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## Methodologies of contemporary disaster resilience research

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### Abstract

The United Nations' Sendai Framework for Disaster Risk Reduction (SFDRR) 2015-2030 specifically calls for "multi hazard and solution-driven research in disaster risk management to address gaps, obstacles, interdependencies and social, economic, educational and environmental challenges and disaster risks". The Advancing Skill Creation to ENhance Transformation (ASCENT) project aims to contribute towards this SFDRR goal by strengthening the research and innovative capacities of researchers to tackle the challenges associated with developing societal resilience to disasters. This research has been undertaken under the auspices of the ASCENT project and it is intended to provide an up-to-date account of the research methodologies in current use in order to inform researchers of contemporary research practice as well as to identify trends and possible gaps that could offer opportunities for innovation and improvement.

This paper presents the results of a survey of research methodologies used in contemporary disaster resilience research that has recently (2005-2017) been published in leading disaster resilience journals. For the sample of 156 articles analysed, it was found that qualitative approaches dominate with data collection primarily from literature and interviews. Case study research is particularly common and the development of theoretical and conceptual frameworks is somewhat more prevalent than the development of practical toolkits and guidelines.

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*Keywords:* built environment; disaster resilience; research methodologies

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### 1. Introduction

The United Nations' Sendai Framework for Disaster Risk Reduction (SFDRR) 2015-2030 [1] calls for "multi hazard and solution-driven research in disaster risk management to address gaps, obstacles, interdependencies and

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social, economic, educational and environmental challenges and disaster risks". The Advancing Skill Creation to ENhance Transformation (ASCENT) project aims to contribute towards this SFDRR goal by strengthening the research and innovative capacities of researchers to tackle the challenges associated with developing societal resilience to disasters. The ASCENT project identifies disaster resilience research and innovative capacity needs in higher education institutions in Bangladesh, Sri Lanka and Thailand and develops research infrastructure and capacity to address these and to increase international cooperation among higher education institutions. The three-year project is co-funded by the European Union's Erasmus+ programme. It is implemented by a consortium of 13 European and Asian higher education institutions and is led by the University of Huddersfield's Global Disaster Resilience Centre. [2]

This research was undertaken under the auspices of the ASCENT project. The authors were tasked with providing an introduction to research methodology in the context of disaster resilience in the built environment (DRBE) as part of capacity building training which took place in Sri Lanka in February / March 2017. To this end, an analysis of recent journal articles was carried out with the intention of providing an up-to-date account of the research methods in current use in order to inform researchers of contemporary research practices as well as to identify trends and possible gaps that could offer opportunities for innovation and improvement.

### *1.1. Research methodologies in disaster resilience in the built environment (DRBE) research*

In accordance with Redman and Mory (1923) [3] who noted that "research is a systematized effort to gain new knowledge", we define research here as a systematic way of finding answers to questions. Disaster resilience in the built environment is an interdisciplinary research field [4, 5] which brings together a wide range of researchers from different backgrounds and therefore with different research traditions. Amaratunga *et al.* (2002) noted that, in interdisciplinary research, the clear understanding of the research problem, terminology and choice of appropriate research methods becomes especially acute, as "... fundamental issues pertaining to different types of research typologies will affect the whole research process, as the success of a research project will be largely dependent on the robustness of this strategy" [6].

Across different disciplines, a wide variety of alternative research methods, terms and approaches are applied and are accepted to varying degrees, so that finding an appropriate way to conduct research within the great choice of methods can be challenging and invites "disagreement about theoretical concepts and faulty assumptions about the human role in disasters to disputes about the inclusion of various disciplines and the relative merit of competing paradigms" [7]. Thus, research methodology choice represents both a critical issue and a particularly challenging decision to make in the context of DRBE research.

### *1.2. Reviewing research methodologies in contemporary DRBE research*

One of the few publications reviewing research methodology in disaster research has been *Methods of Disaster Research* edited by Robert Stallings (International Research Committee on Disasters, 2002) [8]. Within this edited collection of papers on disaster research methods, Stallings notes that very little has been written specifically on the subject of research methods in the field of disasters. And, although the research methods employed are widely used in other fields, the uniqueness of the disaster context affects the way in which they are applied [9]. Phillips (2002) [10] notes the rich tradition that qualitative methods have in disaster research since the 1920s, particularly of the interview-based, case study variety, but also alludes to funders tending to have a preference for positivist as opposed to naturalist paradigms for research and that this favours quantitative research. To the authors' knowledge, there has not yet been a comprehensive investigation into research methodologies or methods in the narrower DRBE field.

Research methodology refers to the justification in terms of the underlying assumptions, principles, etc. for the research methods being applied in a research project [11]. In order to undertake a review of the methodologies in use in DRBE research, it is helpful to have, as a starting point, a general framework for the types of data which should be collected in order to describe the research methodology of extant articles. For this purpose, a loose classification structure was drawn up largely based on that implied by Creswell's book *Research Design: Qualitative, Quantitative and Mixed Methods Approaches* [12], as follows:

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