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Editorial: Diversity of Design Innovation Management research – the Design Innovation Management SIG

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Papers included in the Design Innovation Management Special Interests Group's section cover a spectrum of topics such as trying to develop a measurement to benchmark design's strategic impact in manufacturing companies, or exploring external barriers hampering safety product innovation and exploring critical thinking elements in educational settings. The included papers in the DRS2020 conference proceedings illustrate the wide level of diversity related to design innovation management research.

In the first paper (paper 185) by Sonny Yip Hong Choy, Blair Kuys and Gianni Renda titled 'Expanding industrial design's contribution to manufacturing SME's in Hong Kong by introducing a Balanced Scorecard for industrial design management' outlines a rationale to develop a tool named 'Balanced Scorecard' to measure performance of 'industrial design management' within manufacturing SMEs. The development of the 'Balanced Scorecard' tool is part of a doctoral research project. The 'Balanced Scorecard' has been inspired by Kaplan's and Norton's initial work in 1992 and the idea is to extend the measure to 'industrial design management' and how it informs SMEs' strategy and in return, it is anticipated that the information can be used to improve the performance of the 'industrial design management'. The doctoral candidate plans to test the 'Balanced Scorecard' with manufacturing SMEs located in Hong Kong.

In the next paper (paper 251) by Lisa Giusti Gestri and Carolyn Barnes titled 'Product standards as a barrier to innovation: the case of jockey's safety vests' explores how design innovation which is related to personal safety can be hampered by national product standards. The authors propose that in order to stimulate product design innovation a wider network of stakeholders need to be considered. For example, in their review of jockey's safety vests in Australia they identified that beside the jockeys, both medical, as well as product standard experts, should be involved in the innovation process.

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The third paper (paper 286) titled 'Research on the value of CMF design in industrial products' by Ying Liu argues that the fastest and most efficient cost reduction can be realised by changing the Colour, Material and Finishing (CMF) scheme. Liu proposes that the CMF design concept is related to the International Council of Societies of Industrial Design (ICSID) 1980's definition of industrial design. Ying Liu suggests that CMF can also be used to develop business strategy. Thus, the author concludes that future designers should be trained using CMF as part of their practices.

The next paper (paper 204) by Blair Kuys and Mark Strachan outlines a research-led design project undertaken with a lighting company and how it stimulated the company's innovation by enabling it to access expertise of using CAD and 3D prototyping technology. The technological expertise was used to progress the aesthetic development of a new range of products, as well as their structural and functional elements.

The fifth paper (paper 272) titled 'A pilot study used to better construct a research direction to understand where industrial design fits within the 4th industrial revolution (Industry 4.0)' by Christoph Koch, Blair Kuys and Gianni Renda argues that industrial designers are largely unaware about 'Industry 4.0' benefits. They suggest that the lack of understanding is potentially hampering innovation to support companies to take advantage of Industry 4.0.

The last paper (paper 358) by Wei Leong and Leon Loh titled 'Sharpening Critical Thinking in Problem Identification in Design and Technology Education' explores critical thinking elements as used by Design and Technology students located in Singapore. The authors propose that the contextualising students' critical thinking can support teachers to improve how they guide students' design projects. They concluded that the students who participated in the research have achieved positive outcomes related to critical thinking.

About the Authors:

Erik Bohemia PhD is an Adjunct Research Professor at OsloMet, Norway. Previously Programme Director for Design Innovation at Loughborough University London. He has founded and co-founded many organisations committed to design innovation and design education.

Blair Kuys is a Professor and the current director of Swinburne University's Centre for Design Innovation. He has extensive experience in product development and a strong track-record in industry-university engagement. Over the past 6-years he has signed over 30 industry-university research projects to the value of \$AUD6.2M.

For more information on the Design Innovation Management SIG, please visit the SIG's webpage at <https://www.designresearchsociety.org/cpages/design-innovation-management-sig>. To find out whether the SIG is organising a satellite event to the DRS2020 conference, or just to get in touch with members and see news on the SIG, please visit the SIG webpage.