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Pursuing diversity in disaster management: the Korean experience

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Abstract: Developed nations have made efforts toward diversity during globalisation, according to an analysis of costs and benefits. However, Korean researchers have not thoroughly discussed disaster management. This study examined how Korea should incorporate diversity in the final goal of disaster management. Qualitative content analysis including inference was used to compare the finger-pointing and survival-hugging approaches by cross-checking four categories of diversity (sexual orientation, national origin, disability, and others) and four major stakeholders (governments, businesses, voluntary organisations, and local communities). The key theme was that Korea must change the finger-pointing approach to the survival-hugging approach while enhancing minority participation, whole-community engagement, new sub-topics, and education, as well as each stakeholder's assigned role. The biggest value of this research is that it investigated diversity in Korea more rigorously than previous studies.

Keywords: national disaster management; globalisation; finger-pointing approach; survival-hugging approach; education.

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1 Introduction

Various nations have made efforts toward providing effective disaster management for their people and communities (Ahmad, 2016; Rajapaksha et al., 2023). However, the impact of disasters has not decreased sharply in the process. In summary, there are gaps between national disaster management and the reality of disaster impacts. In this regard, these nations need to systematically bridge related gaps. Without attempts to connect the two aspects logically by referring to unconventional means, each nation would continue to face similar difficulties (Naik and Prasad, 2022).

One way to bridge these gaps is to consider the issue of diversity, considering that it has non-traditional and complicated features (ALNAP, 2014; Khan et al., 2023). It is known that the larger the size of a population, the more diverse the community. Table 1 shows general perceptions of diversity. However, the exact extent of diversity in the globalisation arena has been dependent on multiple factors, such as diversity awareness, values, government policy, infrastructure, technology, the environment, the size of populations, and people’s general perceptions.

Table 1 General perception on diversity

<i>Units</i>	<i>Monocultural society</i>	<i>Multicultural society</i>
• Level of uniformity	√ (better)	
• Speed of decision-making	√	
• Adjustability to new environment		√
• Level of creativity		√

Source: Bessey (2023)

Social resilience refers to the capacity of social mechanisms to reduce social disruption. The concept of social resilience has been supported in the field of disaster management, considering that all types of hazards, disasters, and risks have social and physical dimensions (Meyer et al., 2016; Saja et al., 2019). In terms of social resilience, the field needs to effectively utilise the issue of diversity, which is a major aspect of community resilience.

South Korea (hereafter Korea) has experienced numerous disasters, such as the sinking of ferry Sewol in 2014, the Middle-Eastern Respiratory Syndrome outbreak in 2015, the Pohang earthquakes in 2017, Miryang’s hospital fire in 2018, coronavirus disease 2019 (COVID-19) in 2020/currently, and the yearly foot-and-mouth disease and avian influenza (Kwon and Kim, 2023; Zastrow, 2020). The impacts of the disasters have not decreased considerably. However, the nation has not yet seriously addressed the issue of diversity in disaster management. For this reason, this study asks about the Korean process of diversity in disaster management as a research question.

The objective of this article is to study how Korea will adopt the appropriate extent of diversity (e.g., sexual orientation, national origin, and disability) to achieve the ultimate goal of disaster management (i.e., reducing human loss, economic damage, and psychological impact). The finger-pointing approach was compared with the survival-hugging approach using four stakeholders: governments, businesses, voluntary organisations, and local communities. Similarly, the scope of diversity (also known as minority groups) includes government officials, business employees, volunteers, and local residents. The biggest finding was that Korea must change its finger-pointing

approach to a survival-hugging approach while addressing minority participation, grassroots participation, whole-community engagement, biodiversity and indigenous knowledge, and education, to ensure diversity.

2 Literature review

The issue of diversity has become a major topic in many regions since the early 1980s (Pennsylvania State University, 2001). In the globalisation arena, the economy of a country has relied directly or indirectly on the economies of other countries. For a nation to sell its products in other regions, it must understand different people, languages, politics, cultures, and physical environments, among other factors. In addition, the composition of the population in each nation has been further varied by movement of labour, trade, capital, and technology. Many individuals or groups prefer differences than similarities or fitting in.

The term diversity in the field of disaster management has often been confused with other phrases such as equal employment opportunities or affirmative employment. However, diversity includes different people or objects in the field. Similarly, diversity refers to understanding, acknowledging, respecting, accepting, and valuing various characteristics that allow individuals to be unique (FEMA, 2017). In doing so, diversity includes multiple factors, such as human beings, mother tongues, educational backgrounds, job experiences, communication methods, social backgrounds, cultural backgrounds, and economic differences.

The issue of diversity has worked toward ever-changing disaster management in its own ways, particularly when realising that it has come to form effective disaster management strategies (Young and Jones, 2019). Traditional disaster management without an appropriate extent of diversity has frequently failed to reflect the diverse experiences or needs of various stakeholders. To embrace diversity, individuals and organisations have participated in improving emergency management capabilities (e.g., preparedness and response capabilities) and embodying the thorny topic of social justice and fairness. While pursuing diverse perspectives, solutions, or knowledge, stakeholders mutually support and develop interconnectedness among each other and thus contribute to disaster mitigation for all people.

The mechanism of diversity is important in the field, considering that it has various (direct or indirect) implications (Gautam et al., 2023; Rahmani et al., 2022). The issue of diversity has helped the field prepare for, respond to, and recover from disaster impacts, thus producing far-reaching effects for all people. Meanwhile, the subject of diversity is to leave nobody behind, as forming a fair disaster management system is strategically appropriate, culturally sensitive, and relevant to all disaster victims. Furthermore, when avoiding miscommunication between individuals and organisations, diversity eliminates related boundaries in emergency spots.

Indeed, diversity has greatly influenced many individuals or groups in terms of how they live, interact with one another, and perceive one another. As such, individuals' or groups' thoughts (or ways of thinking) may be dynamically changeable depending on many diverse factors, such as sexual orientation, national origin, and disability (see Table 2). Each factor is differently, but not unitarily, embodied by many individuals and groups.

Table 2 Exemplar issues of diversity in disaster management

<i>Diversity category</i>	<i>Representing issue</i>	<i>Example of related contents</i>
Sexual orientation	Gender	Resource allocation has shown many aspects of gender bias.
	LGBT	Disaster relief efforts have not included LGBT into their scope, such as the lack of disaster impact data for LGBT.
National origin	Race and colour	Many workplaces are still struggling to increase the number of races/colours in their disaster management decision making.
	Ethnicity	There has been disparity in disaster preparedness among ethnic groups, such as medication supplies and emergency evacuation plans.
Disability	Disability	The field in many regions has generally managed people without disabilities, without equally incorporating people with disabilities.
Others	Age	While young people possess recent technical knowledge, old people use experienced-based knowledge.
	Religion	Faith-based organisations have played many roles in treating disaster victims' psychological trauma.
	Culture	Culture has influenced how local communities deal with not only natural hazards but also manmade emergencies.

Note: LGBT – lesbian, gay, bisexual, and transgender.

Source: Jogia et al. (2014), Valet (2019) and Raheem et al. (2023)

Diversity frequently encounters multiple challenges such as barriers at the individual and organisational levels (Andrulis et al., 2009). The former includes limited trust in economic and social contexts, geographical isolation, and language and culture. The latter includes lack of knowledge of diversity, lack of need for diversity, lack of collaboration, and ethnic or racial discordance. In summary, it has not been easy for the field to achieve diversity owing to these barriers.

Similarly, addressing the extent of diversity incurs several major costs. The cost of legal compliance includes training staff, record-keeping systems, and related communication, whereas long-term monetary costs should be paid for education, support and facilities, employment policies, and working conditions, among others. Meanwhile, the opportunity cost is mainly provided by scarce resources, productivity shortfall, time consumption, and other factors. Furthermore, the cost of execution risk is proposed without sustainable diversity (European Commission, 2003).

However, when the extent of diversity is fully embodied in the field, important benefits are clearly distributed. Fundamentally, individuals or groups can broaden their horizons and encounter unexpected opportunities to learn from one another. When individuals and groups consider different people, viewpoints, or cultures, they may acquire additional knowledge and skills through diversity. In other words, diversity ultimately creates synergies in the field.

In addition, diversity will further bring further benefits to the fields. As such, while improving decision-making performance, many individuals or groups may reduce their fear of psychological rejection (Miller, 2023). Because individuals' motivation considerably increases through diversity, their engagement in the field is also high. When individuals and groups improve their insights, they build community-based relationships.

Diversity will ultimately help reduce the physical and social impacts of various disasters in the field (Duckworth, 2022; Goosman, 2023). In doing so, diversity will similarly influence important factors such as effective disaster response, fair decision making, equal access, and community-based resilience, thereby including marginalised people in mainstream disaster management. The goals of disaster management, such as decreasing human loss, economic damage, and psychological impact, will be achieved far more than at present.

Between diversity costs (or barriers) and benefits, the consequences of continuing to ignore the issue of diversity are major. For example, ignoring diversity directly affects the cost of money, time, and efficiency in the field. When tension or conflict arises among multiple people, work productivity drops automatically. While other social costs, such as those of legal actions, poor investment, or other discrimination, increase, the field may face much difficulty before reaching the ultimate goal of reducing not only the physical impact but also the social impact of various disasters.

When a certain extent of diversity is addressed among individuals or groups, who, thus, possess good opportunities and resources, inclusion occurs. Inclusion creates an environment conducive to respect, connection, and involvement among various stakeholders, particularly when ideas, perspectives, and backgrounds turn into appropriate disaster values (EMV, 2016). Meanwhile, exclusion is to cut across disaster contexts as well as diverse stakeholders. If diversity is a goal in the field, inclusion is considered a good way to achieve it.

The field has requested direct support for technological areas on the way to promoting diversity (Ogie et al., 2018). While utilising advanced technology, diverse stakeholders have addressed the potential problems surrounding them; that is, many migrants have faced difficulties in understanding foreign languages, thus missing disaster warnings. Technology has played a role in engineering appropriate communication. Consequently, the number of human losses and injuries has decreased considerably.

Some developed nations have made efforts to address the issue of diversity in the field through related research and practice. Many researchers from Australia and New Zealand gathered in Melbourne, Australia, in 2018, focusing on diversity in disasters (Riseborough, 2018). While supporting the role of the Australian Institute for Disaster Resilience, they elaborated on a detailed research agenda, including Aboriginal groups, the homeless, refugees and migrants, and all disabilities.

Donald Trump, the former US president, did not show his support for the issue of diversity in society, considering his policy on border walls, child migrant deaths, deferred action for childhood arrival, military transgender ban, and others. Nonetheless, the Federal Emergency Management Agency (FEMA), under the Biden administration, has continued to implement its own diversity and inclusion plan in the field, while strongly relying on its own leadership (FEMA, 2023). In doing so, although difficult, FEMA has attempted to ensure diverse workforces, diverse-friendly environments, and others.

A few European countries have recently been struggling with the issue of diversity while fighting against the Islamic State in Iraq and Syria and other terrorism. Examples include the Brussels bombings in 2016, the Nice vehicle ramming in 2016, the London bridge attack in 2017, and pushing illegal migrants back to European borders in 2022 (Nesser, 2018; Salgado and Patuzzi, 2022). As a result, some Europeans elected rightist politicians by opposing the introduction of Arab refugees into Europe, whereas others continued to support their introduction.

In Korea, some researchers have started to show keen interest in studying the issue of diversity in society in the 21st century when thinking of changing demographics to include foreign-born national assembly women as well as many racial mixed marriages (Lim, 2017). No rigorous studies have explored the topic of diversity in the field of disaster management, although a few researchers have partially mentioned this issue during the development of their main focus (Seda et al., 2023). However, they did not fully apply many international principles of diversity in their research.

With all the abovementioned issues in mind, this research elaborates on the issue of diversity in the Korean field of disaster management. Particularly, the greatest value of this article is its comprehensive examination of how the nation should deal with the diversity issue by referring to all stakeholders, sub-topics, strategies, and others with the support of internationally recognised principles. Accordingly, this article, as a pioneering study, will not focus on describing a specific aspect of diversity, but on a holistic perspective of diversity within disaster management.

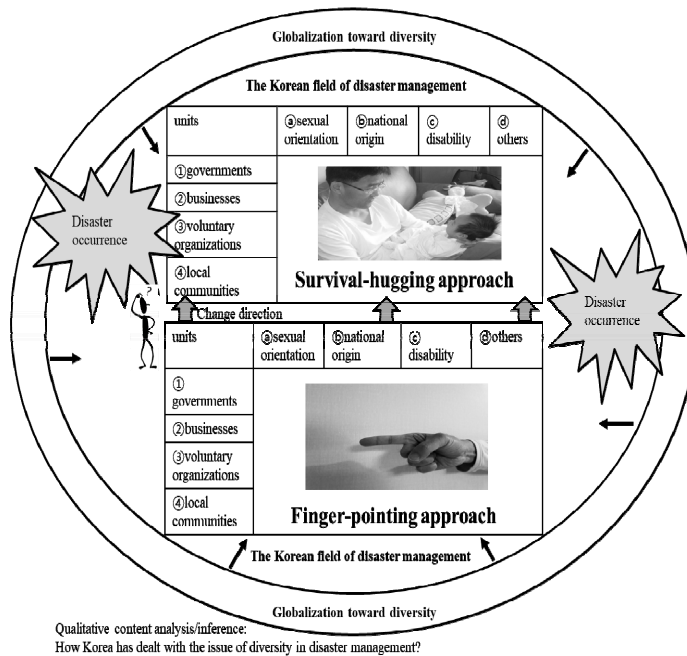
3 Methodology

Disaster-management research has several unique characteristics. Knowledge of disaster subjects has not been considerably different from or more significant than that of other subjects. One of the biggest differences between the two subject groups is the circumstances under which the respective methods were used (Stallings, 2002). In other words, it is not the method itself, but the context that renders disaster management research unique. When a disaster phase is considered, key information and data are remarkably influenced by the disaster context.

Qualitative content analysis is a key methodology that involves searching for, identifying, interpreting, and rewriting appropriate qualitative texts in the right places. Several search engines have been used for such texts, including Google, EBSCOhost, ScienceDirect, Oxford University Press, and KISS (a Korean database). In particular, Google has uploaded more official documents and research articles than others. Typed keywords have included 'diversity in disaster management', 'costs-benefits of diversity', 'how to maximise diversity', and 'diversity in Korea'. The criterion for identifying a specific text was whether it was related to diversity or disaster management.

The inference technique was used in this study. Inference is defined as the process in which the major tenet of a paper is drawn without a high degree of certainty. However, inference relies on a certain probability regarding the suggested evidence (Morse, 2006). In summary, the technique of inference used in this study created linkages, recognised new examples, categorised similar things, and created new themes.

As shown in Figure 1, this study compared and contrasted two approaches: the finger-pointing and survival-hugging approaches. In the former, the major stakeholders in Korea blame one another while discussing or practicing the issue of diversity. Finger-pointing (or the blame-game) is a situation in which one or more stakeholders are blamed for an issue of diversity that has gone bad or wrong. In the latter, stakeholders hug one another to ensure the survival of the fittest. Survival-hugging is a kind of sincere endearment in which two or more stakeholders put their arms around their bodies regarding the issue of diversity on their way to survival.

Figure 1 Analytical framework

To elaborate, this study cross-checked the issue of diversity with the roles of major stakeholders in the field. The issue of diversity around the two approaches included four major categories:

- sexual orientation
- national origin
- disability
- others, based on the above literature review.

The major stakeholders around the two approaches were classified into four important players:

- governments
- businesses
- volunteer organisations
- local communities.

The four stakeholders are widely known as key players in disaster management, regardless of national boundaries (FEMA, 2015). Governments are concerned with diversity when evaluating disaster management as a public benefit. Businesses provide materials for the field. Voluntary organisations make up for the lack of government participation, whereas local communities are directly faced with various disasters.

4 Results

4.1 *Finger-pointing approach*

4.1.1 *Governments*

The Ministry of the Interior and Safety (MOIS) plays a key role in managing all types of hazards at the central government level (MOIS, 2023). Multiple local governments unitarily followed the MOIS policy in disaster management. Although the Korean society has discussed the issue of diversity from a macro viewpoint, in general, governments in the field of disaster management have not officially or systematically worked on the issue of diversity.

Nevertheless, the National Fire Agency (NFA), under the MOIS, has recently touched on the ratio of female firefighters in Korea as a diversity issue. Approximately 7.5% of the NFA human resources are female firefighters. The administrator of the NFA has announced that the institution will increase the ratio of female firefighters to more than 10% in the near future (Oh, 2020). He also emphasised that the institution will examine not only written but also physical tests during the recruitment process.

4.1.2 *Businesses*

Diverse companies, such as conglomerate corporations (also known as chaebols) and small companies, have worked in the field of disaster management to produce related products. The majority of them have mainly discussed the composition of their workforces with respect to the issue of diversity. Many companies continue to recruit or utilise homogenous workers or kin without resorting to diverse external workers (Kim and Lee, 2017). Conversely, few companies have begun recruiting diverse workers to achieve economic benefits.

In terms of leadership, most business leaders have not realised how diversity operates substantially in their businesses. Considering that Korea is an export-oriented nation, many business leaders keep pace with globalisation. However, they do not proportionally address diversity issues in their businesses. In some cases, business leaders have emphasised the lack of government support for diversity as a major factor in deficient business diversity.

4.1.3 *Voluntary organisations*

Korea is breaking its traditional image as a male-dominated society. Fortunately, many women have come to be representatives of volunteer organisations, whereas others have fully or partially worked for their leadership (Chang, 2017). Although men have dominated the posts of public organisations and business enterprises, women have been pushed to work for volunteer organisations. Voluntary organisations have addressed the issue of sexual orientation via personnel management far more than other groups.

Most female-dominant volunteer organisations have played many roles in dealing with the issue of the diversity of foreign-born wives and their children in the field of disaster management. Conversely, this means that these volunteer organisations have not discussed other topics of diversity equally. While getting involved in their favourite topic, some volunteer organisations have turned violent to demand related financial support from the government.

4.1.4 Local communities

Local communities in the field of disaster management have changed rapidly during globalisation (Ghemawat and Altman, 2019). Owing to imported Western values, local communities, including residents and the mass media, have increased their awareness of the gender gap and people with disabilities much more than ever before. Local communities have traditionally accepted not only the aged but also different religions in many aspects of disaster management.

However, local communities struggle with other issues such as LGBT, race and colour, ethnicity, and culture. Many local communities have failed to integrate issues of LGBT and national origin into disaster management, though improving. Local residents are unwilling to accept foreign cultures as they are (Engermann, 2014). Thus, some residents have violently finger-pointed the negative aspects of different cultures, as in the case of Yemeni refugees on Jeju Island.

4.2 Survival-hugging approach

4.2.1 Governments

Two reasons may explain why the MOIS has not officially attempted to address the issue of diversity in disaster management. First, the majority of MOS officials have not realised the importance of diversity in disaster management. Second, although they have noted the fundamentals of diversity, they have not attempted to do anything concrete because their posts carry too much of a burden. By not doing anything about diversity, they simply wanted to secure their posts.

Nonetheless, MOIS officials must officially discuss the issue of diversity in disaster management (Mitchell and Creary, 2009). Because the MOIS is not involved in the issue of diversity, no individual, private group, or local government can easily advance on this topic under the Korean centralised political system. When doing so, the MOIS should discuss various topics of diversity simultaneously, unlike the NFA's focus on the ratio of female firefighters (or gender issues) (Lucier et al., 2023).

4.2.2 Businesses

Korean businesses have recently struggled with the composition of their workforces on diverse topics. Indeed, the issue of diversity includes several factors such as sexual orientation, national origin, and disability. In this regard, multiple businesses should increase their diversity in the aforementioned areas, treating the composition of a diverse workforce as a starting point. This would contribute to achieving the goal of their economic benefits.

Business leaders need to develop and utilise new transformational leadership toward the issue of diversity, considering that they can manage the extent of business diversity the most (Barratt, 2019). Based on scientific data without unconscious bias, business leaders must provide an appropriate vision of diversity by addressing the viewpoints of intersections, diverse relationships, collaborative events, outreach efforts, and so on.

4.2.3 *Voluntary organisations*

It is a positive signal that many volunteer organisations have innovatively accommodated a number of women from the perspective of diversity. However, this does not mean that these organisations do not require improvements. Voluntary organisations need to further expand their activities in the field of disaster management to include the issues of LGBT, disability, age, religion, and culture, as many of them have not been professional due to the lack of funding, training, disaster information, and other factors.

The number of foreign-born residents is increasing (about one in 25 people as of now) in Korea, including foreign-born husbands, industrial workers, students, illegal immigrants, and foreign-born wives (Kim and Ryu, 2017). In summary, volunteer organisations must deal with not only foreign-born wives, but also other related issues. Although the number of foreign-born wives is relatively large, the issues for the aforementioned disregarded people remain an inevitable part of diversity. Therefore, female representatives of volunteer organisations must integrate these issues.

4.2.4 *Local communities*

Despite increased awareness, the income gap between men and women is still large in the field, noting that Korea ranked 32 among the 36 Organizations for Economic Co-operation and Development (OECD) nations (OECD, 2020). In addition, local communities have not specified the special needs of people with disabilities in their emergency operation plans, unlike the case of the aged. Local communities must continue to emphasise the role of local religious groups in regional disaster preparation.

Furthermore, local communities must increase their disaster awareness of LGBT, race and colour, ethnicity, and culture (see Table 3). It will not be easy to address the above-mentioned issues within a short time because they are deeply rooted in historical events. When it is difficult to avoid considering these issues, local communities must adapt themselves by relying on diverse channels, such as obtaining appropriate information from the international community and visiting sister cities.

Table 3 Summary of two diversity approaches

<i>Units</i>	<i>Finger-pointing approach</i>	<i>Survival-hugging approach</i>
Governments	Governments have not seriously worked for diversity in general.	MOIS must officially discuss thorny topics on diversity.
Businesses	Businesses have continued to recruit homogenous workers in the field.	Businesses must develop transformation leadership on diversity by providing appropriate vision.
Voluntary organisations	Women have exceptionally dominated important posts in voluntary organisations.	Voluntary organisations must professionally address the issue of diversity.
Local communities	Local communities have been friendly with the aged and different religions.	Local communities must improve their understanding of and attitudes toward issues such as LGBT and immigrants.

5 Major implications

While changing the finger-pointing approach to a survival-hugging approach in the Korean field of disaster management, all four stakeholders will face multiple challenges that overlap or interact with each other. Simultaneously, they will share related responsibilities (McLennan and Handmer, 2014). In doing so, the extent of their responsibilities will not be the same but will vary, depending on multiple factors.

There is no single panacea for achieving the transition, as each of the four stakeholders must perform assigned roles and responsibilities in their own environments (Leinster and Meckes, 2016). In other words, all stakeholders' unique activities maximise the level of diversity. Such maximisers amplify or intensify the extent of diversity under rough circumstances.

From a macro perspective, diversity is a catalyst for change in the field to include not only Korea, but also other nations (ECDC, 2017; Brundiers and Eakin, 2018). Considering that diversity offers opportunities for appropriate change, such as disaster risk reduction, resilience enhancement, and sustainability, it should facilitate change regardless of national boundaries. Diversity catalyses change initiatives, change processes, and interrelations among individuals and groups in the international community.

The transition between the two approaches will contribute to the expansion of the existing literature on diversity (Shahraki et al., 2022). For example, the Korean case may emerge as a unique East Asian case for other developed nations and thus will be referred to during their further efforts toward diversity. Other developing nations may use the Korean case as an exemplary model for their diversity in the near future, while considering the Korean stage of initial diversity. At any rate, the transition to a new approach will make the existing literature much more abundant.

Each issue of diversity indicates the status of minorities such as women, LGBT, ethnicity, disability, and the aged. Minorities include those who experience disadvantages in political, economic, and social conditions compared to the majority (Siddiqui et al., 2011). It is imperative that the field includes all populations in disaster preparedness. Therefore, the transition to the survival-hugging approach may encourage minorities to better prepare for disasters.

The transition between these two approaches continues to indicate grassroots participation in disaster management. Grassroots involve people in a given community who are fundamental to disaster management. Considering that all components of the minority are a clear part of grassroots (Village Earth, 2012), its inclusion in the survival-hugging approach is a good example of grassroots participation in disaster management.

A number of people who share identities, strengths, and challenges comprise a community of interest. When any issue of diversity matters in a region, it is necessary for the field to support the related people through cooperation from the community of interest. For example, while developing emergency operation plans in a community, all individuals and groups within the diversity category must be allowed to participate in the planning process (Zuiderwijk et al., 2023).

Community engagement refers to the fact that all stakeholders collaborate to share their vision of diversity while utilising information, resources, strategies, empowerment, and others (AEMI, 2013). Under these circumstances, whole-community engagement is

required for a successful transition to the survival-hugging approach. When an individual or group does not fully participate in the diversity process, community engagement is not conducted in a timely manner.

The field may innovatively include more topics on the issue of diversity to achieve the original goal of disaster management (Monty et al., 2016). Biodiversity refers to biological diversity and includes the variety of life on Earth, such as plants, animals, microscopic organisms, air, water, weather, and other environments. Integrating biodiversity conservation into the scope of diversity will enhance the co-benefits of nature and disaster management (e.g., the contribution of mangroves to climate change adaptation in the Oceania region).

Similarly, indigenous knowledge can be included in the diversity category. Indigenous knowledge includes knowledge embedded in indigenous people or communities. This traditional knowledge is transferred to descendants orally (PAHO and WHO, 2014). Many types of indigenous knowledge contain important information for diversity, such as animal reactions, plant behaviour, constellations, wind direction, and cloud movement.

Education is an effective tool to embody the extent of diversity in the field. To do so, it is necessary to educate teachers about diversity in advance (OECD, 2010). Without the teachers' appropriate sensitivity or obligation, the field will not provide the education for their students. To elaborate, the field needs to redesign education for teachers as a driving force before further distributing the thorny issues of diversity. Simultaneously, the field must utilise a series of evaluations of related teachers for ultimate flexibility and strength.

6 Conclusions

This study explored how Korea must deal with the issue of diversity in the field of disaster management to reduce social impacts, as well as the physical impacts of disaster. Considering that the article has provided two noteworthy approaches (the finger-pointing and the survival-hugging approaches), potential barriers, appropriate strategies, and others, the objective of the study was achieved in terms of research criteria.

The major finding of this study is that Korea needs to wisely transform its current finger-pointing approach into a future-oriented survival-hugging approach on the way to diversity. To implement this, four stakeholders must carry out assigned roles: governments' active involvement, businesses' leadership, voluntary organisations' efforts in various topics, and local communities' long-term awareness. Meanwhile, the field needs to address minority participation, grassroots participation, whole-community engagement, and the inclusion of biodiversity, indigenous knowledge, and education.

Despite the potential challenges, many developed nations have made efforts to address the issue of diversity in the field. On the other hand, in Korea, some efforts have partially been oriented toward diversity, such as NFA's support for female firefighters, volunteer organisations' female leaders and their support for foreign-born wives, and local communities' traditional values. However, Korean researchers have not thoroughly discussed this diversity. In this context, this pioneering study approached diversity more comprehensively than previous studies.

When it is impossible to prevent or avoid the embodiment of diversity in the field due to globalisation, we must actively embrace it. This will be a shortcut to achieving the goals of national disaster management or transnational disaster management. Appropriate

researchers in Korea may extend their research diversity by utilising the results of this study. In addition, researchers in the international community must include not only developed countries but also developing countries, referring to lessons from the Korean case for their regional research.

Data availability statement

All data, models, and codes generated or used during the study are included in the submitted article.

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