaviour in online sports community.	Supported
SOVC → Intention	Sense of virtual community positively influences knowledge-sharing intention in online sports community.	Supported
PBC → Intention → Behaviour		Supported
SOVC → Behaviour		Not Supported
SOVC → Intention → Behaviour		Supported

One limitation of this study is the use of a cross-sectional design and self-report measures instead of an independent behavioural measure. There is also the issue of predicting a past behaviour, which is inherently problematic. This is a common deficiency of TPB studies. It has been demonstrated that sometimes intentions and observed behaviours are only weakly connected (Davies et al., 2002) and that TPB variables account for larger variances in self-report than in observed behaviour (Armitage & Conner, 2001). Thus, it should be noted that the measures of attitudes and SN probably are less strongly connected with actual participation in an ESOC than what was found in this study.

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## **CHAPTER 6 – DISSCUSSION AND CONCLUSIONS**

In the final chapter, three topics are discussed. First, the results of the hypothesis testing are discussed in terms of the theoretical frameworks used to develop the hypotheses. This section of the chapter focuses on how the study's findings advance academic research on online sports communities. Second, implications for practitioners are discussed in terms of how managers/marketers charged with managing ESOC activities could benefit from the findings of this study. Third, suggestions for future research directions are discussed in terms of how they can serve as a point of departure for future research in the area of online sports communities.

### **Discussion of Findings**

This research aimed to deepen our understanding of motivation to participate in online communities and knowledge-sharing behaviour within the online environment. The research examined the theoretical relationships between key cognitive and social factors in the context ESOCs.

#### **Study 1**

The MS-ESOC is a valid and reliable measure of users' motives for using ESOCs. Seven factors (seeking, sharing, entertainment, interpersonal communication, escape, pass time, and economic) identified are similar to previous research on sports online consumption (Seo & Green, 2008).

Entertainment, escape, pass time, and economic subscales consisted of three items.

Information/technical knowledge-seeking and sharing subscales consisted of four items. The interpersonal communication subscale consisted of two items in the final MS-ESOC measure.

However, it is interesting that ESOC users' motivations for seeking and sharing are not as complicated as the researcher initially proposed. Information-seeking and technical knowledge seeking factors are highly correlated, and the same applies to the sharing factors. Therefore, the

researcher combined the two seeking factors (information seeking and technical knowledge seeking) into one (information-knowledge seeking) as the result of this study. The researcher also combined two sharing factors (information sharing and technical knowledge-sharing) into one (information-knowledge-sharing). Additionally, ESOC users may not visit ESOCs for interpersonal communication purposes, even if some NFL fans use NFL Web sites for the purposes of interpersonal communication (Seo & Green, 2008). The result of the EFA and CFA procedures in this study indicate that the MS-ESOC instrument has been validated and that the instrument can be used to test why people participate in ESOCs.

The MS-ESOC is also a reasonable measure for sports community stakeholders or sports community entrepreneurs, those who develop or manage online sports communities. MS-ESOC's seven factors might be used together to obtain ESOC users' motivation. Alternatively, the factors might be used separately to obtain detailed information, such as users sharing motives within the ESOC.

The MS-ESOC confirms that ESOC members seek a number of different benefits, especially sharing motives. ESOC users are more likely to spend time in socially interactive activities with other users in the community. It is easily conceivable that users in an ESOC conduct their activities with more social and functional aspects through seeking for and exchanging sports information and knowledge, and enjoying sharing their sports experiences with other users.

Endurance-sports companies and organisations need to adapt to the culture of the Internet for success, and provide consumers with the ability to interact with one another in addition to the sports-related company or organization. Through these steps, sports-related company or organizations can build new and deeper relationships with their (potential) customers. As Hagel

and Armstrong (1999) suggested success in the online area will belong to businesses that organise online communities to provide multiple social and commercial benefits. By creating strong online communities, sports companies or organisations will be able to build customer loyalty and generate strong economic returns. In addition, the researcher suggests that participation in sports online communities may serve to build connections, which transform active contributions into the most attractive actual sports consumption. This is consistent with literature that suggests consumer collaboration is a prerequisite to strong marketing relationships (Deighton & Grayson, 1995).

ESOCs are difficult in some ways because they demand that stakeholders commit to the satisfaction and support of the community as well as the individual. Sports and sports-related companies that do not may find that people with a strong need for community have migrated to a competitor that can offer access to and positive relations with an alternative or more desirable community.

In summary, sports online communities are regarded as one of the most effective management and marketing models in the information age, and the rise of sports online communities has provided great opportunities for both sports businesses and their customers. However, the achievement of this goal depends on a comprehensive understanding of the sports community members' motivation for contribution so that the community has enough public goods (i.e. information and knowledge) for consuming.

## **Study 2**

Combining the results of the current three investigations leads to some interesting conclusions concerning motivational differences between posters and lurkers in ESOC consumption. The first conclusion involves factor mean differences within each of four groups through paired *t*-test. In

Group 1 (posting once or more per day in ESOC), the information/technical knowledge seeking factor was defined as the most important reason to use ESOCs, and the economic factor was a less important reason to use ESOCs. Consistent with the Group 1 analyses, the information/technical knowledge-seeking factor got the highest score from all four groups. Similarly, Groups 2's (posting once per week) factor mean order showed a similar pattern to Group 1. In Group 3 (posting once per month or less), the order of factor means scores showed similar patterns to Groups 1 and 2. However, the actual factor mean score fell drastically except the seeking factor. Finally, factor means scores within Group 4 showed significantly different results from Groups 1 and 2. The information/technical knowledge-sharing factor mean ranked fifth out of seven factors, and the entertainment factor ranked second. Therefore, the information/technical knowledge-seeking motivation is the main reason why ESOC users use ESOCs. The economic and interpersonal communication motivations are relatively unimportant factors in ESOC consumption.

Other conclusions can be drawn from an examination of factor mean differences among the four groups through ANOVA. Information/technical knowledge-sharing, interpersonal communication, and economic factor mean scores were significantly different among the four groups. Conversely, information/technical knowledge seeking, entertainment, escape, and pass time factors were not statistically different among the groups.

An additional conclusion concerns the factor mean differences between two (poster and lurker) groups equalised in sample size by combining Groups 3 and 4 together. The Mplus 6 software was used to determine factor mean difference across these two groups. The results showed that information/technical knowledge-sharing, interpersonal communication, and

economic factor mean scores were significantly different between the two groups. This result supported the results of the previous two investigations.

Therefore, it can be concluded that individuals who are motivated by one or more of these seven motives tend to be sports online community users. Furthermore, the importance of the seven motives differs by levels of participation or participation levels might be changed by ESOC users' motivations for ESOC consumption.

Relative to demographics, past research on online users has typically looked at age. For example, older users were less likely to participate in social networking sites. Demographically, lurkers and posters of ESOC do not differ in terms of ethnicity, education, or age in this study. However, gender did prove to be a factor in that males were significantly more likely to post frequently than females. This may be indicative of the attraction of ESOCs for men.

The findings of this study indicate that lurkers are much more prevalent than posters in the ESOC environment. Lurkers are consumers of ESOCs; as such, they are likely to be affected by UGC even if they do not contribute to producing it. Future research might explore the influence of UGC among lurkers. They should not be ignored since they constitute a large proportion of the user population.

Understanding why someone delurks (i.e. becomes active), and its value to the online community, is as interesting as why they lurk. Lurkers and lurking will continue to be an important area of study as more and more communities go online. Researchers' next step will be to develop better tools for measuring lurker participation, thereby creating better online communities for all participants. To achieve this, we need to broaden our definition of participation and take up the challenge of studying participation in all its forms through combined ethnographic and large sampling approaches.

### Study 3

The major purpose of this study was to propose and test a structural equation model that identifies relationships between variables that contribute towards knowledge-sharing behaviour within an ESOC. Research hypotheses were developed to characterize the relationships between variables: sharing attitude, sharing intention, sharing behaviour, SN, PBC, and SOVC. For each hypothesis, it was expected that sharing attitude, SOVC, SN, and PBC would positively influence members' intention to share knowledge in an ESOC. It is also expected that intention to share knowledge and PBC would positively influence members' sharing behaviour in an ESOC. The result of this study suggested that four hypotheses (H1, H3, H5, and H6) were supported, and two (H2 and H4) were not supported (see Table 32).

This study supports current literature that suggests that intention was clearly the best predictor of actual knowledge-sharing in an ESOC. PBC is also a good predictor of intention toward sharing knowledge in an ESOC, but not a good predictor of actual knowledge-sharing behaviour in an ESOC. Attitude toward sharing knowledge in an ESOC and SN were theoretically good predictors of sharing intention, but both SN ( $p = .16$ ) and sharing attitude ( $p = .07$ ) were statistically insignificant paths. However, sharing attitude was retained in the final structural model due to strong theoretical support.

Again, the results of this study shed light on some important points that relate to the sharing behaviour of sports online community users, which have not been addressed by previous research. Although previous research on online community consumption focused on attitude, intention, SN, and PBC, this study finds that SOVC is also an important factor that affects users' knowledge-sharing behaviour. Notably, this study reveals that PBC is a more important influential factor than attitude, SOVC, and SN. This finding is particularly important for ESOC

developers and stakeholders when they decide how to manage malicious comments by other users. In addition, this study suggests that managers or stakeholders should consider focusing more on establishing interactions between users. For example, developing sports online communities with high interaction formats that enable users to ask and answer by not only actual typing online but also clicking ‘agree’ or ‘disagree’. The more users there are in sports online communities, the more UGC, such as knowledge, experience, and information, is likely to be exchanged and the more users it will attract. This idea, called a dynamic loop, was described by Hagel and Armstrong (1999) to yield increasing returns in an online community.

For academic researchers, this study contributes to a deeper understanding of the important factors that affect ESOC users’ sharing behaviour. Despite the fact that TPB and SOVC have been widely applied to the adoption of online communities, the integration of the two approaches has never been applied to the sports online community field. By integrating TPB and SOVC, this study demonstrates satisfactory results for the synthetic model in the context of sports online communities. This finding implies that this can serve as a theoretical model to understand better the users’ sharing behaviour within ESOCs. In addition, it may be appropriate to extend it to other types of online communities.

## **Conclusions**

An online sports community provides an incredible opportunity for the diffusion of knowledge among like-minded people. People seek to innovate, just as organisations, and they both seek fresh ideas and novel concepts. Online communities provide a space where these processes of individual and organisational innovation can converge. The creation of a sense of community, one that encapsulates not only the participants but also the organisations responsible for

providing sports participation experiences, is important. A sense of community augurs well, not just for individuals and organisations, but also for the greater good of the sports.



## Appendices

### Appendix A – Original Scale and ESOC Scale

Concept	Original Scale	ESOC Scale (modified version)	Literature & Researcher
Motivation for ESOC			
MS-ESOC	<p>It provides quick and easy access to large volumes of cycling information.</p> <p>I use this forum because I am able to obtain a wide range of cycling information.</p> <p>I use this forum because I can learn about things happening in the cycling world.</p> <p>If I could, I would like to continue using this forum to seeking information (He &amp; Wei)</p> <p>I ask the form members when I need cycling information. (Pintrich)</p> <p>I use this forum because I enjoy sharing my information with other members.</p> <p>I use this forum because I enjoy helping others by sharing my information.</p> <p>I use this forum because it feels good to help someone else by sharing my information.</p> <p>If I could, I would like to continue using this forum to contribute information. (He &amp; Wei).</p> <p>I use this forum because it is useful for my knowledge-sharing. (He &amp; Wei)</p> <p>I use this forum because I want to know the technical aspects</p>	<p>1. I use this forum because I enjoy sharing my information with other members.</p> <p>2. I use this forum because I enjoy helping others by sharing my information.</p> <p>3. I use this forum because it feels good to help someone else by sharing my information.</p> <p>4. If I could, I would like to continue using this forum to contribute information.</p> <p>5. I use this forum because it is useful for my knowledge-sharing.</p> <p>6. It provides quick and easy access to large volumes of cycling information.</p> <p>7. I use this forum because I can learn about things happening in the cycling world.</p> <p>8. If I could, I would like to continue using this forum to seeking information</p> <p>9. I ask the form members when I need cycling information.</p> <p>10. I use this forum because I want to share cycling strategies.</p> <p>11. When I use this forum, I often try to explain technical aspects of cycling to members.</p> <p>12. If I could, I would like to continue using this forum to contribute technical aspect of cycling.</p> <p>13. I use this forum because I want to know the technical</p>	(Chiu, Hsu, & Wang, 2006; He & Wei, 2009; Pintrich et al., 1991; Seo & Green, 2008; Wann et al., 1999)

	<p>of cycling.  I use this forum because I want to know the rules of cycling.  I use this forum because I want to know cycling strategies.  I ask the forum members to clarify technical aspects of cycling.(Pintrich, Smith, Garcia, &amp; McKeachie, 1991)  I use this forum because it is useful for my knowledge seeking. (He &amp; Wei)</p> <p>I use this forum because I want to share the rules of cycling.  I use this forum because I want to share cycling strategies.  I use this forum because I want to share the skills of cycling.  When I use this forum, I often try to explain technical aspects of cycling to members. (Pintrich)  If I could, I would like to continue using this forum to contribute technical aspect of cycling. (He &amp; Wei)</p> <p>I use this forum because it is exciting.  I use this forum because it is cool.  I use this forum because it is amusing.  I enjoy this forum because its entertainment value. (Wann)  I use this forum because it is simply a form of recreation.(Wann, Schrader, &amp; Wilson, 1999)</p> <p>I use this forum because it shows me how to get along with others.  I use this forum because it</p>	<p>aspects of cycling.  14. I use this forum because I want to know the rules of cycling.  15. I use this forum because I want to know cycling strategies.  16. I ask the forum members to clarify technical aspects of cycling.  17. I use this forum because it is useful for my knowledge seeking.  18. I use this forum because I am able to make purchases on the classified section of the forum.  19. When I want to buy cycling item, I used this forum to search for bargain prices.  20. I use this forum because it is great place to sell my needless cycling equipment.  21. This forum is useful when I want to buy cycling equipment.  22. I use this forum because I can forget about work.  23. I use this forum because it allows me to enter a non-thinking, relaxing period.  24. One of main reasons I use this forum is that doing so makes me forget about my problem.  25. I use this forum because it takes me away from life's hassles.  26. I use this forum because it is exciting.  27. I use this forum because it is cool.  28. I enjoy this forum because its entertainment value.  29. I use this forum because it is simply a form of recreation.  30. I use this forum because it</p>	
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	<p>allows me to meet others, which helps me cope with personal problems. I use this forum because I won't be alone. I spend a lot of time interacting with some members in this forum. (Chiu, Hus, &amp; Wang) I have frequent communication with some members in this forum. (Chiu)</p> <p>I use this forum because I can escape from reality. I use this forum because I can forget about work. I use this forum because it allows me to enter a non-thinking, relaxing period. One of main reasons I use this forum is that doing so makes me forget about my problem.(Wann) I use this forum because it takes me away from life's hassles.(Wann)</p> <p>I use this forum because it gives me something to do to occupy my time. I use this forum because it passes the time away, particularly when I'm bored. I use this forum during my free time. One of the main reason I use this forum is to spend my time.</p> <p>One of the main reasons I use this forum is that I consider myself a fan of cycling. One of the main reasons I use this forum is that I consider myself to be a big fan of a</p>	<p>allows me to meet others, which helps me cope with personal problems. 31. I use this forum because I won't be alone. 32. I spend a lot of time interacting with some members in this forum. 33. I have frequent communication with some members in this forum. 34. I use this forum because it gives me something to do to occupy my time. 35. I use this forum because it passes the time away, particularly when I'm bored. 36. One of the main reason I use this forum is to spend my time.</p>	
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	<p>particular cyclist. One of the main reasons I use this forum is because I am interested in following my favorite cycling athlete.</p> <p>I use this forum because I am able to make purchases on the classified section of the forum. When I want to buy cycling item, I used this forum to search for bargain prices.</p> <p>I use this forum because it is great place to sell my needless cycling equipment. This forum is useful when I want to buy cycling equipment.</p>		
Sense of Virtual Community			
Sense of Virtual Community	<ol style="list-style-type: none"> <li>1. I think this group is a good place for me to be a member.</li> <li>2. Other members and I want the same thing from this group.</li> <li>3. I can recognize the names most members in this group.</li> <li>4. I feel at home in this group.</li> <li>5. I care about what other group members think of my actions.</li> <li>6. If there is a problem in this group, there are members here who can solve it.</li> <li>7. It is very important to me to be a member of this group.</li> <li>8. I expect to stay in this group for a long time.</li> <li>9. I anticipate how some members will react to certain questions or issues in this group.</li> <li>10. I get a lot out of being in this group.</li> <li>11. I've had questions that</li> </ol>	Group > Forum	(Blanchard, 2008)

	<p>have been answered by this group.</p> <p>12. I've gotten support from this group.</p> <p>13. Some members of this group have friendships with each other.</p> <p>14. I have friends in this group.</p> <p>15. Some members of this group can be counted on to help others.</p> <p>16. I feel obligated to help others in this group.</p> <p>17. I really like this group.</p> <p>18. This group means a lot to me.</p>		
Theory of Planned Behaviour			
Subjective Norms	<p>1. People who are important to me think that I should use IM</p> <p>2. People who influence me think that I should use IM</p>	IM > Forum	(Blanchard, 2008; Lu, Zhou, & Wang, 2009)
Knowledge-sharing attitude	<p>1. Buying things over the Internet is a Bad idea~ Good idea</p> <p>2. Buying thing over the Internet is Foolish idea ~ Wise idea</p> <p>3. Buying things over the Internet is an idea I dislike ~ Like</p> <p>4. Using the Internet to buy things would be Unpleasant ~Pleasant</p>	Buying > sharing idea	(George, 2004)
Knowledge-sharing intention	<p>1. I will post knowledge on this Web site.</p> <p>2. I will happily share my knowledge on this Web site.</p> <p>3. There is high possibility that I would post knowledge on this Web site in the near future (within 6 months). (Aulawi)</p>	Web site > Forum	(Aulawi, Sudirman, Suryadi, & Govindaraju, 2009; Chen, Chen, & Kinshuk, 2009)

	<p>1. I intend to frequently share my ideas with other members in the virtual learning community.</p> <p>2. I will always provide my know-where or know-whom at the request of other members in the virtual learning community. (double barrelled ??)</p> <p>3. I will try to share my expertise from my education or training with other members in an effective way. (double barrelled??)</p> <p>4. I intend to share my resolution of others' problems to earn more course credit. (Chen)</p>		
Knowledge-sharing behaviour	<p>1. I usually spend a lot of time sharing knowledge with other members in the online community.</p> <p>2. I usually active share my knowledge with other members in the online community.</p> <p>3. I usually involve myself in discussions of various topics rather than specific topics.</p> <p>4. I usually respond to others' comment on my messages.</p>	<p>Online community &gt; Forum</p> <p>OR</p> <p>How often do you post on this forum? Never, Occasionally, Weekly, Daily.</p>	(Chen et al., 2009; Chiu et al., 2006)
Perceived Behavioural Control	<p>1. I am capable of buying things over the Internet.</p> <p>2. Buying things over the Internet is entirely within my control.</p> <p>3. I have the resources and the knowledge and the ability to buy things over the Internet.</p>	<p>1. I am capable of sharing my ideas over the forum.</p> <p>2. Sharing ideas over the forum is entirely within my control.</p> <p>3. I have ideas and the knowledge and the ability to share sports-related subject over the forum.</p>	(George, 2004)
Lurker vs. Contributor			
	<p>1) Tourist: who lacks strong social ties to the group, and seldom contributes to the community; 2) Mingler: who</p>	<p>1. I lack strong social ties to this X forum, and seldom contribute to this forum.</p> <p>2. I maintain somewhat strong</p>	(Wang & Fesenmaier, 2004)

	<p>maintains somewhat strong social ties with the group, and sometimes contributes to the community; 3) Devotee: who maintains strong social ties with the group, enthusiastic about community activities and contributes to the community often.; and 4) Insider: who maintains very strong social and personal ties with the group, and very actively contributes to the community.</p>	<p>social ties with this X forum, and sometimes contribute to this forum.</p> <p>3. I maintain strong social ties with this X forum, I am enthusiastic about this online sports community activities and I contribute to the forum often.</p> <p>4. I maintain very strong social and personal ties with this X forum, and very actively contribute to the forum.</p>	
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Information sharing	<p>I use this forum because I enjoy sharing my information with other members.</p> <p>I use this forum because I enjoy helping others by sharing my information.</p> <p>I use this forum because it feels good to help someone else by sharing my information.</p> <p>If I could, I would like to continue using this forum to contribute information.</p> <p>I use this forum because it is useful for my knowledge-sharing.</p>
Information seeking	<p>It provides quick and easy access to large volumes of cycling information.</p> <p>I use this forum because I can learn about things happening in the cycling world.</p> <p>If I could, I would like to continue using this forum to seeking information</p> <p>I ask the form members when I need cycling information.</p>
Technical knowledge-sharing	<p>I use this forum because I want to share cycling strategies.</p> <p>When I use this forum, I often try to explain technical aspects of cycling to members.</p> <p>If I could, I would like to continue using this forum to contribute technical aspect of cycling.</p>
Technical knowledge seeking	<p>I use this forum because I want to know the technical aspects of cycling.</p> <p>I use this forum because I want to know the rules of cycling.</p> <p>I use this forum because I want to know cycling strategies.</p> <p>I ask the forum members to clarity technical aspects of cycling.</p> <p>I use this forum because it is useful for my knowledge seeking.</p>
Economic	<p>I use this forum because I am able to make purchases on the classified section of the forum.</p> <p>When I want to buy cycling item, I used this forum to search for bargain prices.</p> <p>I use this forum because it is great place to sell my needless cycling equipment.</p> <p>This forum is useful when I want to buy cycling equipment.</p>
Escape	<p>I use this forum because I can forget about work.</p> <p>I use this forum because it allows me to enter a non-thinking, relaxing period.</p> <p>One of main reasons I use this forum is that doing so makes me forget about my problem.</p> <p>I use this forum because it takes me away from life's hassles.</p>
Entertainment	<p>I use this forum because it is exciting.</p> <p>I use this forum because it is cool.</p> <p>I enjoy this forum because its entertainment value.</p> <p>I use this forum because it is simply a form of recreation.</p>
Interpersonal communication	<p>I use this forum because it allows me to meet others, which helps me cope with personal problems.</p> <p>I use this forum because I won't be alone.</p> <p>I spend a lot of time interacting with some members in this forum.</p> <p>I have frequent communication with some members in this forum.</p>
Pass time	<p>I use this forum because it gives me something to do to occupy my time.</p> <p>I use this forum because it passes the time away, particularly when I'm bored.</p> <p>One of the main reason I use this forum is to spend my time.</p>



## Appendix B – AUT Ethics Committee Memorandum



# MEMORANDUM

## Auckland University of Technology Ethics Committee (AUTC)

To: Geoff Dickson  
From: Dr Rosemary Godbold and Madeline Banda Executive Secretary, AUTC  
Date: 25 May 2011  
Subject: Ethics Application Number 11/91 Factors affecting knowledge sharing within endurance sport online communities (ESOC): A pilot study.

Dear Geoff

We are pleased to advise that the Auckland University of Technology Ethics Committee (AUTC) approved your ethics application at their meeting on 9 May 2011, subject to the following conditions:

1. Justification and clarification of the assertion in the first sentence of the response to section C.2 of the application;
2. Reconsideration of the amount of time that the questionnaire will take participants to complete and alteration of the Information Sheet to reflect this. AUTC considers that the questionnaire will take at least fifteen minutes to complete;
3. Amendment of the Information Sheet as follows:
  - a. Careful checking of the grammar throughout the document;
  - b. Introduction and identification of the researcher at the beginning of the section titled 'An Invitation';
  - c. Inclusion of a section about how participants were identified and chosen to be invited to participate in the research that includes the information given in the response to section D.4 of the application and also advises that they may not be students being taught by the applicant;
  - d. Alteration of 'will' to 'may' in the first sentence of the section titled 'What are the benefits?';
  - e. Alteration of 'date' to 'data' in the section titled 'How will my privacy...';
4. Inclusion in the Consent Form of a bullet point excluding students of yourself;
5. Careful checking of the grammar in the questionnaire.

We request that you provide the Ethics Coordinator with a written response to the points raised in these conditions at your earliest convenience, indicating either how you have satisfied these points or proposing an alternative approach. AUTC also requires written evidence of any altered documents, such as Information Sheets, surveys etc. Once this response and its supporting written evidence has been received and confirmed as satisfying the Committee's points, you will be notified of the full approval of your ethics application.

When approval has been given subject to conditions, full approval is not effective until all the concerns expressed in the conditions have been met to the satisfaction of the Committee. Data collection may not commence until full approval has been confirmed. Should these conditions not be satisfactorily met within six months, your application may be closed and you will need to submit a new application should you wish to continue with this research project.

When communicating with us about this application, we ask that you use the application number and study title to enable us to provide you with prompt service. Should you have any further enquiries regarding this matter, you are welcome to contact Charles Grinter, Ethics Coordinator, by email at [ethics@aut.ac.nz](mailto:ethics@aut.ac.nz) or by telephone on 921 9999 at extension 8860.

Yours sincerely

Dr Rosemary Godbold and Madeline Banda  
Executive Secretary  
Auckland University of Technology Ethics Committee

Cc: Byung Seok Kang [byung.seok.kang@aut.ac.nz](mailto:byung.seok.kang@aut.ac.nz)



## MEMORANDUM

### Auckland University of Technology Ethics Committee (AUTEC)

To: Geoff Dickson  
From: Dr Rosemary Godbold Executive Secretary, AUTEC  
Date: 23 March 2012  
Subject: Ethics Application Number 11/184 Factors affecting knowledge sharing within endurance-sport online communities (ESOC).

Dear Geoff

Thank you for your request for approval of amendments to your ethics application. I am pleased to advise that I have approved the minor amendment to your ethics application allowing the use of an additional survey. This delegated approval is made in accordance with section 5.3.2 of AUTEC's *Applying for Ethics Approval: Guidelines and Procedures* and is subject to endorsement at AUTEC's meeting on 16 April 2012.

I remind you that as part of the ethics approval process, you are required to submit the following to AUTEC:

- A brief annual progress report using form EA2, which is available online through <http://www.aut.ac.nz/research/research-ethics/ethics>. When necessary this form may also be used to request an extension of the approval at least one month prior to its expiry on 26 August 2014;
- A brief report on the status of the project using form EA3, which is available online through <http://www.aut.ac.nz/research/research-ethics/ethics>. This report is to be submitted either when the approval expires on 26 August 2014 or on completion of the project, whichever comes sooner;

It is a condition of approval that AUTEC is notified of any adverse events or if the research does not commence. AUTEC approval needs to be sought for any alteration to the research, including any alteration of or addition to any documents that are provided to participants. You are reminded that, as applicant, you are responsible for ensuring that research undertaken under this approval occurs within the parameters outlined in the approved application.

Please note that AUTEC grants ethical approval only. If you require management approval from an institution or organisation for your research, then you will need to make the arrangements necessary to obtain this. Also, if your research is undertaken within a jurisdiction outside New Zealand, you will need to make the arrangements necessary to meet the legal and ethical requirements that apply within that jurisdiction.

To enable us to provide you with efficient service, we ask that you use the application number and study title in all written and verbal correspondence with us. Should you have any further enquiries regarding this matter, you are welcome to contact me by email at [ethics@aut.ac.nz](mailto:ethics@aut.ac.nz) or by telephone on 921 9999 at extension 6902. Alternatively you may contact your AUTEC Faculty Representative (a list with contact details may be found in the Ethics Knowledge Base at <http://www.aut.ac.nz/research/research-ethics/ethics>).

On behalf of AUTEC and myself, I wish you success with your research and look forward to reading about it in your reports.

Yours sincerely

Dr Rosemary Godbold  
Executive Secretary  
Auckland University of Technology Ethics Committee

Cc: Byung Seok Kang [byung.seok.kang@aut.ac.nz](mailto:byung.seok.kang@aut.ac.nz)

## Appendix C – ESOC List

Sports (category)	Forum/community	# of members	Traffic ranking in category	Percent of global Internet users who visit particular Web site
Triathlon	Slowtwitch.com	37145	2 <sup>nd</sup>	0.00327
	Beginnertrathlete.com	No info.	1 <sup>st</sup>	0.00323
	Trifuel.com	No info.	4 <sup>th</sup>	0.00145
	Transitions.org.au	5311	No info.	0.00015
Swimming	Swimmingforums.com	126475	13 <sup>th</sup>	0.00010
	*10kswimmer.com	65457	2 <sup>nd</sup>	No info.
	Openwaterswimming.eu	No info.	20 <sup>th</sup>	0.00003
Cycling	Cyclingforums.com	57753	301 <sup>th</sup>	0.00235
	Cycling.net.au	13572	No info.	0.00001
	Velonews.com	34533	2 <sup>nd</sup>	0.00003
	Thehubsa.co.za	24348	No info.	0.00265
	Bikeforums.net	No info.	3 <sup>rd</sup>	0.01110
	Readbikerrview.com	34498	8 <sup>th</sup>	No info.
	cyclingforum.com	No info.	7 <sup>th</sup>	0.00006
Running	Coolrunning.com	776944	1 <sup>st</sup>	0.00515
	Runnersworld.co.uk	45675	No info.	0.00356
	Mapmyrun.com	No info.	7 <sup>th</sup>	0.00770
	Runningtimes.com	55712	3 <sup>rd</sup>	0.00174
	Runningroom.com	59664	4 <sup>th</sup>	0.00095
	Coolrunning.com.au	No info.	9 <sup>th</sup>	0.00097



# Participant Information Sheet

## **An Invitation**

I would like to invite you to take part in this survey to collect information about your opinion on whether each item is easily understood (face validity). Please remember that your involvement in a survey is entirely voluntary, and you may choose not to participate or withdraw from the survey at anytime without adverse consequences. Before you decide to participate it is important for you to understand why the research is being done and what it will involve. Please take the time to read the following information carefully and discuss it with others if you wish. Ask me if there is anything that is not clear or if you would like more information.

## **What is the purpose of this survey?**

The purpose of the survey is to examine and improve the face validity of the initial Motivational Scale – Endurance Sport Online Community (MS-ESOC).

## **What will happen in this survey?**

You will be asked to classify each item into one or more of the constructs provided. In addition you will be asked to offer an opinion on whether each item is easily understood.

## **What are the benefits?**

The result of the survey will improve MS-ESOC. This improved scale will assist online sport community entrepreneurs, those who manage or develop online sport communities, and those who market within them, to understand consumers' motivation of behaviour.

## **What are the discomforts and risks?**

The possibility of any discomforts and risks occurring are minimal. If discomfort occurs then you have the right to decline answering any question or you may choose to withdraw from the survey.

## **How will my privacy be protected?**

The questionnaire is both anonymous and confidential. The data will be stored in a secured location. These files will be destroyed six years from now.

## **What are the costs of participating in this research?**

The only cost involved in participating in this research is that of your time. This time commitment required will be approximately 10 minutes.

**How do I agree to participate in this research?**

If you agree to participate in this research, please complete the questionnaire and return by XX April, 2011.

**Will I receive feedback on the results of this research?**

Yes, you may. Contact the researcher at his email address below, to request feedback after the research is complete. The result provided to you will be in summary form.

**What do I do if I have concerns about this research?**

Any concerns regarding the nature of this project should be notified in the first instance to the Project Supervisor, Dr Geoff Dickson, [Geoff.dickson@aut.ac.nz](mailto:Geoff.dickson@aut.ac.nz), 021-999 ext. 7851.

**Whom do I contact for further information about this research?**

*Researcher contact details:*

Byung Seok Kang  
School of Sport & Recreation  
Auckland University of Technology  
E: [byung.seok.kang@aut.ac.nz](mailto:byung.seok.kang@aut.ac.nz)  
P: 921-999 ext. 7119

*Project supervisor contact details:*

Dr. Geoff Dickson  
Associate Professor  
Faculty of Health and Environmental Sciences  
Auckland University of Technology  
E: [goeff.dickson@aut.ac.nz](mailto:goeff.dickson@aut.ac.nz)  
P: 921-999 ext. 7851

Approved by the Auckland University of Technology Ethics Committee on XXXX 2011. AUTEK Reference number : XX/XX

# Consent Form



**Project title:** Item generation regarding Motivational Scale for Endurance Sport Online Community.

**Project Supervisor:** Dr. Geoff Dickson

**Researcher:** Byung Seok Kang

- I have read and understood the information provided about this research project in the Information Sheet dated XX April 2011.
- I have had an opportunity to ask questions and to have them answered.
- I understand that I may withdraw myself or any information that I have provided for this project at any time prior to data analysis, without being disadvantaged in any way.
- If I withdraw, I understand that all relevant information will be destroyed.
- I confirm that I am over 20 years of age.
- I agree to take part in this research.
- I wish to receive a copy of the report from the research (please tick one):

Yes ☐

No ☐

Participant's signature:.....

Participant's name: .....

Participant's contact details (if appropriate):

### **Part I: Item classification / categorization**

**Directions:** Below are eleven motivations to explain why people utilize online communities.

1. Information seeking
2. Information sharing
3. Technical knowledge seeking
4. Technical knowledge sharing
5. Entertainment
6. Interpersonal communication
7. Escape
8. Pass time
9. Fanship
10. Team support
11. Economic

On the attached sheet, there are 37 items that are associated with at least one of the above motivations. Please assign to each item the number (1-11) or the motivation that you think is appropriate.

There are no right or wrong answers.

ITEMS	Construct
<p>1. It provides quick and easy access to large volumes of sport information.</p> <p>2. I use this online sport community because I am able to obtain a wide range of triathlon information.</p> <p>3. I use this online sport community because I can learn about things happening in the triathlon world.</p> <p>4. I use this online sport community because I can express myself through communication contents (message board, chat, etc.).</p> <p>5. I use this online sport community because I can form my own opinion through communication contents (message board, chat, etc.).</p> <p>6. I use this online sport community because I enjoy interacting with other fans on this online sport community.</p> <p>7. I use this online sport community because I want to know the technical aspects of triathlon.</p> <p>8. I use this online sport community because I want to know rules of triathlon.</p> <p>9. I use this online sport community because I want to know triathlon strategy.</p> <p>10. I use this online sport community because I want to contribute the technical aspects of triathlon.</p> <p>11. I use this online sport community because I want to share rules of triathlon.</p> <p>12. I use this online sport community because I want to share triathlon strategy.</p> <p>13. I use this online sport community because I want to share the technical aspects of triathlon.</p> <p>14. I use this online sport community because I want to contribute rules of triathlon.</p> <p>15. I use this online sport community because I want to contribute triathlon strategy.</p> <p>16. I use this online sport community because it is exciting.</p> <p>17. I use this online sport community because it is cool.</p> <p>18. I use this online sport community because it is amusing.</p> <p>19. I use this online sport community because it shows me how to get along with others.</p> <p>20. I use this online sport community because I won't be alone.</p> <p>21. I use this online sport community because it allows me to meet others, which helps me cope with personal problems.</p>	



- 
- |  |  |
|--|--|
| <p>22. I use this online sport community because I can escape from reality.</p> <p>23. I use this online sport community because it allows me to enter a nonthinking, relaxing period.</p> <p>24. I use this online sport community because I can forget about work.</p> <p>25. I use this online sport community because it gives me something to do to occupy my time.</p> <p>26. I use this online sport community because it passes the time away, particularly when I'm bored.</p> <p>27. I use this online sport community during my free time.</p> <p>28. One of the main reasons I use this online sport community is that I consider myself a fan of triathlon.</p> <p>29. One of the main reasons I use this online sport community is that I am a huge fan of triathlon in general.</p> <p>30. One of the main reasons I use this online sport community is that I consider myself to be a big fan of my favourite triathlete or triathlon team.</p> <p>31. One of the main reasons I use this online sport community is because of a particular team I am interested in following.</p> <p>32. I use this online sport community because I believe it is important to support my favourite team.</p> <p>33. Using the online sport community demonstrates my support for triathlon in general.</p> <p>34. I use this online sport community because I am able to make purchases on the classified section of the online sport community.</p> <p>35. When I want to buy a triathlon item, I used this online sport community to search for bargain prices.</p> <p>36. I use this online sport community because it is great place to buy gift.</p> <p>37. I use this online sport community because it is great place to sell my needless triathlon equipment.</p> |  |
|--|--|
-

## **Part II: Item clarity**

I seek your opinion on the clarity of the wording used in each of the 37 items. Please indicate whether you were able to easily understand felt each of items. If you have a suggestion for how the item could be improved, I would be delighted to receive it.

There are no right or wrong answers.

Item number	Clearly understood	Not clearly understood
1	Ⓣ	Why not? Your suggestion?
2	Ⓣ	Why not? Your suggestion?
3	Ⓣ	Why not? Your suggestion?
4	Ⓣ	Why not? Your suggestion?
5	Ⓣ	Why not? Your suggestion?
6	Ⓣ	Why not? Your suggestion?
7	Ⓣ	Why not? Your suggestion?
8	Ⓣ	Why not? Your suggestion?
9	Ⓣ	Why not? Your suggestion?
10	Ⓣ	Why not? Your suggestion?
11	Ⓣ	Why not? Your suggestion?
12	Ⓣ	Why not? Your suggestion?
13	Ⓣ	Why not? Your suggestion?
14	Ⓣ	Why not? Your suggestion?
15	Ⓣ	Why not? Your suggestion?
16	Ⓣ	Why not? Your suggestion?
17	Ⓣ	Why not? Your suggestion?
18	Ⓣ	Why not? Your suggestion?
19	Ⓣ	Why not? Your suggestion?
20	Ⓣ	Why not? Your suggestion?

21	①	Why not? Your suggestion?
22	①	Why not? Your suggestion?
23	①	Why not? Your suggestion?
24	①	Why not? Your suggestion?
25	①	Why not? Your suggestion?
26	①	Why not? Your suggestion?
27	①	Why not? Your suggestion?
28	①	Why not? Your suggestion?
29	①	Why not? Your suggestion?
30	①	Why not? Your suggestion?
31	①	Why not? Your suggestion?
32	①	Why not? Your suggestion?
33	①	Why not? Your suggestion?
34	①	Why not? Your suggestion?
35	①	Why not? Your suggestion?
36	①	Why not? Your suggestion?
37	①	Why not? Your suggestion?

**Thank you so much!!**



Exit this survey

## Endurance-Sports Online Community: Consumption Pattern

### 1. Participant Information Sheet

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#### An Invitation

My name is Byung Seok Kang, and I am a PhD student in Sports and Recreation at AUT University. I am conducting this study with my supervisors, Dr. Geoff Dickson and Dr. Sean Phelps. We invite you to participate in an online survey investigating endurance-sports online communities. Please remember that your involvement in a survey is entirely voluntary. Please note that withdrawing from the survey is only possible prior to submitting the online survey. This is because once it is submitted; there is no way of identifying your survey responses.

#### What is the purpose of this survey?

The purpose of the survey is to understand how people engage with endurance-sports online communities.

**How was I chosen for this invitation?**

We are recruiting participants from 20 difference endurance- sports online communities. All members of the [insert online community here] community are invited to participate in this survey.

**What will happen in this survey?**

You will be asked to indicate the extent of your agreement with a number of statements describing your engagement with the online forum.

**What are the benefits?**

This study will improve our understanding of the factors that influence how people engage with endurance-sports online communities. This study is also central to my own PhD studies.

**What are the discomforts and risks?**

The possibility of any discomforts and risks occurring are minimal. If discomfort occurs then you have the right to decline answering any question or you may choose to withdraw from the survey. You may decline to answer any question.

**How will my privacy be protected?**

The questionnaire is both anonymous (i.e. we do not know who you are) and confidential (i.e. we will not share the raw data with anybody outside the immediate research team). You have the option of providing your email address for a potential follow-up survey. This information is stored separately from your survey responses. All data will be stored in a secured location. These files will be destroyed ten years from now.

**What are the costs of participating in this research?**

The only cost involved in participating in this research is that of your time. This time commitment required will be approximately 7 minutes.

**What opportunity do I have to consider this invitation?**

The survey will be available for responses for three weeks from when this invitation was offered.

**How do I agree to participate in this research?**

Completing the survey is your agreement to be part of the research.

**Will I receive feedback on the results of this research?**

Yes, my thesis will be accessible online from the AUT library. You are also welcome to contact me directly to request a copy of the completed research. My email is below.

**What do I do if I have concerns about this research?**

Any concerns regarding the nature of this project should be notified in the first instance to the Project Supervisor, Dr Geoff Dickson, [geoff.dickson@aut.ac.nz](mailto:geoff.dickson@aut.ac.nz), 921-9999 ext. 7851.

Concerns regarding the conduct of the research should be notified to the Executive Secretary, AUTECH, Rosemary Godbold, [rgodbold@aut.ac.nz](mailto:rgodbold@aut.ac.nz), 921-9999 ext. 7772.

**Whom do I contact for further information about this research?**

Researcher contact details:

Byung Seok Kang

E: [byung.seok.kang@aut.ac.nz](mailto:byung.seok.kang@aut.ac.nz)

P: 921-9999 ext. 7119

Project supervisor contact details:

Dr. Geoff Dickson

Associate Professor

Faculty of Health and Environmental Sciences

Auckland University of Technology

E: [geoff.dickson@aut.ac.nz](mailto:geoff.dickson@aut.ac.nz)

P:921-9999 ext. 7851

Approved by the Auckland University of Technology Ethics Committee on xx-xx-2011. AUTEK Reference number : 11/xx

By clicking on the 'next' button of the page you are indicating your consent to participate. Each question must be answered in order to answer the following question.

Once again thank you for your support and contribution in the study.

Prev

Next



Exit this survey

**2. The purpose of these questions is to understand your commitment to the forum.**

2 / 4

1. Please indicate the extent to which you agree with each of the following statements.

Strongly Disagree   Disagree   Slightly Disagree   Neutral   Slightly Agree   Agree   Strongly Agree

I am dedicated to being a user of the runnersworld forum.

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

I am determined to remain a user of the runnersworld forum.

☐ ☐ ☐ ☐ ☐ ☐ ☐

It would be hard for me to quit using the runnersworld forum.

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

I would be willing to do almost anything to keep being a member of the runnersworld forum.

☐ ☐ ☐ ☐ ☐ ☐ ☐



Exit this survey

## Endurance-sports Online Communities.

3. The purpose of these questions is to understand your motives for using the forum



1. Please indicate the extent to which you agree with each of the following statements.

	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
I use the runnersworld forum because I am able to obtain a wide range of running information.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It provides quick and easy access to large volumes of running information.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I use the runnersworld forum because I can learn about things happening in the running world.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I use the runnersworld forum because I enjoy sharing my information with other members.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I use the runnersworld forum because I enjoy helping others by sharing my information.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I use the runnersworld forum because it feels good to help someone else by sharing my information.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I use the runnersworld forum because I want to know the technical aspects of running.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I use the runnersworld forum because I want to know rules of running.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I use the runnersworld forum because I want to know running strategies.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I use the runnersworld forum because I want to share rules running.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I use the runnersworld forum because I want to share running strategies.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I use the runnersworld forum because I want to share skills of running.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I use the runnersworld forum because it is exciting.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I use the runnersworld forum because it is cool.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
I use the runnersworld forum because it is amusing.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I use the runnersworld forum because it shows me how to get along with others.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I use the runnersworld forum because it allows me to meet others, which helps me cope with personal problems.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I use the runnersworld forum because I won't be alone.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I use the runnersworld forum because I can escape from reality.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I use the runnersworld forum because I can forget about work.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I use the runnersworld forum because it allows me to enter a non-thinking, relaxing period.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I use the runnersworld forum because it gives me something to do to occupy my time.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I use the runnersworld forum because it passes the time away, particularly when I'm bored.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I use the runnersworld forum during my free time.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
One of the main reasons I use the runnersworld forum is that I consider myself a fan running.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
One of the main reasons I use the runnersworld forum is that I consider myself to be a big fan of a particular runner.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
One of the main reasons I use the runnersworld forum is because I am interested in following my favorite runner.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I use the runnersworld forum because I am able to make purchases on the classified section of the forum.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
When I want to buy a running item, I used the runnersworld forum to search for bargain prices.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I use the runnersworld forum because it is great place to sell my needless running equipment.	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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## Online Sports Community Consumption EFA

### 4. DEMOGRAPHIC INFORMATION

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For the statements below, please respond to each item by checking or writing the number where appropriate.

#### 1. Gender


- ☐ Male
- ☐ Female

**2. Age:**

Prev Done

Thank you for completing the survey.

## Appendix F – Questionnaire for Study 1, 2, and 3.

Exit this survey

Participant Information Sheet

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Approved by the Auckland University of Technology Ethics Committee on 23-March-2012. AUTECH Reference number : 11/184

An Invitation

My name is Byung Seok Kang, and I am a PhD student in Sport and Recreation at AUT University. I am conducting this study with my supervisors, Dr. Geoff Dickson, Dr. Sean Phelps and Dr. Michael Naylor. We invite you to participate in an online survey investigating endurance-sport online communities. Please remember that your involvement in a survey is entirely voluntary. Please note that there is no way to identify participants once responses are submitted, so it is therefore impossible to withdraw from this project after that point.

What is the purpose of this survey?

The purpose of the survey is to understand why people participate in endurance-sport online communities.

How was I chosen for this invitation?

We are recruiting participants from 21 difference endurance- sport online communities. All members of the Slowtwitch forum are invited to participate in this survey.

What will happen in this survey?

You will be asked to indicate the extent of your agreement with a number of statements describing your engagement with the online forum.

What are the benefits?

This study will improve our understanding of why people participate in online forums and discuss endurance sports. This study is also central to my own PhD studies.

What are the discomforts and risks?

The change of discomfort arising as a result of completing this questionnaire is minimal. If discomfort occurs then you have the right to decline answering any question or you may choose to withdraw from the survey. You may decline to answer any question.

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How will my privacy be protected?

The process of completing this questionnaire is both anonymous (i.e. we do not know who you are) and confidential (i.e. we will not share the raw data with anybody outside the immediate research team). You have the option of providing your email address for a potential follow-up survey. This information is stored separately from your survey responses. All data will be stored in a secured location. These files will be destroyed ten years from now.

What are the costs of participating in this research?

The only cost involved in participating in this research is that of your time. This time commitment required will be approximately 15 minutes.

What opportunity do I have to consider this invitation?

The survey will be available for responses for three weeks from when this invitation was offered.

How do I agree to participate in this research?

Completing the survey is your agreement to be part of the research.

Will I receive feedback on the results of this research?

Yes, my thesis will be accessible online from the AUT library. You are also welcome to contact me directly to request a copy of the completed research. My email is below.

What do I do if I have concerns about this research?

Any concerns regarding the nature of this project should be notified in the first instance to the Project Supervisor, Dr Geoff Dickson, [geoff.dickson@aut.ac.nz](mailto:geoff.dickson@aut.ac.nz), 921-9999 ext. 7851. Concerns regarding the conduct of the research should be notified to the Executive Secretary, AUTEK, Rosemary Godbold, [rgodbold@aut.ac.nz](mailto:rgodbold@aut.ac.nz), 921-9999 ext. 7772.

Whom do I contact for further information about this research?

Researcher contact details:

Byung Seok Kang

E: [byung.seok.kang@aut.ac.nz](mailto:byung.seok.kang@aut.ac.nz)

P: 921-9999 ext. 7119

Project supervisor contact details:

Dr. Geoff Dickson

Associate Professor

Faculty of Health and Environmental Sciences

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Associate Professor  
Faculty of Health and Environmental Sciences  
Auckland University of Technology  
E: goeff.dickson@aut.ac.nz  
P:921-9999 ext. 7851

Approved by the Auckland University of Technology Ethics Committee on 23-March-2012. AUTEK Reference number : 11/184

By clicking on the 'next' button of the page you are indicating your consent to participate. All questions on each page must be answered in order to progress to the subsequent page.

Once again thank you for your support and contribution to the study.

Next

## Your Posting Behaviour

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**How often do you post a message(s) on the Slowtwitch forum?**

- ☐ About once per day
- ☐ About Once per week
- ☐ About once a month or less
- ☐ Never

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## Your Commitment to the Forum.

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Please indicate the extent to which you agree with each of the following statements.

	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
I am dedicated to being a user of the Slowtwitch forum.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am determined to remain a user of the Slowtwitch forum.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It would be hard for me to quit using the Slowtwitch forum.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would be willing to do almost anything to keep being a member of the Slowtwitch forum.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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Your Sharing Attitude, Intention and Behaviour, Norm and Perceived Behaviour Control to the Forum.

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Please indicate the extent to which you agree with each of the following statements.

	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
Sharing ideas over the forum is entirely within my control.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I actively share my knowledge with other members in the Slowtwitch forum.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sharing knowledge over the Slowtwitch forum is a wise idea.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I usually spend a lot of time sharing knowledge with other members in the Slowtwitchforum..	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sharing knowledge over the Slowtwitch forum is an idea I like.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am capable of sharing my ideas over the Slowtwitch forum.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I usually respond to others' comments on my messages.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
People who influence me think that I should use the Slowtwitch forum.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have the ability to share sport-related subject over the Slowtwitch forum.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I will post knowledge on the Slowtwitch forum.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Using the Slowtwitch forum to share knowledge would be pleasant.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There is high possibility that I would post knowledge on the Slowtwitch forum in the near future (within 6 months).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
People who are important to me think that I should use the Slowtwitch forum.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I will happily share my knowledge on the Slowtwitch forum.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sharing knowledge over the Slowtwitch forum is a good idea.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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## Your Sense of Belonging with the Forum

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Please indicate the extent to which you agree with each of the following statements.

	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
I feel at home in the Slowtwitch forum.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other members and I want the same thing from the Slowtwitch forum.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can recognize the names (nickname, ID, etc.) of most members in the Slowtwitch forum.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I care about what other members of the Slowtwitch think of my actions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I get a lot out of being in the Slowtwitch forum.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Some members of the Slowtwitch forum can be counted on to help others.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If there is a problem in the Slowtwitch forum, there are members here who can solve it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel obligated to help others in the Slowtwitch forum.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have friends in the Slowtwitch forum.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Some members of the Slowtwitch forum have created friendships with each other.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I've received support from the Slowtwitch forum.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I've had questions that have been answered by the Slowtwitch forum.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I really like the Slowtwitch forum.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I anticipate how some members will react to certain questions or issues in the Slowtwitch forum.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think the Slowtwitchforum is a good place for me to be a member.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is very important to me to be a member of the Slowtwitch forum.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I expect to stay in the Slowtwitch forum for a long time.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The Slowtwitch forum means a lot to me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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Next

Your Motives for Using the Forum.

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Please indicate the extent to which you agree with each of the following statements.

	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
I use this forum because it feels good to help someone else by sharing my information.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I use this forum because it is useful for my information sharing.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I use this forum because I want to share skills of triathlon.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I could, I would like to continue using this forum to contribute information.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I ask the forum members when I need triathlon information.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I use this forum because I want to know triathlon strategies.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I could, I would like to continue using this forum to contribute technical aspect of triathlon.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I use this forum because I want to know the technical aspects of triathlon.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I use this forum because I can learn about things happening in the triathlon world.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I use this forum because I enjoy helping others by sharing my information.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It provides quick and easy access to large volumes of triathlon information.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I use this forum, I often try to explain technical aspects of triathlon to members.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I could, I would like to continue using this forum to seeking information.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I use this forum because it is useful for seeking technical knowledge.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I ask the forum member to clarify technical aspects of triathlon.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I use this forum because I want to share triathlon strategies.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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Your Motives for Using the Forum (Continued).

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Please indicate the extent to which you agree with each of the following statements.

	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
I use this forum because it allows me to meet others, which helps me cope with personal problems.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I use this forum because it is great place to sell my needless triathlon equipment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I use this forum because it passes the time away, particularly when I'm bored.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have frequent communication with some members in this forum.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I use this forum because it gives me something to do to occupy my time.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I use this forum simply as a form of recreation.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I use this forum because it is exciting.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This forum is useful when I want to buy triathlon equipment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
One of main reasons I use this forum is that doing so makes me forget about my problem.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I enjoy this forum because its entertainment value.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I use this forum because it takes me away from life's hassles.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I use this forum because it is cool.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I want to buy a triathlon item, I use this forum to search for bargain prices.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I use this forum because I am able to make purchases on the classified section of the forum.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I spend a lot of time interacting with some members in this forum.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
One of the main reason I use this forum is to spend my time.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I use this forum because I won't be alone.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I use this forum because it allows me to enter a non-thinking, relaxing period.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I use this forum because I can forget about work.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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## Demographic Information

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For the statements below, please respond to each item by checking or writing the number where appropriate.

### Gender

- ☐ Male  
☐ Female

### In what year were you born?

e.g:

1975

### What is the highest level of education you have completed?

- ☐ High school or equivalent  
☐ College  
☐ Bachelor's degree  
☐ Master's degree  
☒ Doctoral degree  
☐ Professional degree (MD, JD, etc.)

Other (please specify)

**How would you classify yourself?**

- ☐ Arab
- ☐ Asian
- ☐ Black
- ☐ Caucasian / White
- ☐ Hispanic
- ☐ Indigenous or Aboriginal
- ☐ Latino
- ☐ Pacific Islander
- ☐ Multiracial
- ☐ Would rather not say

Other (please specify)

**What is your current marital status?**

- ☐ Divorced
- ☐ Living with another
- ☐ Married
- ☐ Separated
- ☐ Single
- ☐ Widowed
- ☐ Would rather not say

**How many years have you been using the Internet?**

Thank you for completing the survey.

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Done

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