

**Mega-sports event participation and Social capital --Mediating
effect of the Social legacy recognition of 2018 PyeongChang
Winter Olympics**

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ABSTRACT

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Researchers who have studied mega-sporting events argue that such events have been purely in the interests of the global and corporate elite, leaving little social impact in the community at large, and they have insisted that such events should pay more attention to creating long-term values for the community. Therefore, the purpose of this study is to establish a research model encompassing participation, social capital, and social legacy of mega- sporting events, and to identify the role that sport event participation plays in developing social capital in host regions' community through the case study of the 2018 PyeongChang Olympic games. A total of 213 structured surveys were administered to local residents in two cities: Gangneung and PyeongChang, where the games were held. The data was statically analyzed by using factor analysis, correlation analysis, ANOVA, and multiple regression analysis in SPSS 19.0.

The analysis results for the research model are as follows. First, multiple regression analyses were conducted to verify the impact of participation timing, participation type and motivation on trust, network, community participation and reciprocal norms, which are sub-components of participation level. the most influential variable on trust and the network was found to be the period of participation, then the participation types, and finally the motivations. The reciprocity norm was found to be significantly influenced by the period of participation and type, in order but participation motivation showed no influence. Second, mediation analysis showed that the period of the participation displayed a partial mediated effect on the trust, the network, and the reciprocity norm, which are the elements of social capital mediated by social legacy recognition. Third, the types of the participation showed a partial mediated effect on the trust, the network, and the reciprocity norm mediated by the social legacy recognition. Last, the motivation of the participation showed a partial mediated effect on the trust, the network mediated by the social legacy recognition, but not with the reciprocity.

Because the research has been carried out within a particular context, there are limitations when generalizing and explaining the relationship between the development of social capital and mega- sports events taking place in other regions. For more concrete theoretical development, longitudinal studies such as before-and-after comparisons are needed to track long-lasting impact, because social capital can be developed and transformed over time. However, the findings of this study can be used as valuable information for future sports mega-sports event organizing/ governing bodies.

Keywords: Olympic games, Mega-sports event, Sports event participation, Social capital, Social Olympic legacy, Community development

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1 INTRODUCTION

1.1 Research background

International sporting events such as the Olympic games and the World Cup are considered representative mega-sports events in terms of their scale and influence, affecting the host city in a wide range of affairs such as economic, physical, touristic, industrial, social, cultural, psychological, and political matters. Thus, many cities bid competitively to host mega-sports events so they benefit from their influence. Large-scale sporting events have been driven primarily by the economic impact that they are expected to produce (Mules & Faulkner, 1996). Similarly, when it comes to the academic field, earlier studies about mega-sports events were mainly propelled by the concerns on the short-term economic impact, such as the event process or the use of facilities after the event is held (Caiazza & Audretsch, 2015; Daniels, Norman, & Henry, 2004; Davies, Coleman, & Ramchandani, 2013).

However, there are arguments that such events have been purely in the interests of the global and corporate elite, and leave little social impact in the community (Andranovich, Burbank, & Heying, 2001; Roche, 2002). These critics insist that events should pay more attention to create long-term values they provide to the community (Andranovich et al., 2001; Fredline & Faulkner, 2000; Glynn, 2008). Additionally, there are similar perspectives that sports events should be viewed as an important medium of civic participation and as a means of inclusion and community revitalization (G Jarvie, 2003).

With need of exploring the relationship between mega-events and their social influence increasing, the International Olympic Committee (IOC) has decided to take the initiative to require the first item of the bid file for hosting Olympics to be “Olympic legacy”. For this item, bidding cities were asked to submit a long-term plan emphasizing positive influence on the host community, to remain as a sustainable Olympic legacy (IOC, 2003). Since then, it has become crucial to evaluate the social impact that can be created within communities through mega- events, and so several researchers have explored the impact of hosting mega--sports events on the community as a sustainable Olympic legacy, in conjunction with the social capital of the hosting area (Misener & Mason, 2006; Prior & Blessi, 2012; Schulenkorf, Thomson, & Schlenker, 2011).

Extensive research has also been carried out within former Olympic host countries, revealing the relationship as part of an Olympic impact study (Girginov & Hills, 2008; O'Brien & Gardiner, 2006; Shipway, 2007).

Conversely, in South Korea, more than a year after the end of the 2018 PyeongChang Olympic Games, a post-event impact study was conducted in connection with infrastructure use and economic impact, but the impact on the event's community was notably unexplored. This research gap has established a critical necessity to conduct such a study in South Korea. The country developed its international recognition for its outstanding performances in various international sports events, as well as for its skillful hosting of numerous mega-sports events since the 1988 Seoul Olympics. However, while success in hosting mega-sports event has contributed to making the country a world sports powerhouse and developing elite sports, the country has so far paid little attention to the fact that sports can serve as a tool for social development at the grassroots level (Ha, Lee, & Ok, 2015). Therefore, this thesis intends to explore the links between the hosting of sporting events and the development of community, based on the case of 2018 PyeongChang Winter Olympic games, the most recent mega-sports event held in South Korea.

1.2 Purpose of the research

This study aims to:

- 1) Establish the framework and classify the concepts of mega-sports events, social capital, and the Olympic legacy of 2018 PyeongChang Winter Olympics to understand community development through mega-sport events;
- 2) Quantitatively evaluate the influences of 2018 PyeongChang Winter Olympics in the host community using the established framework; and
- 3) Present detailed information and its importance to policy designers in order to implement the results in future mega-sports events.

2 THEORETICAL FRAMEWORK

The theoretical framework consists of three parts. First, define the relationship between mega-sports events and community development, as well as the development of Korean elite sports and the background of the 2018 PyeongChang Winter Olympics. Second, investigate the type and role of social capital and its impact on community development, to find the points of application in this study. Third, explore the concept and role of social Olympic legacy and the literature on how this legacy affects community development.

2.1 Mega- sports event

The definitions of mega-sports events held by various scholars will be examined, as well as the development of elite sports in South Korea, the context behind PyeongChang hosting the Winter Olympics in 2018, and an overview of the event. Next, after learning about the impact of mega-sports events on the development of the host's local community, a three-pronged approach is used to understand the concept of community participation that is essential for community development.

2.1.1 Definition of mega-sports event

The definition of mega-sports event varies from scholar to scholar and similar concepts such as mega-events and hall-mark events exist. For Ritchie (1984, 2) hall-mark events mean “major one-time or recurring events of limited duration, developed primarily to enhance the awareness, appeal, and profitability of a tourism destination in the short and/or long term”. Hall (1997) defined it as an event that serves as a major role in economic development and tourism marketing, both at home and abroad, and Gets (2007) defined it as a development and marketing process for sporting events aimed at achieving the interests of the local economy and the community.

Studies on mega events became more frequent in the 1980s when tourism began to be studied in earnest (Thomson, Leopkey, Schlenker, & Schulenkorf, 2010). Mega-sports events are large scale events, such as the Fédération Internationale de Football Association (FIFA) World Cup and the Olympic Games, that take into account

the number of visitors; levels of public financial support; social, economic and cultural factors; and the scale of the infrastructure such as venues (Kang, 2013). In addition, the concept encompassing sport events, such as the Olympics, the FIFA World Cup, and the various cultural events accompanying them has been organized into various concepts by scholars. According to Malfas (2004), a mega event has two main aspects: first, its internal characteristics (i.e. number of participants and spectators, number of individual sessions, and levels of organizational complexity) and second, its external characteristics, which are mainly about its impact on the host city. For most scholars, the concept of mega-sports event is based on the etymological '*event*', which is shown in Table 1.

TABLE 1 Different definitions of mega event

Researcher	Definition
Ritchie (1984)	✓ Included in a hallmark event and held either only once or periodically for a limited period of time
Witt (1988)	✓ Large-scale tourist attractions that attract many tourists with state-level events, such as the Olympics, FIFA World Cup and World Expo
Hall (1997)	✓ An event that targets international tourism markets, such as the Olympics and the FIFA World Cup, and has a significant impact on participants, target markets, political effects, facility structures, and hosting areas
Roche (1994)	✓ A large, international, short-term, cultural event that has a long-lasting impact on the host city

As shown above, the definition of mega-events is largely similar. Based on prior research, this study defines the concept of a sports mega event as a large-scale sporting event that has sufficient elements of the event and has a social, economic and cultural impact on the hosting area.

2.1.2 2018 PyoengChang winter Olympic games

Brief history of sport development in South Korea

The South Korean government's participation in elite sports seemed to be non-existent until 1960, in the aftermath of the Korean War (1950-1953). President Park Chung-hee took power through a coup on May 16, 1961, but his regime lacked legitimacy. As a result, the new government implemented specific strategies designed to boost public support. The government emphasized nationalism and ideological opposition to North Korea and

used sports to emphasize the legitimacy of the regime, emphasizing other Asian countries such as China and Japan. It is safe to say that in Korea, sports focused on elite sports until the 1988 Seoul Olympics, and were used as a tool for political propaganda (Won & Hong, 2015).

The emergence of a civilian government, chosen democratically since the 1990s, appeared to weaken the government's interest in elite sports. Against this political backdrop, the focus of South Korean sports policy shifted from elite sports to public participation. Also, the success of the 1988 Seoul Summer Olympic games increased public interest in sport participation (Won & Hong, 2015). Since then, the country has hosted the 2002 Korea-Japan FIFA World Cup and the 2010 World Athletics Championships in Daegu. In 2018, South Korea was the second Asian country (after Japan) to reach the Grand Slam of mega-sportsing event by hosting 2018 PyeongChang Olympics.

2018 PyeongChang Olympics bidding process

After the two failed bids for the Winter Olympics in 2010 and 2014, the matter of relaunching a bid emerged as a national issue as well as a local matter for the Gangwon Province. As a result, Kim Jin-sun, then governor of Gangwon Province, officially declared his intention to bid again on September 3, 2007, and the Gangwon Provincial Council voted on the bid on June 26, 2008, setting the conditions for applying to the Korean Olympic Committee (KOC) as a local candidate site. PyeongChang made a breakthrough in international bidding through an amnesty with International Olympic Committee (IOC) member Lee Kun-hee on December 29, 2009; the City's greatest weakness was that there was no famous figure to persuade the IOC, compared to other candidate cities. Subsequently, the atmosphere for PyeongChang's bid began to improve as the Korean athletes continued their campaign at the Vancouver Winter Olympics in February 2010.

Based on the concept of the stadium, which had become more compact than in 2010 and 2014, PyeongChang carried out aggressive bidding activities, including setting "New Horizons" as the slogan of the bidding committee and setting up a customized bidding strategy for each IOC member. Along with these efforts, PyeongChang successfully completed its bid for the 2018 Winter Olympics with 63 votes for PyeongChang, 25 votes for Munich, Germany, and 7 votes for Annecy, South Africa,

at the 123rd IOC General Assembly held in Durban, South Africa, on July 6, 2011 (POCOG, 2012).

General information of the 2018 PyeongChang Winter Olympics

The PyeongChang Winter Olympics were held in PyeongChang County, Gangwon Province, South Korea from 9 - 25 February 2018 (Olympic.org, 2019). The opening rounds and matches for certain events were held on Feb. 8, 2018, the eve of the opening ceremony. The 2018 Winter Olympics featured 102 events over 15 disciplines in seven sports, making it the first Winter Olympics to break the 100-mark medal events. The PyeongChang Winter Olympics introduced six new events in addition to existing sports, including men's and women's big air snowboarding, mixed doubles curling, men's and women's mass start speed skating and mixed team alpine skiing.

The vision for the 2018 Olympics was to provide a world of Olympic movement and winter sports New Horizons, a legacy of new growth and new potential that had never been seen before. The Winter Olympics plan was one of the most compact plans in Olympic history, providing a unique stage for the world's best athletes to perform superbly. With access to the fast-growing youth market through PyeongChang's Asia Strategic Posting, the 2018 Winter Olympics exposed a new generation of potential athletes to the power of winter sports (Olympic.org). Most of the outdoor snow events were held in PyeongChang County, except downhill alpine skiing and the Super G event which were held in nearby Jeongseon County. The indoor ice events were held in the nearby city of Gangneung (see Figure 1).



Figure 1. Location of venues at the 2018 PyeongChang Winter Olympics (Olympic.org)

The 2018 PyeongChang Winter Olympics promised to create lasting legacies for the host region and country, as the 1988 Seoul Olympic Games did 30 years before it.

2.1.3 Impact of mega-sports event in community development

Typically, there are two main reasons for the political support of sporting events as part of urban development (Palmer, 2002). The first justification is that local government support brings direct and positive economic benefits to the host community. The second and more abstract reason for supporting sports events is related to civic pride, community identity and attempts to raise the city's global image (Austrian & Rosentraub, 2002). While the academic literature discussing the first rationale for economic compensation for hosting sports events is rich, the social impact of sporting events on the local community has received much less attention than the first argument on economic rewards for hosting sports events. Discussions of sporting events and sporting events dealing with the social impact of professional sports leagues have often argued that events have a negative impact on the community. (Andranovich et al., 2001; Olds, 1998; Sacco & Hannigan, 2006; Whitson & Macintosh, 1996).

Despite the negative comments, others, such as Higham (2009) , suggest that small sports competitions have a positive impact on the host community. In addition, Jarvie (2003) argued that we need to understand more about how sports can be an important form of civic engagement, social inclusion and community revitalization. Ahn (2012) produced a study result that the implementation of mega--sports events creates identity and unique image of the region, which results in residents' attachment to and belonging to the region. It also argued that hosting mega--sports events is the most effective means for the exchange of excavation of cultural resources, which can help ease the cultural needs of local residents and enhance the appeal of the region. Additionally, Kang (1988) discovered that sports events have a positive influence on local residents' love-hate and regional cultural development, thus bringing together members' sense of belonging. As such, the hosting of sporting events is said to affect not only the economic effects within the region but also the sense of solidarity and affection among the participating local members, directly and indirectly, and contribute to the development of local culture.

Given that sports are widespread as a tool used for citizens and economic development, cities will continue to use events for pro-development agendas, and therefore a greater understanding of the positive and negative consequences of social capital built through these events will be important to policy makers, sports managers, recreational experts and community developers in promoting social change (Grant Jarvie, 2003; Misner, L. & Mason, D., 2006).

2.1.4 Mega- sports event and civic participation

In order to ensure the success of local mega-events, participation of residents is essential. But so far, residents' participation has often been seen as passive, such as attending the event. Active participation has been recognized only for professionals and local officials. However, residents can determine the direction of regional development and local changes. In addition, residents are best aware of resources and their utilization in the local community.

Verba (1967) stated that the meaning of residents' participation is that ordinary people who are not authorized to participate in the policy-making process directly or indirectly participate in it with the intention of influencing those who exercise public power. Macintosh & Smith (2002) defined it as the process in which the public members of a community exercise power over decisions related to problems in that community. Resident participation can perform positive functions by taking steps in an efficient and desirable way in which policies are implemented. Furthermore, any adverse effects of resident participation can be reversed. Therefore, the positive net function should be kept to its fullest extent while also reducing the negative adverse function as much as possible. Civic participation refers to the local residents' autonomous participation in administration with a sense of identity. Arnstein (1969) divided the level of residents' participation into three phases: "*non-participation*", "*degrees of participation*" and "*degree of citizen power*", depending on the extent of their influence on policy decisions.

The first phase, "*non-participation*", is aimed at mobilizing, persuading, enlightening and incarcerating residents, rather than engaging them in policymaking and executive processes. In other words, "*non-participation*" is a step that does not involve residents. The second stage is the "*degrees of participation*," which focuses on reflecting residents' wishes on a certain single stage of administration, which provides institutional

guarantees for deliberation meetings, dialogue with residents, and negotiations with residents' activist groups. The third step is the “*degree of citizen power*”, which not only involves residents in the decision-making process, but also transfers to residents the authority to manage and operate after decisions. In other words, administrative agencies transfer a certain range of authority to the residents so they can exercise full autonomous management within the scope of their activities.

Meanwhile, the level of residents' participation is viewed as the period of participation, the motivation for participation and the type of participation. Therefore, it is not just about participating in the event, but also about intervening in the event as a whole. In addition, the level of participation increases when there is a greater share of public interest than private interest with regards to the motivation for participation, and when the type of participation is more active. In this study, the level of resident participation in the “*degrees of participation*” that focuses on reflecting residents' opinions at a certain stage of administration was set as an independent variable.

Period of participation

The period of participation can be measured by investigating how intensely a local resident participated in the event. The intensity of the period of participation is not defined by how long the participant was involved, but by how appropriate their participation was to the circumstances or needs of the time. In this study, the period of participation is divided into three categories: low, medium, and high.

First, the ‘low’ participation was from the time the 2018 PyeongChang Winter Olympics was designated as a host city to the just before the Olympics, i.e., from 2011 to the 9th of February 2018. Second, ‘medium’ participating in the hosting period only refers to about 20 days from Feb. 9 to Feb. 29, 2018. Lastly, ‘high’ participation was from the 2018 PyeongChang Winter Olympics bid to the event hosting period. This period of participation level was the highest as there was sufficient time for consultation and active participation by residents certain stages of administration.

Types of participation

Zimmerman (1986) classified residents' participation as passive participation and active participation based on participants' spontaneity. Passive participation refers to taking a

passive action or attitude, such as getting information from bureaucrats or public officials, and having a supportive stance on public officials and policies. Residents received information about tickets for local mega-events, event programs, concert exhibitions, or attendance of academic conferences, forums and seminars. On the other hand, active participation refers to resident activities, including a general meeting, public hearings, a civic advisory committee, a civic committee, a referendum, a resident initiative, and volunteer work (Oh, 1988).

Mega event participation is a social action that takes place in relation to the mega event, directly participating in all stages from the planning to the execution of the event; from supporting activities such as talent donation and volunteering to participating or viewing simple event programs, is a type of participation in the mega-sports event. Therefore, in this study, depending on the strength of the individual's willingness to participate in the mega event, the weak intensity of the 2018 PyeongChang Olympics, such as 'indirect competition viewing through TV or Internet' and 'participation in related event programs', was considered passive and active. In addition, participation such as 'donation of sponsorship' and 'resource service' and 'funeral donation' corresponding to the strength of the individual's willingness to participate were considered active participation and conducted.

Motivation of participation

Motivation is a drive that forces an individual to work in a certain way. It is the energy that pushes us to work hard to accomplish goals, even if the conditions are not going our way. In this context, the motivation for participation is an internal factor that stimulates, directs, and integrates human behavior, a set of needs and desires that leads people to participate in mega events, and gives them the opportunity to understand, explain and predict human behavior (Park & Lee, 2011). Cho & Kang (2006) state that in the past, if the participation of residents was passive, active participation is now taking place, and in the past, it is also changing from the personality of private interests to the personality of the public interest. As such, the government is presenting a form of participation by residents in pursuit of private interests, pursuit of public interest, actively and passively.

The internal factors that lead to the participation in the mega events being in the public interest and seen as a benefit to the community and society as a whole are defined as public interest motivations. In contrast, the motivation of the individual

interests are considered personal motives. Therefore, residents' participation can be distinguished as being private motivations, such as 'for the successful hosting of the PyeongChang Olympics', 'for the development of the local community' and 'for the benefit of the community' or private motivations, such as 'to follow sport', 'to spend valuable spare time' and 'to make a new network with new people'.

2.2 Social capital

The definition of social capital held by various scholars is explored, and then its role in community development is discussed.

2.2.1 Definition of social capital

Social capital is typically an intangible asset that accumulates in different levels of relationships. Social capital is also recognized as a potential resource that can affect the various activities of the individual or group involved. Social capital exists not only in the relationships between individuals but also in the organizations or groups to which individuals belong, and is closely related to society, local government, and the state. Many researchers have so far expressed social capital by defining the components of social capital and measuring the concepts corresponding to the components (Bourdieu, 1986; Coleman, 1988; Lin, 2017; Putnam, 1993)

For Bourdieu (1986), social capital is a set or combination of real and potential resources acquired through a continuous network, mutual knowledge, or mutual recognition through institutionalized relationships, and is defined as resources that enable access to collective goods. Bourdieu (1986) explained that, using the concept of social capital, a network that is systemically stratified in a capitalist society reproduces inequality among classes in society. Bourdieu added that it seems just as social capital exists between the elite, there are special networks of locality, and interaction is taking place between these networks.

Thus, although it may seem that a particular group has representative social capital, the form of relationships between individuals and groups is diverse, and individuals try to acquire these resources through participation in various groups. Therefore, social capital is a resource that is linked to the sense of belonging to a group and to the social network of that group. Bourdieu (1986) further argues that the size of

social capital was the same as 'the size of economic, cultural and symbolic capital that can be effectively mobilized through the social network of individuals'.

Meanwhile, Coleman (1990) defined social capital by its function. Social capital is not an independent entity, but it is said that all other objects consist of social and structural aspects. A relationship structure exists between individuals, enabling individual's behaviors within that structure. In other words, social capital is not for a property possessed by an individual, but rather the ability to mobilize resources held by others through the social relationships in which the individual participates, formed on the basis of trust between individuals (Kim, 2004).

According to Putnam (1993), social capital is defined by elements of social organization such as norms, networks and trust that improve the efficiency of society by promoting cooperative behavior. Putnam states that voluntary cooperation is much easier in areas where social capital is transferred in the form of rules such as networks, civic engagement and mutual assistance, and thus the performance of local governments depends on the differences in social capital accumulated in the region. The study shows that trust-based social networks can be based on mutual benefits among members and can create social cohesion.

Fukuyama (1999), on the other hand, argued that social capital comes when trust is established in a whole society or a part of it. In this case, trust is defined as the expectation that members within a community will act regularly, directly and cooperatively on the basis of universal norms. This trust can be established not only in the smallest and most basic social groups, but also in bigger social units at a national level. Social capital is different from other forms of human capital in that it is usually created and transferred through religious, traditional, and historical customs and literary systems. Based on this definition, the reason why economic differences occur between countries with similar environments is due to a lack of the social capital, in other words, trust. Although not all economic gaps can be described as trust, it is widely believed that there is a relationship between social capital and trust (Misener & Mason, 2006; R. Putnam, 2000; Shah, Kwak, & Holbert, 2001).

Lin maintains that the idea behind social capital is simply that investing in social relations results in expected benefits (1999). In this way, the concept of social capital has been defined in a multitude of ways by several researchers. This study defines social capital as 'the power of the community to promote social cooperation with social resources such as trust, participation, reciprocal norms and networks formed between

people'. Each scholar proposed different components of social capital, but generally included trust, community involvement, reciprocal norms and networks. Trust exists in relationships among members of a society and is created through exchange and acts as a principle of network movement. Meanwhile, reciprocal norms provide a basis for participation in cooperation (Fukuyama, 1999; Putnam, 1993). After all, relationships among social capital components makes the social capital.

In this context, Bourdieu (1986) emphasized that the essential element of social capital formation is relationships, which are socially-institutionalized and warranted by the expectations of groups such as family, schools, classes and political parties. Therefore, on the basis of the argument that there is an important connection between trust and reciprocal norms and that, the existence of reciprocal norms is the basis for the formation and accumulation of trust (Fukuyama, 1999). In this study, the 2018 PyeongChang Olympics will be reviewed with a focus on trust, networks and reciprocal norms.

2.2.2 Role of social capital and community development

Physical capital and human capital have been investigated extensively in the literature regarding urban regeneration and tourism development, while the role played by social capital has been studied to a limited extent (Misner & Mason, 2006). Physical capital refers to equipment, real estate and physical infrastructure acquired to maximize profits(Lin, 1999). For example, literature dealing with issues related to the construction of a multimillion-dollar sports stadium is widely available as a starting point for civic and tourism development. Human capital refers to the skills, abilities and training of individuals involved in tourism and regeneration (Gibbs & Coleman, 1990). Examples in the literature have been related to knowledge for the organization and management of research and events related to the major volunteers involved. Because physical and human capital are a relatively tangible concept, they have been widely studied on their importance in urban planning and economic development.

Social capital, on the other hand, is defined as the relationship of reciprocal benefits inherent in the social network that enables action, and so is presented as a less visible concept that has not attracted the same amount of academic attention (Gibbs & Coleman, 1990). Granovetter (1973) believes that the economics of the new system, which tends to

guide most of the research on capital accumulation, often fails to recognize the importance of personal interaction and social relationships that generate trust, set expectations, and make norms. The value of social capital centers around the fact that it identifies certain important aspects of the community social structure and the importance of community social organization. The concept is neither new nor revolutionary, but what it does is combine several aspects of social theory, such as social structure, institutional and non-institutional relationships, trust, financing, and community networking, into one social behavioral theory (Gibbs & Coleman, 1990).

The premise behind the concept of social capital is relatively straightforward: investments in social relationships have expected returns in the market (Bourdieu, 1986; Coleman, 1988; Gibbs & Coleman, 1990; Lin, 1999; R. Putnam, 2000). So far, there has been some empirical evidence suggesting that social capital has causal implications for the rate of economic growth, lower crime rates, improved population health, increased government efficiency, and reduced corruption (Halpern, 1999). The fundamental characteristics of Coleman's view of social capital (1988; 1990) lies in the sense of collective responsibility arising from this broad, underlying participation in community initiatives.

Strong community-level social capital helps establish a civil infrastructure that supports formal and informal bottom-up decisions and overall public participation (Misener & Mason, 2006). Putnam (2000) argued that in recent years the opportunity to build community networks and trust among community members has been limited. Community construction is heavily dependent on social capital to revitalize the community and provide opportunities for both citizens and non-citizens to participate in these efforts. Coleman's theory of social capital (1990) focuses on the notion that a strong and healthy community network is essential for growth and prosperity.

Since Coleman's theory relates to events in the city, the fundamental importance lies in the collective sense of responsibility generated by the public's participation in community initiatives. Productive social capital creates understanding, compassion, and reciprocal and comprehensive community concepts (Wilson, 1997). Therefore, it is not only the elite, but also the collective effort by community members to engage in problem-solving when social capital is highly developed (Misener & Mason, 2006).

2.3 Social Olympic legacy

As the importance of Olympic legacies has recently been highlighted, there have been discussions among many sports event officials and researchers about what legacy the event leaves after it has ended. This study also defines the type, concept, and role of the Olympic legacy with local community development.

2.3.1 Concept of Olympic legacy

Legacy is interpreted as "heritage" in the English-American concept (Nuryanti, 1996). Johnson and Thomas (1995) interpreted legacy as something "inherited" from one generation in the past to the next. Legacy is a term commonly used in our daily lives. Recently, the debate over the outcome of hosting sport events has highlighted the concept of legacy, along with a similarly defined set of concepts, including 'effects', 'results' and 'influences'. Legacy has a similar focus to these other terms. It measures the results if possible, but varies depending on the type of results analyzed and the time interval considered.

Several scholars have attempted to improve the analytical value of the term by providing a classification that accurately identifies the important sub-genres of legacy events. Mules and Faulkner (1996) see a legacy as a long-term economic and social outcome that appeared both directly and indirectly as a result of an event. Cashman (2005), for example, categorized six legacies: sports; economics; infrastructure; information and education; public life; politics and culture; and symbols, memories and history. Mangram (2008) and Roche (2000) defined it as tangible and intangible effects that would remain for a long time after an event. In addition, Gratton and Preuss (2008) described a legacy using a three-dimensional cube model (see Figure 2), which consists of three dimensions: positive and negative, planned and unplanned, and tangible and intangible. They insisted that legacies should be considered from a long-term perspective, and that previous studies have only focused on narrow and short-term legacies.

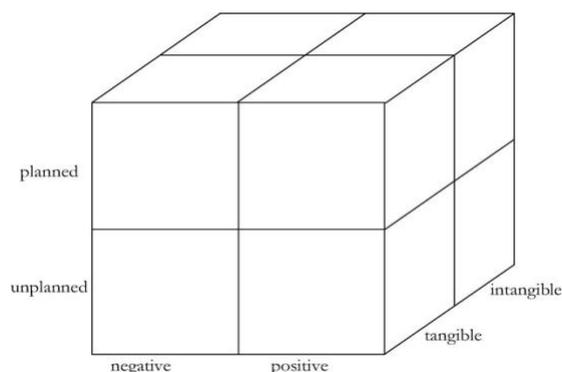


Figure 2. Legacy cube (Gratton & Preuss, 2008)

Gratton and Preuss (2008) argue that a legacy also includes a wider range of phenomena than those associated with alternative terms. At the center of classifying this phenomenon is the distinction between "hard" and "soft" heritage. While the former involves results that can be measured directly (e.g., provision of event-related facilities and construction of social overhead capital), 'intangible' heritage is not generally directly measurable. For example, a continued increase in tourists over time can be considered a tangible legacy, while the improved image of attractive tourist destinations is an intangible legacy (Preuss, 2007). Tangible legacy heritage consists of sports facilities, infrastructure, urban and economic regeneration, jobs, promotion of sustainability, barrier-free environment and cultural tourism. Intangible heritage may include promoting core values such as community spirit, sports participation, culture of volunteerism, internationalism, inclusiveness, education and understanding. Although there are many concepts and typologies of sport event legacies among scholars, the IOC defined it the legacy related to the Olympics as: "Olympic legacy is the result of a vision. It encompasses all the tangible and intangible long-term benefits initiated or accelerated by the hosting of the Olympic Games/sport event for people, cities/territories and the Olympic Movement" (IOC, 2017). The types of Olympic legacy defined by IOC are listed in Table 2.

TABLE 2 Types of Olympic legacy (IOC, 2017)

TYPES OF OLYMPIC LEGACY	DEFINITION
Sport legacy	<ul style="list-style-type: none"> ✓ It refers to a sustainable sports leisure that promotes and develops sports not only in the host city, but also in the host country through the hosting of the Olympics.
Social legacy	<ul style="list-style-type: none"> ✓ It also refers to the use of sports facilities built to host the Olympics, the promotion of interest in sports, the spread of local sports clubs, and the promotion of outstanding athletes. ✓ The promotion of the host city, changes in the behavior and attitudes of local people, and continuing provision of social, cultural and political legacy. ✓ Through the Olympics, the spirit of respect, human dignity, mutual understanding, solidarity, and fair play can be widely publicized, and the core values of the Olympics such as friendship and respect flow into society as a whole.
Environmental legacy	<ul style="list-style-type: none"> ✓ In close cooperation with public organizations, leaving sustainable programs and environmental legacies through the hosting of the event, the Olympics provides the optimal environment for athletes who participate in the event in the short term, while providing continuous benefits to host cities and local residents in the long run. It also includes the creation of green spaces for communities in urban reconstruction, and the use of energy efficient resources
City legacy	<ul style="list-style-type: none"> ✓ The city will be rebuilt by hosting the Olympics in under-developed areas of a city, which add vitality to the city by creating a green space for the community.
Economical legacy	<ul style="list-style-type: none"> ✓ It refers to economic activities through the hosting of the Olympic Games, the overall improvement of the country's total output, the overall urban aesthetic, the creation of new jobs, the increase in the number of tourists and the continued hosting of international sport events in the future.

According to Donnelly (2011), the growing emphasis on legacy is not excessive, especially given that neo-liberalism and general attacks on government spending have become a dominant political ideology in North America and elsewhere. The International

Olympic Committee (IOC), well-aware of these changes in the economic environment, launched the Olympic Game Impact (OGI) program in 2003. The reports are required at the time when a city's official Olympic candidacy is announced by its National Olympic Committee during the preparation phase, one year after the Games have ended, and three years after the end. The OGI's primary goal, consisting of four reports prepared by the Games Organizing Committee is to allow the IOC to measure, analyze and promote the impact on specific host cities, regions and countries based on 126 environmental, social and cultural, and economic indicators (VANOC 2007).

2.3.2 Connection between social Olympic legacy and community development

One of the most important areas of Olympic legacy is the social legacy. At the 2002 Legacy Conference, IOC President Jacques Rogge called for the Olympic Games to create a sustainable legacy that would benefit the host city and the community of the host country in the long term. Events can add value in terms of taking economic benefits while promoting community engagement, improving community creativity, and promoting community welfare. The Olympics are an opportunity to build up civic participation, community participation, empowerment, and social capital within the community. Therefore, there is a need to develop skills to understand the impact of sporting events and measure their social impact, which can improve, in turn, event management. From the research perspective, it is still important to understand the attitude of the host community towards such major sporting events. Recognizing and understanding the host community's association with major events, such as the Olympics, has the practical function of meeting the requirements of event organizers by residents; regional, county, and local tourism committees; sports governing bodies; local government offices; and other stakeholders.

The sustainable legacy of the 2018 Olympics proposed by the central government at the planning stage was that the construction and maintenance of major sporting facilities can serve as a catalyst for the larger purpose of promoting sports and physical activities among local communities, potentially having a long-term impact in the health of the population. However, by the end of the first year after the 2018 South Korean Olympics, no research investigating whether the sports stadia and arenas are in fact encouraging sports in the local communities has been conducted. The PyeongChang 2018 Olympic Games still have the opportunity to provide a legacy that drives change, but only if these

changes are included in the regional policies and programs whose profits flow into the needs of the host community in the long-term. It is important to consider that some future mega-sports events in South Korea may lose their community support base if the social impact related to the 2018 Olympics is not fully investigated. Therefore, this study explores the social legacy left by the 2018 Olympics. The study investigates the social capital of the community in the host region and defines it as a sustainable legacy of the Olympic games.

3 IMPLEMENTATION OF THE STUDY

3.1 Research hypothesis and questions

This study aims to quantitatively analyze how participation in the mega- sport event of 2018 PyeongChang Olympics affected the formation of social capital. How it relates to the recognition of local residents' social legacy, and how social legacy perceptions of local residents through participation in the Olympics relate to social capital formation, such as trust, networks, and reciprocal norms in the region. The following hypotheses were established.

Research Hypotheses	
H1	The higher the level of participation in the PyeongChang Winter Olympics, the stronger the degree of social capital.
H2	The higher the level of participation in the PyeongChang Winter Olympics, the stronger the degree of social capital through the recognition of social Olympic legacy.

Based on these assumptions, a research model to analyze the impact of local mega-sports event on the formation of social capital was established (Fig. 3).

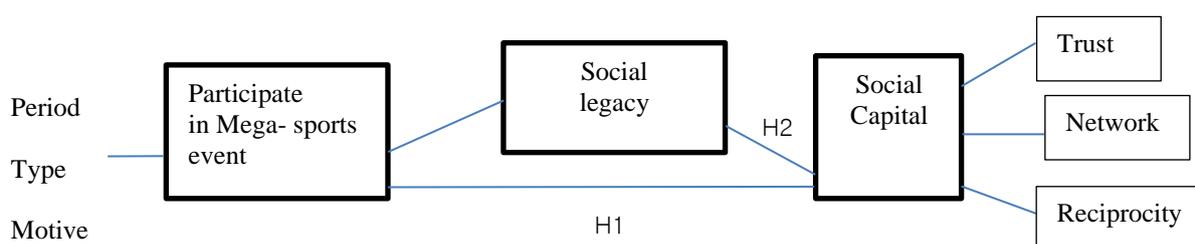


Figure 3. Conceptual model of the research

3.2 Study population and sample selection

In this study, structured questionnaires were given to residents who dwell in the host regions of 2018 PyeongChang Olympic games. The host region of PyeongChang

Olympic is divided into two parts: the City of Gangneung (coast cluster with indoor sport venues), and the County of PyeongChang (mountain cluster with outdoor sport venues). The population of Gangneung is 215,914; and of PyeongChang is 40,264 as of 2017 (Korea National Statistical Office, 2017). Both the Cities are located in the smallest province of South Korea, Gangwon. The 213 participants in this study were residents in their 20s and older who lived in Gangneung and PyeongChang at the time of the 2018 PyeongChang Winter Olympics.

3.3 Data collection procedure

Data were collected in two ways: an on-site survey and an online survey from 8 April 2019 – 25 April 2019. For the on-site surveys, two students who lived in Gangneung and volunteered at the 2018 PyeongChang Olympics were recruited for survey distribution and collection. These students were instructed to go to places where many city residents gather such as city halls, subway stations, and restaurants, and to ask people to voluntarily participate in the survey. The students explained the purpose of the study and answered any questions the respondents had while they were filling out the questionnaires. A total of 200 copies of survey were distributed and 165 (82.5 %) were returned in total. Meanwhile, an online questionnaire was distributed to residents of Gangneung and PyeongChang as a hyperlink for easy access, resulting in 117 online responses. Out of 282 surveys, 69 surveys were excluded due to missing data, resulting in 213 surveys used for analysis.

In on-site field situations as used in this study, probability sampling is difficult to achieve. Consequently, the convenient sampling method was used. One of the major weaknesses associated with convenient sampling is selection bias, which was managed by instructing the surveyors to seek an equal proportion of male and female respondents in various age groups.

3.4 Operational definition of variables and scales

1) Independent variables: participate in mega-sports event

In this study, mega- sport event is defined as a 'large-scale sporting event with efficient elements of events and with multiple impacts on society, the economy, and the host

region'. The mega- sport event is not only an event hosted by the state and administrative body, but also an event in an area where local residents play a central role through active participation. Thus, participation in sports mega- events is defined as 'an act of participating in the entire process of planning and executing mega- events'. The concept of 'participation' of residents is operationalized by considering the level of participation of residents.

(1) Period of participation

The period of participation is defined, not as a matter of the duration of the participation period, but as how appropriate it is to the circumstances or needs of the time period (Cho, 2015).

Participation during the entire period (from 2011 when PyeongChang was named the Olympics host, during the preparations for the games (5 August 2011 – 25 February 2018) and during the Olympic games), is set to be most intense, and hence given a 'high' score. On the other hand, participation in only the preparation stage (from 5 August 2011 to 9 February 2018, in other words, before the start of the event), is considered to be a lower period of participation; thus, this period of participation was labeled 'low'. Participation during the Olympic Games period for 17 days (9 February 2018 - 25 February 2018) period is considered 'intermediate' level.

(2) Type of participation

Participation in mega--sports events is a social action that takes place in relation to mega--sports events, from supporting activities such as talent donation or volunteering to participating in or watching competition programs. All forms of participation are called participation types of mega--sports events. A certain way or form in which an individual moves or works with a will is defined as a way of behaving. In this way of doing things, active is defined as an 'attitude to act on your own initiative or that kind of mindset and active' and passive is the opposite (Cho, 2015).

Therefore, in this study, weak intensity such as 'Watching Olympic Games via TV or Internet' and 'Participating in Olympic Related Programs' were considered passive participation types and the participation level was set to 'low' according to the strength of the individual's willingness to participate in mega-sports events. 'Watching Olympic

Games on the Venue' and 'Participating in proactivity' were judged as a passive and active intermediate step and the participation level was set to 'intermediate'. Finally, participation such as 'Donation for Olympic-related Fund', 'Volunteering' and 'Talent Donation', which corresponds to a strong will of an individual, were regarded as active participation and set to 'High'.

(3) Motive for participation

Motive for participation is also an important measurement variable that reflects the level of participation. Motivation is defined as 'an internal state that directs an individual to achieve the goals that exist in the external environment by activating the momentum or physical energy that causes the individual's participation behavior' (Lee & Lee, 2006). This motivation is an internal factor that stimulates, directs, and integrates human behavior and is a collection of needs and desires that make humans participate in mega-sports events. From a research perspective, motivation creates opportunities to understand, explain, and predict human behavior (Park, 2012). Humans participate in events with a variety of motivations, and this motivation is a driving force for all actions, so it is considered a very important concept in the process of understanding and choosing participation (Park, 2012).

In this study, the internal factors that contribute to the interests of members of society and society as a whole—that is, the desire for the public good, resulting in the participation of mega-events—are designated the 'public service motor'. Conversely, incentives by personal interests are designated 'personal motor'. Therefore, public interest incentives for the benefit of society as a whole and community were set to 'high' such as 'To support hosting fully Olympic Games' and 'To dedicate to community development.' On the other hand, private motivations for personal interests such as 'To follow sports', 'To send variable spare time', 'To make a new network with new people' were set to 'low.'

2) Mediating variable: Social legacy

The questionnaire items related to social Olympic legacy factors were prepared based on studies by the IOC (2017), the Korea Institute of Sports Science (2016). Items from the questionnaire used in studies by Soyoung (2016) and Kyungyeon (2018) were also modified for the purpose of this study. The Social Olympic Legacy was written in six

questions, with the Local Community Spirit, Sense of Pride, Possible Image of City, Well-being and stability as sub-variables. Each question was measured using a 5-point Likert scale of strongly agree (5) to strongly disagree (1). Therefore, the higher the score, the higher the social Olympic legacy of the PyeongChang Winter Olympics.

3) Dependent variable: Social capital

This study defines social capital as 'the power of the community to promote social cooperation with social resources such as trust, network, participation, and reciprocal norms formed between people'(Misner & Mason, 2006) . Therefore, this study measures 'trust' in six different questions about trust in neighbors and trust in local government officials. 'Network' is measured in six different questions about exchanges with neighbors, exchanges of private gatherings, and exchanges of regional gatherings. And finally, 'reciprocal norms' is measured in six different questions about donations, such as money and time, resolving conflicts with others, and following the public order. Each question was measured using a 5-point Likert scale of strongly agree (5) to strongly disagree (1).

4) Control variables: Demographic character

To identify the demographic characteristics of residents, this study asked eight questions about gender, age, final education, work areas, jobs, monthly income, cities of residence and length of residence. Gender and education levels and areas of work were divided into nominal scales, and monthly average income was categorized and used as an open scale. The occupation, age and length of residence were asked by open question.

TABLE 3 Research questionnaire

Variables	Items	Research questions	Sources
Demographic character		Gender, Age, Education, Occupation, Income, City of residence, Period of living (in the city)	
Level of participation	Period of participation Type of participation Motive of participation	Period of participation in 2018 PyeongChang Olympics Watching Olympic games on the venue Watching Olympic games via TV or Internet Participating in Olympic related programs Participating in promotional activity Donation / Volunteering/ Talent donation To support hosting successful Olympic games. To dedicate to community development To follow sports To spend valuable spare time To dedicate my talent To make a new network with new people	
Social Olympic legacy	Local community spirit Sense of pride Possible image of city Well-being and stability	1. I feel I am a member in my local community through 2018 PyeongChang Olympics 2. I feel more attachment and pride than before towards my local community through 2018 PyeongChang Winter Olympics 3. I have a better image of the city where I live through the 2018 PyeongChang Olympics. 4. I think 2018 PyeongChang Winter Olympics offered local residences chances to have more well-being 5. I think 2018 PyeongChang Winter Olympics contributed to local residences participating more in physical activity 6. The 2018 PyeongChang Winter Olympics offered sustainable positive impacts in my local community in general	
Social capital	Trust Network Reciprocity	1-6 I trust (neighbors/ coworkers/ public officials/ politicians/ village office/ civic organization in my area) 1. I share important local information with neighbors 2. I often correspond and talk with neighbors 3. I often join a personal gathering 4. I often join a local meeting 5. I often connect to websites of government agencies in my area 6. I have a neighbor who I can ask for help in an emergency situation 1. I have a mind to donate my time, money or ability to others regardless of proper profit for me 2. I help unprivileged neighbors as well as induce others to help them 3. I recently get help from others in my area 4. In a conflict with others, I try to resolve it smoothly 5. I always try to understand other people 6. I try to comply with public order	
Total		36	

3.5 Reliability and Validity

3.5.1 Reliability of the measurement

The independent variables used in this study related to the level of participation. The dependent variables were trust, network, and reciprocal norms. Tests were conducted to assess the validity of the research results by checking how reasonable the questions in the questionnaire are for each parameter concept and eliminating questions that do not meet them.

TABLE 4 Validity test

Factor	Reciprocity	Network	Trust	Communality
Trust in community				
Trust fellow workers	0.557	0.059	0.373	0.454
Trust neighbors	0.519	0.207	0.408	0.479
Trust public officials	0.198	0.062	0.853	0.770
Trust municipality and village office	0.202	0.075	0.859	0.784
Trust politicians	-0.092	0.297	0.748	0.656
Trust civic organization	0.129	0.168	0.807	0.696
Network in community				
Share information with neighbors	0.436	0.584	0.264	0.601
Network with neighbors	0.355	0.715	0.141	0.657
Join private meeting	0.341	0.590	0.087	0.472
Participate in local volunteering	0.043	0.809	0.108	0.668
Connect to municipality website	-0.160	0.610	0.233	0.452
Have neighbors who help each other	0.390	0.625	0.036	0.543
Reciprocity in community				
Willing to donate talents	0.588	0.166	0.067	0.378
Help unprivileged neighbors and induce others to do it	0.542	0.464	0.176	0.540
Help other recently	0.323	0.459	0.054	0.318
Get help from others recently	0.785	0.166	0.034	0.645
Willing to solve conflict smoothly	0.736	0.129	-0.020	0.559
Try to understand others who have different opinion	0.565	0.132	0.124	0.352
Eigenvalue	6.270	2.208	1.547	
Variance (%)	34.831	12.266	8.597	55.693
Cumulative variance (%)	34.831	47.097	55.693	

Table 4 shows the result of a validity test for social capital formation factors. A total of 55.7 % of the information was extracted by the measurement variables. A total of three

factors were extracted and only variables with a factor load of 0.5 or higher were used for the analysis. Therefore, the third question in the reciprocal norm and the first and second questions in the confidence were deleted due to low factor loading and then the analysis was carried out.

TABLE 5 KMO and Bartlett's test

Kaiser-Meyer-Olkin Measure of Sampling		0.857
Bartlett's test of Sphericity	Approx. Chi-square	1651.276
	df	153
	Sig.	0.000

The Bartlette's Test in Table 5 indicates the strong relationship among variables. It also checked the correlation matrices against a null hypothesis. The measure is 0.857 in the Kaiser-Meyer-Olkin test indicated that the variables for the factor analysis were well selected. Bartlett's test showed the degree of suitability of the factorial analysis model and suggested that the factorial analysis model was appropriate under the significance level of 1%, and common factors exist.

3.5.2 Reliability of the measurement

The reliability measure, the Cronbach alpha coefficient, was used as a measure of consistency in the questionnaires (Table 6). Questions with a Cronbach alpha coefficient of 0.5 or less were eliminated as they were judged to reduce internal consistency.

TABLE 6 Reliability test

Factor	Question number	Total number of questions	Reliability (Cronbach's)
Social Legacy	1,2,3,4,5,6	6	0.922
Social Capital		15	0.905
Trust	3,4,5,6	4	0.869

Network	1,2,3,4,5,6	6	0.818
Reciprocity	1,2,4,5,6	5	0.773

In this study, the social capital formation factors, the confidence, network, and reciprocal norms, and the reliability factors for social legacy, all had Cronbach alpha values than 0.7 and thus meet internal consistency requirements. In addition, the value of overall social capital formation is 0.905, showing very high internal consistency.

3.5.3 Correlation analysis test

Prior to the analysis, a correlation analysis was conducted of sub-factors of social capital (trust, network, reciprocal norms) and the mediating variable social legacy. Variables were constructed by calculating the means of each scale, except for items excluded due to the results of the validity analysis.

TABLE 7 Correlation analysis

	Trust	Network	Reciprocity	Social legacy
Trust	1			
Network	.408**	1		
Reciprocity	.351**	.559**	1	
Social legacy	.384**	.405**	.462**	1
M	2.8636	3.1818	3.6529	3.3345
SD	.7698	.7333	.5883	.8585

** . Correlation is significant at the 0.01 level (two-tailed).

The correlation analysis showed a slightly higher correlation between the network and the reciprocal norm at 0.559. The correlation coefficient of the remaining social capital formation variables was 0.4, meaning that they had a relatively strong amount of correlation with each. The above correlation analysis is significant at the 1% level.

4 RESULTS

4.1 Demographic backgrounds of respondents

Basic demographic data have been summarized in Table 8. Gender distribution showed the proportion of male respondents (58.7 %) was relatively higher than of female ones (41.3 %). When looking at the distribution by age group, the ratio of young people (from under 20 to 39 years old) to middle-aged people (over 40 years old) was similar (54.6 % and 45.4 %, respectively). In terms of education level, more than 40 % of the respondents were found to have graduated from university. As for the occupation, the largest number of respondents were working in professional jobs, while the lowest number of people were working in agriculture. Most of the respondents resided in Gangneung (84.5 %), while relatively few respondents lived in PyeongChang, a suitable ratio when comparing the population of Gangneung and PyeongChang (215,914 and 40,264 respectively). More than 80 % of respondents had lived in the city for more than 10 years.

TABLE 8. Demographic information of the respondents (N= 213)

Variables	Characteristics	N	%
Gender	Male	125	58.7
	Female	88	41.3
Age	Less than 20	2	0.9
	20 - 29	45	21.2
	30 - 39	69	32.5
	40 - 49	55	25.9
	50 - 59	27	12.7
	60 or more	14	6.6
Education level	Junior high school	9	4.2
	Senior high school	61	28.8
	College graduate	40	18.9
	University graduate	86	40.6
	Post graduate school	16	7.5
Occupation	Non-response	1	0.5
	Student	16	7.5
	Sales & Service	37	17.4
	Self-employed	34	16.0
	Agriculture	5	2.3
	Housewife	22	10.3
	Practitioner	47	22.1
	Government official	32	15.0
	Employee	9	4.2
	Others	11	5.2
	Average income	Under \1,000,000	25
\1,000,000 - \2,000,000		42	21.6
\2,000,000 - \3,000,000		57	28.6
\3,000,000 - \4,000,000		36	18.1
Over \4,000,000		39	19.6
City	Non-response	14	6.6
	Gangneung	180	84.5
	Pyeongchang	33	15.5
Years lived in the city	Less than a year	0	0
	1 - 3	10	4.7
	3 - 5	14	6.6
	5 - 10	17	8.0
	More than 10 years	172	80.8

4.2 Respondents' satisfaction with participating in the PyeongChang Winter Olympics

This survey question analyzed responses to a satisfaction rating after participating in the PyeongChang Winter Olympics. The results in Table 9 show that the average value was 3.67 points, which were satisfactory to the normal level. This finding shows that citizens in Pyeongchang and Gangneung were evaluating their participation in the PyeongChang Olympics in a neutral manner.

TABLE 9. General characteristics of respondents.

Division	Participation satisfaction
Average (standard deviation)	3.67(0.925)

*Means of the scores given to the options selected by the respondents: 1= Highly unsatisfactory, 2= Unsatisfactory, 3=Neutral, 4= Satisfactory, 5= Highly satisfactory

4.3 Level of participation in 2018 PyeongChang Olympic games

Level of participation in the PyeongChang Winter Olympics according to period of participation

Table10 shows that more than half of the respondents (54.5 %) only participated the PyeongChang Winter Olympics game during the actual game period. 33.3 % answered that they participated in the Olympics from 2011, when the city won the bid, to the Olympic gaming period in 2018, a high level of participation. Finally, 11.3 % of the respondents answered that they participated in the preparation of the PyeongChang Winter Olympics, but not the gaming period itself. The results illustrate that the majority of the citizens of PyeongChang and Gangneung participated in the 2018 PyeongChang Olympics for a long time. In addition, the level of participation is generally high.

TABLE 10 Period of participation of respondents

Division	Measurement	Frequency (%)
Participation period	Low	From when city won the bid to host 2018 Winter Olympics to before the games were held
	Medium	The period when 2018 Winter Olympic games were held
	High	From when the city won the bid to host 2018 Winter Olympics and to the period of 2018 Winter Olympic games were held
Total		100.0%

4.4 Level of participation in 2018 PyeongChang Olympic games according to participation type

As Table 7 indicates, residences in PyeongChang and Gangneung were quite passive in participating in the PyeongChang Winter Olympics. Only 17.4 % of residents participated in PyeongChang Olympics active-type activities, which were considered high levels of participation, while 56.9 % of the residents participated passively. The type of participation shows that the overall level of participation is relatively low.

TABLE 11 Participation type of respondents

Division	Measurement	Frequency (%)	
Participation type	Passive	Watching Olympic games via TV or Internet	87(24%)
		Participating in Olympic related programs	119(32.9%)
	Medium	Watching Olympic games on the venue	71(19.6%)
		Participating in promotional activity	22(6.1%)
	Active	Donation for Olympic-related fund	4(1.1%)
		Volunteering	33(9.1%)
		Talent donation	26(7.2%)
	Total		362(100%)

(3) Participation motivation

As presented in Table 12, analysis of the motivation for participation in the PyeongChang Winter Olympics showed that the motivation for the successful hosting of the PyeongChang Winter Olympics was the highest with 32.1 %. Community development motivation accounted for 22.5 % of the residents who participated. However, while there were 76 citizens (19.8 %) who sought public interest in order to spend their leisure time informally, private interests are shown to also have contributed to the citizens of PyeongChang and Gangneung's motivation to participate in the PyeongChang Winter Olympics.

TABLE 12 Motivation for participation of respondents

Division	Measurement	Frequency (%)	
Participation motivation	Public interest	To support hosting successful Olympic games.	123(32.1%)
		To dedicate to community development	85(22.5%)
	Private interest Motive	To spend valuable spare time	76(19.8%)
		To dedicate my talent	23(6.0%)
		To make a new network with new people	21(5.5%)
	Others	To follow sports	45(11.7%)
			9(2.3%)
Total		383(100%)	

4.5 Mediating variable : Social legacy

On social legacy-related questions, the 2018 PyeongChang Winter Olympics had on average a positive impact on our community for a long time overall, but the highest score of 3.60 points. Other measurement items generally showed similar results (see Table 13).

TABLE 13. The degree of social legacy awareness by respondents participating in the PyeongChang Winter Olympics

Items	Minimum	Maximum	Mean	Std. Deviation
I have feeling I am a member in my local community through 2018 PyeongChang Winter Olympics	1	5	3.50	0.914
I feel more attachment and pride than before towards my local community through 2018 PyeongChang Winter Olympics	1	5	3.49	0.984
I got a better image of the city where I live through the 2018 PyeongChang Olympics.	1	5	3.59	0.905
I think 2018 PyeongChang Winter Olympics offered local residences to have more well-being life	1	5	3.39	0.954
I think 2018 PyeongChang Winter Olympics contributed to local residences to be participated more in physical activity	1	5	3.31	0.959
The 2018 PyeongChang Winter Olympics offered sustainable positive impacts in my local community in general	1	5	3.60	0.950

4.6 Dependent variable : Social capital

(1)Trust

Of the social capital characteristics, trust in neighbors was the highest at 3.60, followed by trust in people who meet at work or work together on the basis of business at 3.54.

On the other hand, trust in local politicians was the lowest with a mean of 2.47.

TABLE 14. The degree of trust in the local community among participants in the PyeongChang Winter Olympics

	Minimum	Maximum	Mean	Std. Deviation
1. I trust neighbors in my area	1	5	3.54	0.743
2. I trust my fellow workers or people who I meet in work place.	1	5	3.60	0.737
3. I trust public officials in my city	1	5	3.11	0.932
4. I trust municipality office or village office in my city	1	5	3.14	0.863
5. I trust politicians in my city	1	5	2.47	1.030
6. I trust civic organizations in my city	1	5	2.99	2.99

(2)Network

Among the social capital characteristics, the existence of close neighbors who can ask for help was 3.66 points, followed by participation in private gatherings, 3.63 points, and 3.44 points in frequent conversations and exchanges with neighbors.

TABLE 15. The degree of network within the local community of participants in the PyeongChang Winter Olympics

	Minimum	Maximum	Mean	Std. Deviation
1. I share important local information with neighbors.	1	5	3.43	0.880
2. I often correspond and talk with neighbors.	1	5	3.44	0.943
3. I often join a personal gathering.	1	5	3.63	0.901
4. I often join a local meeting	1	5	2.90	0.987
5. I often connect to websites of government agencies in my area.	1	5	2.77	1.078
6. I have a neighbor who I can ask for help in emergency situation.	1	5	3.66	0.937

(3)Reciprocity

Among the social capital characteristics, the highest possible understanding of the relativity norm had a mean of 3.91 points, followed by recent help from others at 3.86 points, and the smooth resolution of conflicts arising from interests with others scored 3.82 points. On the other hand, the last item, helping others, showed the lowest value (3.10 points).

TABLE 16. The degree of reciprocity within the local community of participants in the PyeongChang Winter Olympics

	Minimum	Maximum	Mean	Std. Deviation
1. I have a mind to donate my time, money or ability to others regardless of proper profit for me.	1	5	3.74	0.811
2. I help unprivileged neighbors as well as induce others to help them.	1	5	3.34	0.884
3. I recently get help from others in my area	1	5	3.10	0.977
4. In a conflict with others, I try to resolve it smoothly.	1	5	3.86	0.737
5. I always try to understand other people	1	5	3.82	0.686
6. I try to comply with public order	1	5	3.91	0.708

4.7 The impact of participation level on trust

To make a relative comparison of the influence of the sub-factor of the participation level, the independent variable, on the dependent variables, the results of estimating the standardized coefficient values are as follows: adequacy of the timing of participation (0.123, $p < 0.05$) was the most influential, followed by participation types (0.117, $p < 0.05$), and participation periods (0.105, $p < 0.05$). Thus, with the probability that these results would have been found under the null hypothesis begin less than 5 %, the independent variables have a significant effect on the trust.

(1) Test the Period of Participation and its relationship with trust and its interventions

The three-step medium effect test method was implemented to verify the mediated effect of the timing of participation on the formation of social capital. The results of Step 1, which analyzed the effect of appropriateness of the independent variables on the social legacy as parameters, show that the independent variables have a significant effect on the parameters at the time of participation (0.141, $p < 0.05$). Step 2's results analyzing the effects of independent variables on the confidence of the dependent variables show that the participation period (0.205, $p < 0.05$) has a significant effect on the dependent variables. Finally, Step 3's test of the effects of the independent variables and parameters on the dependencies of the dependencies show that parameter social legacy has a significant effect on the dependencies, indicating that there is a partial mediation (0.375, $p < 0.05$).

TABLE 17. Relationship and Interaction between the Period of Participation and Trust

Division	Step 1			Step 2			Step 3		
	Participation Social (Dependent)		period-legacy	Participation Trust(Dependent)		period-legacy-	Participation /Social Trust(Dependent)		period-legacy-
	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β
(Constant)	2.179	.314		1.982	.284		1.258	.288	
Gender	.152	.109	.088	.009	.098	.006	-.044	.091	-.028
Age	.153	.049	.205	.051	.044	.077	.001	.042	.001
City of residence	-.002	.045	-.003	.055	.040	.094	.056	.037	.095
Participation period	.182	.079	.141	.235	.071	.205	.174	.067	.151
Social legacy							.334	.053	.375
<i>R</i> ₂	0.064			0.059			0.191		
<i>F</i>	4.304			3.900			11.647		

(2) Test the Type of Participation and its relationship with trust and its interventions

The three-step method of testing the mediated effects of participation types on the formation of social capital was used. The results of step 1, which analyzed the effect of the participation type on the social legacy, where the participation type is a parameter, show that the participation type has a significant effect on the parameters (0.114, $p < 0.05$) (Table 17). Step 2 found, through analyzing the effects of independent variables on the

confidence of the dependent variables, that the participation type has a significant effect on the dependent variables (0.183 and $p < 0.05$). Finally, step 3 tested the effects of independent variables and parameters on the confidence of the dependent variables, and found that the parameter social legacy has a significant effect on the dependent variables, indicating that it has a partial mediation effect (0.382, $p < 0.05$).

TABLE 18. Relationship and Interaction between the type of Participation and Trust

Division	Step 1 Participation type-Social legacy (Dependent)			Step 2 Participation type- Trust(Dependent)			Step 3 Participation type /Social legacy-Trust(Dependent)		
	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β
(Constant)	2.392	.280		2.223	.251		1.411	.264	
Gender	.160	.109	.093	.015	.098	.010	-.040	.091	-.026
Age	.138	.050	.186	.025	.045	.037	-.021	.042	-.032
City of residence	.001	.045	.001	.057	.040	.097	.057	.037	.097
Participation type	.115	.069	.114	.180	.062	.183	.140	.057	.142
Social legacy							.340	.052	.382
<i>R</i> ²	0.057			0.050			0.188		
<i>F</i>	3.794			3.292			11.482		

(3) Test the Motivation of Participation and its relationship with trust and its interventions

The three-step medium effect test method was again implemented to detect the mediated effect of the motivation for participation on the formation. The analysis results show that the independent variable has a significant effect on the parameter. Step 1 analyzed the effect of the independent variable on the parameter of social legacy. Step 2's analysis of the effects of motivation for participation on the confidence of the dependent variables shows that the participating motors have a significant effect on the dependent variables (0.183 and $p < 0.05$). Finally, the results in Step 3 of testing the effects on the confidence of the dependent variables show that the parameter social legacy has a significant effect on the dependent variables, indicating that there is a partial mediation effect (0.390 and $p < 0.05$).

TABLE19. Relationship and Interaction between the motivation of Participation and Trust

Division	Step 1 Participation motivation- Social legacy (Dependent)			Step 2 Participation motivation- Trust(Dependent)			Step 3 Participation motivation/Social legacy- Trust(Dependent)		
	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β
(Constant)	2.306	.291		2.134	.267		1.303	.277	
Gender	.152	.108	.088	.004	.099	.002	-.056	.092	-.036
Age	.135	.050	.182	.028	.045	.041	-.018	.043	-.027
City of residence	.002	.045	.004	.061	.041	.104	.059	.038	.099
Participation motivation	.181	.092	.122	.243	.084	.183	.191	.078	.144
Social legacy							.353	.054	.390
<i>R</i> ²	0.061			0.052			0.196		
<i>F</i>	4.084			3.349			11.818		

4.8 The impact of level of participation on the network

The value of the standardized coefficient was verified for relative comparison of the effect of the sub-factor of the independent variable participation level on the dependent variable network. The estimates showed that the timing of participation was most appropriate (0.239, $p < 0.05$), followed by the types of participation (0.194, $p < 0.05$), and the motivation (0.168, $p < 0.05$). Thus, under a significant level of 5%, participation levels have a significant effect on the network, which is a social capital formation factor.

(1) Test the Relationship and Interaction between Period of Participation and Network

The three-step medium effect test method was implemented to verify the mediated effect of the timing of participation on the formation of social capital. The analysis results show that the independent variables have a significant effect on the parameters at the time of participation (0.141, $p < 0.05$), by looking at the results of Step 1 which analyzed the effect of appropriateness of the independent variables on the social legacy as parameters. Second, the results of Step 2 that analyzed the effect of independent variables on networks with dependent variables show that independent variables have a significant effect on

dependencies at the time of participation (0.313 and $p < 0.05$). Finally, the results in Step 3 of testing the effects of independent variables and parameters on networks with dependent variables show that parameter social legacy (0.368, $p < 0.05$) has a significant effect on the dependencies, indicating that they have a partial mediation.

TABLE 20. Relationship and Interaction between the Period of Participation and Network

Division	Step 1			Step 2			Step 3		
	Participation Social (Dependent)		period-legacy	Participation Network(Dependent)		period-	Participation period/Social Network(Dependent)		legacy-
	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β
(Constant)	2.179	.314		2.023	.249		1.361	.251	
Gender	.152	.109	.088	-.051	.086	-.036	-.098	.080	-.068
Age	.153	.049	.205	.127	.039	.206	.082	.037	.132
City of residence	-.002	.045	-.003	.026	.036	.047	.026	.033	.048
Participation period	.182	.079							
Social legacy			.141	.332	.062	.313	.276	.058	.260
							.304	.046	.368
<i>R</i> ²	0.064			0.146			0.273		
<i>F</i>	4.304			10.568			18.516		

(2) Test the Relationship and Interaction between Type of Participation and Network

The three-step method of testing the mediated effects of participation types on the formation of social capital was implemented to verify The analysis results show that the participation type ($=0.114$, $p < 0.05$) has a significant effect on the parameters by looking at the results of Step 1 which analyzed the effect of the participation type, the participation type, on the social legacy, where the participation type is a parameter. Second, the results in Step 2 of analyzing the effects of independent variables on the confidence of the dependent variables show that the participation type ($=0.235$, $p < 0.05$) has a significant effect on the dependent variables. Finally, the results in Step 3 of testing the effects of independent variables and parameters on the confidence of the dependent variables show that the parameter social legacy ($=0.386$, $p < 0.05$) has a significant effect on the dependent variables, indicating that it has a partial mediation effect.

TABLE 21. Relationship and Interaction between the Type of Participation and Network

Division	Step 1			Step 2			Step 3		
	Participation type-Social legacy (Dependent)			Participation type-Network(Dependent)			Participation type/Social legacy-Network(Dependent)		
	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β
(Constant)	2.392	.280		2.418	.227		1.656	.237	
Gender	.160	.109	.093	-.041	.088	-.028	-.092	.082	-.065
Age	.138	.050	.186	.096	.040	.157	.053	.037	.087
City of residence	.001	.045	.001	.029	.036	.053	.029	.033	.053
Participation type	.115	.069	.114	.214	.055	.235	.177	.051	.195
Social legacy							.319	.047	.386
<i>R</i> ₂	0.057			0.103			0.244		
<i>F</i>	3.794			7.135			15.992		

(3) Test the Relationship and Interaction between Motivation of Participation and Network

The three-step medium effect test method was implemented to verify the mediated effect of the motivation for participation on the formation. The analysis results show that the independent variable has a significant effect on the parameter, with the result of Step 1 analyzing the effect of the independent variable on the parameter, social legacy. Second, the results of Step 2 that analyzed the effect of independent variables on networks with dependent variables show that the participating motor ($=0.169$, $p>0.05$) has a significant effect on the dependent variable. Finally, the results of Step 3 testing the effects of independent variables and parameters on networks with dependent variables show that parameter social legacy ($=0.396$, $p<0.05$) has a significant effect on the dependencies, indicating that there is a partial mediation effect.

TABLE 22. Relationship and Interaction between the Motivation of Participation and Network

Division	Step 1			Step 2			Step 3		
	Participation motivation-Social legacy (Dependent)			Participation motivation-Network(Dependent)			Participation motivation/Social legacy-Network(Dependent)		
	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β

(Constant)	2.306	.291		2.452	.242		1.672	.250	
Gender	.152	.108	.088	-.061	.090	-.043	-.116	.083	-.082
Age	.135	.050	.182	.106	.041	.172	.063	.038	.103
City of residence	.002	.045	.004	.032	.037	.059	.030	.034	.055
Participation motivation	.181	.092	.122	.208	.076	.169	.159	.070	.129
Social legacy							.331	.048	.396
<i>R</i> ²	0.061			0.081			0.230		
<i>F</i>	4.084			5.387			14.492		

4.9 The impact of level of participation on reciprocity

The standardized coefficients were verified for relative comparison between the effects of the sub-factor of the independent variable (the participation level) on the dependent variable (the reciprocal standard). The estimates showed that the timing of participation was most appropriate (0.250, $p < 0.05$), followed by the types of participation (0.130, $p < 0.05$), and the motivation (-0.069, $p > 0.05$). Thus, under the significant level of 5 %, the timing and type of participation can have a significant effect on the network, which is a social capital formation factor. The motivation for participation is not significantly influencing the dependencies, but should be tested for significant effects through the parameter of social legacy.

(1) The Relationship and Interaction between Period of Participation and Reciprocity

The three-step medium effect test method was implemented to verify the mediated effect of the timing of participation on the formation of social capital. The analysis results show that the independent variables have a significant effect on the parameters at the time of participation (0.141, $p < 0.05$), by looking at the results of Step 1 which analyzed the effect of appropriateness of the independent variables on the social legacy as parameters. Second, the results in Step 2 of analyzing the effects of independent variables on the relativity standard, which is a dependent variable, show that the timing of participation

(0.316 and $p < 0.05$) has a significant effect on the dependent variable. Finally, the results in Step 3 of testing the effects of independent variables and parameters on the relativity standard with dependent variables show that parameter social legacy (0.410, $p < 0.05$) has a significant effect on the dependencies, indicating that they have a partial mediation effect.

TABLE 23. Relationship and Interaction between the Period of Participation and Reciprocity

Division	Step 1			Step 2			Step 3		
	Participation Social (Dependent)		period-legacy	Participation Reciprocity(Dependent)		period-legacy	Participation period/Social Reciprocity(Dependent)		legacy-
	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β
(Constant)	2.179	.314		2.563	.206		1.961	.204	
Gender	.152	.109	.088	.070	.073	.058	.024	.066	.020
Age	.153	.049	.205	.099	.032	.196	.057	.030	.112
City of residence	-.002	.045	-.003	.012	.030	.027	.012	.027	.026
Participation period	.182	.079		.278	.052	.316	.228	.048	.260
Social legacy			.141				.278	.037	.410
<i>R</i> ²	0.064			0.137			0.294		
<i>F</i>	4.304			9.893			20.690		

(2) The Relationship and Interaction between Type of Participation and Reciprocity

The three-step method of testing the mediated effects of participation types on the formation of social capital was implemented to verify. The analysis results show that the participation type ($\beta = 0.114$, $p < 0.05$) has a significant effect on the parameters by looking at the results of Step 1 which analyzed the effect of the participation type, the participation type, on the social legacy, where the participation type is a parameter. Second, the results of Step 2 that analyzed the effect of independent variables on the reciprocal standard of the dependent variable show that the participation type ($\beta = 0.173$ and $p < 0.05$) has a significant effect on the dependent variable. Finally, the results in Step 3 of testing the effects of independent variables and parameters on the relativity standard with dependent

variables show that parameter social legacy ($=0.434$, $p<0.05$) has a significant effect on the dependencies, indicating that they have a partial mediation effect.

TABLE 24. Relationship and Interaction between the Type of Participation and Reciprocity

Division	Step 1			Step 2			Step 3		
	Participation type-Social legacy (Dependent)			Participation type-Reciprocity (Dependent)			Participation type/ Social legacy-Reciprocity (Dependent)		
	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β
(Constant)	2.392	.280		2.972	.191		2.275	.195	
Gender	.160	.109	.093	.079	.075	.066	.027	.068	.023
Age	.138	.050	.186	.077	.034	.154	.037	.031	.074
City of residence	.001	.045	.001	.016	.031	.037	.015	.028	.033
Participation type	.115	.069	.114	.130	.046	.173	.097	.042	.129
Social legacy							.295	.038	.434
<i>R</i> ₂	0.057			0.068			0.246		
<i>F</i>	3.794			4.580			16.225		

(3) The Relationship and Interaction between Motivation of Participation and Reciprocity

The three-step medium effect test method was implemented to verify the mediated effect of the motivation for participation on the formation. The analysis results show that the independent variable has a significant effect on the parameter, with the result of Step 1 analyzing the effect of the independent variable on the parameter, social legacy. Second, Step 2's analysis of the effects of independent variables on the reciprocal norms of dependent variables shows that the participants ($=0.162$ and $p<0.05$) significantly affect the dependent variables. Finally, the results in Step 3 of testing the effects of independent variables and parameters on the confidence of the dependent variables show that parameter social legacy ($=0.445$ and $p<0.05$) has a significant effect on the dependent variables, indicating that there is a partial mediation.

TABLE 24. Relationship and Interaction between the Motivation of Participation and Reciprocity

Division	Step 1			Step 2			Step 3		
	Participation motivation-Social legacy (Dependent)			Participation motivation-Reciprocity (Dependent)			Participation motivation/Social legacy-Reciprocity (Dependent)		
	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β
(Constant)	2.306	.291		2.954	.201		2.243	.202	
Gender	.152	.108	.088	.061	.076	.051	.005	.069	.004
Age	.135	.050	.182	.080	.034	.159	.040	.031	.080
City of residence	.002	.045	.004	.014	.031	.030	.010	.028	.022
Participation motivation	.181	.092	.122	.164	.063	.162	.120	.057	.119
Social legacy							.305	.039	.445
<i>R</i> ²	0.061			0.065			0.251		
<i>F</i>	4.084			4.235			16.349		

5 DISCUSSION

5.1 Participation in mega-sports event and relationship between social Capital

This study is an empirical study of the 2018 Winter Olympics in PyeongChang based on the question of how participation in mega-sports event affects the development of social capital in the host region. In particular, the concept of participation in mega-events was approached in terms of level of participation and the timing, type of participation, and motivation were considered in measuring these levels of participation. It also analyzed the role that participation levels play in influencing the formation of social capital. The results verified by multiple regression and intermediate regression are discussed below.

First, the relevance of the timing of participation was found to have the greatest impact on the trust in the research question of 'how the level of participation in mega-sports events affects the formation of social capital'. This impact means that active participation over a long time with common goals for one event will strengthen trust and solidarity among residents. It also suggests that the type of participation, the motivation for participation in sports events, is also impact on the development in social capital. Therefore, it is necessary to develop a participatory strategy to induce active participation of residents from the stage of the introduction of mega-events. And to provide continuous awareness training so that they can participate in local and public interests, rather than in individual interests.

Next, verification of the independent variables' effects on the network, the participation type, and the motivation for participation revealed the relationship with the networks to be the strongest, and the relationship with the motivation to be the weakest. The network is a result of in the interaction between individuals, between groups, and between individuals and groups (Kim Tae-seon and Kim Chun-ki, 2007, 103). Thus, the finding that active participation in sports mega-events affects the formation of networks among local members reflects the need for local governments and organizing committees to ensure continued participation after the mega-sports event, rather than just for the duration of the event. In addition, the type of participation should not be passive, such as

purchasing a one-time ticket or participating in an event program; instead, active participation, such as volunteering and donating talent, should be encouraged. One of the leading scholars who approached social capital from the perspective of participation is Putnam. He argued that civic engagement and economic development were related, defining social capital as the characteristics of social organizations such as trust, norms, and networks that could enhance society's efficiency by coordinating their actions (Putnam, 1993). As can be interpreted from this thesis's results, individuals made certain contributions to the production of public goods by participating in the 2018 Olympics.

Meanwhile, the results also showed that the suitability of the timing of participation on the principle of reciprocity was the strongest, followed by the type of participation, and the motivation of participation. The reciprocal norm is important in overcoming public problems with accepted rules of conduct in society over a long period of time (Misener & Mason, 2006). Although not institutionalized such as those formally enforced by the state, the reciprocal norm also prevents individuals from betraying the expectations of other members of the group (R. Putnam, 2000). Therefore, it is possible to argue that the rules or customs that make the group's solidarity or collective expectations unacceptable are an important source of social capital. It can be inferred that participation in the same sporting event for a long period of time is an important factor in the formation of this reciprocal norm. In addition, the timing of participation, the type of participation and the motivation for participation all showed substantial effects on the reciprocal norm.

The results indicate that the suitability of the timing of participation is the most powerful factor in the formation of social capital, trust, network and reciprocal norms. Today, as the gap between rich and poor widens and individualism deepens in South-Korea, the value of public interest, rather than the individual, should be cherished, by demonstrating interest and consideration in the locality, skills in communication with others, cooperation for the public good, and acquisition of volunteer experience through various channels. In other words, participation in sharing and caring, such as in talent donation or volunteering, (a new form of donation that contributes to society rather than limiting individual talent to individual interests or technological development), can increase willingness to participate in the community and can contribute greatly to the formation of the network.

Therefore, it is also necessary to establish a system within mega sports event and take active measures to help residents who participate in the event donate talent and volunteer activities using their special skills in various participating areas.

5.2 Participation in mega-sports event, social legacy recognition, and relationship between social capital

Meanwhile, the hypothesis 2 that higher levels of participation in the 2018 PyeongChang Winter Olympics would result in stronger social capital was verified through the recognition of the Olympic social legacy, which was found to have a significant impact on the formation of social capital. More specifically, the analysis of the parametric effect of social legacy recognition has shown that social legacy recognition has a partial effect on the trust variable during the period of participation, the type of participation, and the motivation for participation. The type of participation, and the motivation for participation is to influence the formation of trust and the recognition of social legacy, if each condition works simultaneously with the parameter of social legacy recognition.

That is, from the time of hosting mega-events to the period of playing games, leading participation throughout the entire period, aiming for common goals rather than individual interests, and expressing participation triggered for regional development as a social legacy defined by regional attachment, belonging, and loyalty. This social legacy awareness promotes cooperation among citizens, enabling them to solve the problems of collective action, and strengthens intergroup trust and solidarity to expand the perception that citizens are the in same community of destiny, thereby facilitating the achievement of the goals of the group.

Trust is the most important component of social capital and the higher the level of trust within the community, the more likely it is to cooperate (Putnam, 1993). In this context, it can be seen that the promotion of sports mega-events in the region focuses on common values rather than on the private interests of the local people, recognizes them as social legacy after the event, and draws civic participation, ultimately leading to regional development by forming the social capital of trust.

For networks, social legacy recognition has been shown to have a partial mediated effect on the timing of participation, types of participation, and motivations for participation. This finding means that participation levels affect network formation, but

in situations in which social legacy perceptions simultaneously affect network formation, social legacy perceptions affect the network entirely. Therefore, in order for the network to lead to the suitability of the participation timing in the mega-event, active participation, and public interest in the participation motive, the social legacy recognition effect of the event remaining in the region should be considered.

In general, a network is a social system that exchanges and shares resources through a closed and ongoing interconnected process to achieve a common goal between individuals or groups (Lim, 2013). The more affection there is for the region, the more active participation will be, centered on the common interest rather than the individual's; the more active the passive participation is, the more it affects the formation of networks that enable to cooperation among local members.

In addition, social legacy recognition was found to have partial mediated effects on the period of participation, the type of participation, and the motivation for participation. This means that the timing of participation, the type of participation, and the motivation for participation affect the formation of a reciprocal norm; however, if social legacy recognition is considered at the same time, social legacy recognition affects the formation of a reciprocal norm.

Reciprocity can address collective action issues, while at the same time resolving the conflict between self-interest and solidarity. The degree of these reciprocal norms can be seen to be strengthened when citizen participation is induced with a focus on the value of social legacy recognition through the events. As such, participation in sports mega-events suggests that the high awareness of the social impact of events (that is social legacy) on the region in the first place also strengthens social capital, such as trust, network, community participation, and reciprocal norms.

Social capital, defined as 'the elements of social organization such as trust, norms and networks that improve the efficiency of society by promoting coordinated action,' is largely recognized as a product of civil society and association activities (Putnam, 1993 and 2000). In addition, a large number of related parties are involved in the process of securing large-scale financial and non-financial resources for the sports mega-events to promote cooperation among stakeholders in terms of regional tourism development. As such, participation in mega-sports event has been shown to be a very high driver for the formation of local social capital, ensuring that it plays an important role in social capital taking root in the community.

The consensus formed between residents and the social legacy inherent in the residents as they participated in the mega sports event held in the region, affected the formation of social capital - trust, networks, and reciprocal norms. This finding suggests that for the mega-sports events' true success, the focus should be on enhancing citizens' level of participation through activities and programs that can be credited with long-term social legacy.

In March 2019, the organizing committee for the PyeongChang Winter Olympics and the Korean Ministry of Culture, Sports and Tourism established the Olympic Legacy Foundation to preserve and develop the legacy of the Olympic Games. It plans to create a 100 billion won foundation through Olympic surplus and additional investment to continue its legacy for the PyeongChang Winter Olympics. The fact that social legacy awareness through participation in the PyeongChang Winter Olympics affects the social capital of the host region, and it soon connected with regional development suggests much. The Olympic Legacy Foundation will have to recognize the importance of social legacy and create a true Olympic legacy through the creation and cooperation of programs that can draw participation from local residents.

6 CONCLUSION

This study began with the assumption that the higher the level of participation of residents in sports mega- events, the stronger the social capital of the host region would be. For the economy to grow, there must be production, which has played a key role, consisting of physical capital such as natural resources, and human capital in the capacity of people. In the 21st century, however, the importance of social capital, the social capacity to solve community problems and achieve common goals through active civic engagement, is highlighted.

Based on the analyses, it can be seen that 'timing of participation' has been a strong factor in social capital formation, and that the type of participation and motivation of participation have also been affected. This result reflects the strong social capital of the host community will be created when residents participated in mega-sports events for a long period of time, from the time one city confirmed to host the Olympic Games. In other words, it suggests that social capital formation requires a participatory strategy to encourage active participation of citizens from the time of the introduction of mega-events, and continuous awareness training to participate in local and public interests, rather than in individual interests. It can also be inferred that social capital within a region has strong mutual trust and reciprocal norms among community members when participating in mega--events held within the region, not through individual interests, but through attitudes that value the public. Additionally, it seems that participation through sharing and consideration creates a network that is closely interconnected with community participation.

Based on the main analysis results, the implications are as follows. The study showed that a more focused factor for the success of effective mega-sports events is the formation of social capital in the region through the participation of local residents. After all, the formation of social capital in the region is an important task not only as a basis for regional development but as a prerequisite for efficient local government. Therefore, it suggests that various efforts should be made to strengthen social capital through the participation of local residents. To this end, it is necessary to establish a close cooperative system with civic groups, related agencies and educational institutions, as well as local

governments, and to make concerted efforts. Social capital cannot be formed without direct action, even if one is fully aware of the building blocks of social capital: trust, network, and reciprocal norms. Therefore, community involvement among the components of social capital will be as important as that.

Above all, participation in the entire period from the inception stage to the end of the event is a very important factor in inducing social capital formation and regional development. In addition to holding mega-sports events, policy approaches such as providing educational opportunities for creating awareness, transparent disclosure of business information, and drawing up guidelines for public participation in various projects held in the region should also be supported.

6.1 Participation in mega-sports event, social legacy recognition, and relationship between social capital

This study is different from other studies in that it has structurally identified the relationship between participation in mega-sports event, social legacy awareness and social capital formation based on the case of the 2018 PyeongChang Winter Olympics. It is also meaningful that the socio-cultural effects were noted, unlike the traditional approach, which primarily deals with economic and external effects. It is also meaningful that the traditional financial capital, physical capital and environmental capital are important through the participation of residents in the sports mega event held in the region, but the factors of social capital formation have been analyzed and discussed.

First, it is necessary to understand that social capital is a part of the psychological realm and therefore it is very difficult to quantify. Considering these aspects, research related to the formation, maintenance and expansion of social capital as well as the participation of residents in various projects in the connected communities is also necessary.

Second, generalizing research results to sports mega-events and social capital formation relationships in other regions comes with limits, as it is a case study analyzed on specific sports mega-event in PyeongChang and Gangneung area. It should also consider the limitations of statistical analysis, as the survey results were used as the main data. Third, although participation in local mega-events is an important factor in the

formation of social capital in the community, it should be noted that this study focused on the level of participation and addressed only trust, network, and reciprocity as a dependent variable among the various factors that constitute social capital.

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APPENDICES

(Korean)

메가 스포츠 이벤트 참여활동이 개최 지역 사회적 자본 형성과 레거시 인식에 미친 영향에 관한 설문조사 : 2018 평창 동계 올림픽을 중심으로

설문지

귀중한 시간을 내어 설문에 응해주셔서 정말 감사합니다. 본 설문은 [메가 스포츠 이벤트 참여가 개최 지역 사회적 자본 형성에 끼친 영향]을 규명해보고자 평창 동계 올림픽 개최 지역인 강릉시와 평창시의 시민 분들의 인식을 조사하기 위한 것입니다. 모든 질문에 대한 정답 또는 오답은 없으며, 모든 질문이 귀하에 해당되지 않는 경우라 할지라도 가장 가까운 정도를 체크해주시길 바랍니다.

빠진 응답이 많은 설문지는 사용할 수 없으므로, 한 문항도 빠짐없이 작성 부탁드립니다. 여러분의 성의 있고, 솔직한 답변은 본 연구의 귀중한 자료가 될 것이며, 이후 지역 주민들에게 큰 도움이 될 것입니다. 여러분의 소중한 설문 결과는 익명으로 통계 처리되며 통계법 제 33 조(비밀의 보호)에 따라 순수 연구 목적으로만 사용될 것이며, 비밀이 철저히 보장됩니다.

오늘도 행복한 하루 되시고, 설문에 참여해 주셔서 정말 감사합니다.

2019 년 4 월

핀란드 유바스퀼라 대학교 스포츠 매니지먼트학과 석사과정
김수빈 (sukim@student.jyu.fi)

I. 다음은 귀하의 일반적 사항에 관한 질문입니다. 해당되는 곳에 표시(V)하여 주십시오.

1. 귀하의 성별은? ① 남성 ② 여성
2. 귀하의 연령은? ()
3. 귀하의 최종 학력은? ① 중졸 이하 ② 고졸 ③ 전문대졸 ④ 대졸 ⑤ 대학원졸 이상
4. 귀하가 일하는 분야는? ① 학생 ② 판매,서비스직 ③ 자영업 ④ 농어업 ⑤ 주부 ⑥ 전문직 ⑦ 공무원,공기업 ⑧ 경영,관리직 ⑨ 기타()
5. 귀하의 직업은? ()
6. 귀하의 월 평균 소득은 얼마입니까? ① 100만원 미만 ② 100만원 이상~200만원 미만 ③ 200만원 이상~300만원 미만 ④ 300만원 이상~400만원 미만 ⑤ 400만원 이상
7. 귀하의 거주 지역은? ① 강릉 ② 평창
8. 귀하께서 강릉/평창 에서 거주하신 햇수는 몇년입니까? ()

II. 다음은 귀하의 평창 동계 올림픽 참여 수준에 관한 질문입니다. 각 문항별로 해당 되는 사항에 표시(V)하여 주시기 바랍니다.

<p>평창 동계 올림픽과 관련된 경험을 토대로 질문에 응해주시기 바랍니다.</p> <ul style="list-style-type: none"> ● 참여에는 경기 관람 또는 표 구매, 행사 프로그램, 홍보활동, 후원금 기부, 자원 봉사, 재능기부 등의 참여 형태가 포함됩니다.

1. 평창 동계 올림픽에 얼마 동안 참여하셨습니다?
 ① 평창 동계 올림픽 유치 무렵부터 개최 전 까지만 참여하였다. (2011-2018. 2. 9)
 ② 평창 동계 올림픽 개최 기간에 참여하였다. (2018. 2. 9-2018.2. 29)
 ③ 평창 동계 올림픽 유치 무렵부터 개최 기간에 참여하였다 (2011-2019. 2. 9)
 ④ 평창 동계 올림픽에 참여하지 않았다.
2. 평창 동계 올림픽에 참여 하셨다면 주요 참여 유형은 무엇입니까? *중복 선택 가능
 ① 방문을 통한 직접 경기 관람
 ② TV, 인터넷 등을 활용한 간접 경기 관람

질문내용	전혀 그렇지 않다	그렇지 않다	보통	그렇다	매우 그렇 다
1. 나는 일터나 직장에서 업무적으로 만나는 사람들을 신뢰한다.	①	②	③	④	⑤
2. 나는 내 주변의 이웃을 신뢰한다	①	②	③	④	⑤
3. 나는 우리 지역 공무원들을 신뢰한다	①	②	③	④	⑤
4. 나는 우리 지역의 시청, 읍면동사무소를 신뢰한다	①	②	③	④	⑤
5. 나는 우리 지역의 정치인을 신뢰한다	①	②	③	④	⑤
6. 나는 우리 지역의 시민단체를 신뢰한다	①	②	③	④	⑤

2) 다음은 귀하가 현재 인식하는 지역의 네트워크 정도를 알아보기 위한 것입니다. 해당 칸에 v표 해 주시기 바랍니다.

질문내용	전혀 그렇지 않다	그렇지 않다	보통	그렇다	매우 그렇 다
1. 나는 지역의 중요한 정보를 이웃과 공유한다	①	②	③	④	⑤
2. 나는 이웃과 자주 대화하고 교류한다	①	②	③	④	⑤
3. 나는 사적인 모임에 자주 나간다 (친목계, 동창회, 종교, 취미 모임 등)	①	②	③	④	⑤
4. 나는 지역의 일로 모임에 자주 나간다 (지역내 봉사 모임, 시민단체, 지역 행사 등)	①	②	③	④	⑤
5. 나는 지역 공공기관 사이트에 자주 접속한다 (시청, 도청, 정부기관 홈페이지)	①	②	③	④	⑤
6. 나는 어려움에 처했을 때 도움을 요청할 수 있는 이웃이 있다	①	②	③	④	⑤

3) 다음은 귀하가 현재 인식하는 지역의 호혜성 규범 정도를 알아보기 위한 것입니다. 해당 칸에 v표 해 주시기 바랍니다.

호혜성이란 미래의 선한 보상을 위해 상대방에게 긍정적 행동을 베푸는 모습을 뜻하는 사회적 용어입니다. 호혜성은 긍정적 관계를 지속하고 공유하는 것을 가능하게 합니다.

질문내용	전혀 그렇지않 다	그렇지 않다	보통	그렇다	매우 그렇 다
1. 나에게는 큰 이득이 없지만 다른 사람 에게 혜택이 있을 경우, 금전, 시간 또는 재 능을 기부할 생각이 있다	①	②	③	④	⑤
2. 나는 생활고를 겪는 불우이웃을 도와 줄 뿐 만 아니라 도움을 주라고 주변 이웃 들에게 권유한다	①	②	③	④	⑤
3. 나는 최근 타인으로부터 도움을 받은 적이 있다	①	②	③	④	⑤
4. 나는 타인과 이해관계로 인해 갈등 발 생 시 되도록 원만하게 해결하려고 한다	①	②	③	④	⑤
5. 나는 나와 의견이 다른 상대방을 가능 한 이해하려고 노력한다	①	②	③	④	⑤
6. 나는 공중 질서를 잘 지키는 편이다. (교 통질서, 거리 질서, 차례 지키기 등)	①	②	③	④	⑤

IV. 2018 평창 동계 올림픽의 사회적 레거시 인식에 관한 질문

스포츠 이벤트 레가시란 이벤트를 통해 장기간 남게 되는 유형과 무형의 것을 말합니다. 올림픽 레가시 구성요소에는 경제적, 사회문화적, 환경적 레거시가 있으며 본 설문지는 사회적 레거시를 중심으로 구성되었습니다.

• 사회적 레거시 : 지역 공동체 정신, 자긍심, 도시 이미지, 웰빙 라이프, 지속가능성 등

1) 다음은 귀하가 인식하는 평창 동계 올림픽의 레거시 정도를 알아보기 위한 것입니다. 해당 칸에 v표 해 주시기 바랍니다.

질문내용	전혀 그렇지 않다	그렇지 않다	보통	그렇다	매우 그렇 다
1. 평창 동계 올림픽을 통해 나는 내가 살고 있 는 지역의 구성원이라는 느낌이 든다	①	②	③	④	⑤
2. 평창 동계 올림픽을 통해 지역에 대한 애착 심과 자부심이 강화 되었다	①	②	③	④	⑤
3. 평창 동계 올림픽을 통해 내가 살고 있는 지 역에 대한 더 나은 이미지를 가지게 되었다.	①	②	③	④	⑤
4. 평창 동계 올림픽이 지역주민들에게 더 나 은 웰빙 생활의 기회를 제공했다고 생각한다.	①	②	③	④	⑤
5. 평창 동계 올림픽이 지역주민들의 더 많은 체육활동 참여에 기여했다고 생각한다.	①	②	③	④	⑤

6. 2018년 평창 동계올림픽은 우리 지역사회에 전반적으로 오랫동안 남을 긍정적인 영향을 주었다.	①	②	③	④	⑤
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설문에 끝까지 응해주셔서 진심으로 감사드립니다.

(English)

The Influence of Mega- Sport Event Participation on the development of the social capital and Olympic legacy : A case study of 2018 PyeongChang Winter Olympic games

This research project is conducted by the University of Jyväskylä, Finland. Its purpose is to examine the influence of people's participation in "mega- sport events" on the social capital of hosting regions. Please read every item carefully and respond according to your experience and honest opinion. Please remember that there are no correct or incorrect answers to the questions. All questions are asked with a specific reason, even if they do not seem applicable to you. All information provided by you will be kept confidential, and the data will be anonymized so that the information that you will provide cannot be associated to you.

Thank you for taking the time to consider participating in this research. We are grateful for your cooperation. We do hope that you will get involved and contribute with your valuable experience and ideas to this important venture. If you have any question regarding this research project, please contact Subin Kim at sukim@student.jyu.fi.

University of Jyväskylä

Faculty of Sport and Health Sciences

Subin Kim (sukim@student.jyu.fi)

1. **What is your gender?** Male Female
2. **What is your age?** ()
3. **What is the highest level of formal education you have completed?** Graduated Middle School Graduated High School Graduated College Graduated University Post-Graduated Degree
4. **Which of the following areas do you work at?** Student Sales & Service Self-employed Agriculture Housewife Practitioner Government official Employee ⑨ Other ()
5. **What is your occupation?** ()

6. **What is your current income?** Under 1,000,000 won 1,000,000 - 2,000,000 won 2,000,000 - 3,000,000 won 3,000,000 - 4,000,000 won Over 4,000,000 won
7. **Which city do you live?** Gangneung Pyeongchang

II. Participation level on 2018 PyeongChang Winter Olympics

Please answer the questions based on your own participation experience related to 2018 PyeongChang Winter Olympics.

- The participation refers all following activities such as, game attendance, ticket purchase, Olympic related program participation, promotional activity, contribute supporting money, talent donation and volunteering.

6. **When did you participate in 2018 PyeongChang Winter Olympics?**
 - From the time when city won the bid to host 2018 Winter Olympics to before the games were held. (2011 – 09.02.2018)
 - The period of 2018 Winter Olympic games were held. (09.02.2018 - 29.02.2018)
 - From the city won the bid to host 2018 Winter Olympics and to the period of 2018 Winter Olympic games were held (2011 - 29.02.2018)
 - Did not participate at all

Questions	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1. I trust neighbors in my area	<input type="checkbox"/>				
2. I trust my fellow workers or people who I meet in workplace.	<input type="checkbox"/>				
3. I trust public officials in my city	<input type="checkbox"/>				
4. I trust municipality office or village office in my city	<input type="checkbox"/>				
5. I trust politicians in my city	<input type="checkbox"/>				
6. I trust civic organizations in my city	<input type="checkbox"/>				

- 5) The following questions will examine the degree of **network** you recognize toward your local area. Check the box most appropriate response.

Questions	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1. I share important local information with neighbors.	<input type="checkbox"/>				
2. I often correspond and talk with neighbors.	<input type="checkbox"/>				
3. I often join a personal gathering. (Graduate's association, religious gathering, hobby group etc.)	<input type="checkbox"/>				
4. I often join a local meeting (civic organization, local festival, local volunteering meeting etc.)	<input type="checkbox"/>				
5. I often connect to websites of government agencies in my area.	<input type="checkbox"/>				
6. I have a neighbor who	<input type="checkbox"/>				

I can ask for help in emergency situation.					
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The following questions will examine the level of **reciprocity** you recognize toward your local area. Check the box most appropriate response.

Reciprocity is a social norm of responding to a positive action with another positive action, rewarding kind actions. Reciprocity makes it possible to build continuing relationships and exchanges.

Questions	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1. I have a mind to donate my time, money or ability to others regardless of proper profit for me.	<input type="checkbox"/>				
2. I help unprivileged neighbors as well as induce others to help them.	<input type="checkbox"/>				
3. I recently get help from others in my area	<input type="checkbox"/>				
4. In a conflict with others, I try to resolve it smoothly.	<input type="checkbox"/>				
5. I always try to understand other people	<input type="checkbox"/>				
6. I try to comply with public order	<input type="checkbox"/>				

IV. Social legacy in 2018 PyeongChang Winter Olympics

Sport event legacy refers to tangible and intangible things created by the whole phases of hosting sport events that will last for long time. According to the IOC, there are economic, social, cultural and environmental legacy as Olympic legacy components. The following questions are organized to estimate the social legacy.

Social legacy: Local community spirit, pride, image of the city, well-being life, Sustainability and so on.

Questions	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1. I have feeling I am a member in my local community through 2018 PyeongChang Winter Olympics	<input type="checkbox"/>				

2. I feel more attachment and pride than before towards my local community through 2018 PyeongChang Winter Olympics	<input type="checkbox"/>				
3. I got a better image of the city where I live through the 2018 PyeongChang Olympics.	<input type="checkbox"/>				
4. I think 2018 PyeongChang Winter Olympics offered local residences to have more well-being life	<input type="checkbox"/>				
5. I think 2018 PyeongChang Winter Olympics contributed to local residences to be participated more in physical activity	<input type="checkbox"/>				
6. The 2018 PyeongChang Winter Olympics offered sustainable positive impacts in my local community in general	<input type="checkbox"/>				