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INTERVENTIONS AND ITERATIONS TO FORTIFY SMALL BUSINESS RESILIENCE

Krishnakumar Nair *

Muma College of Business
University of South Florida, Tampa,
Florida, USA

kknairusa@gmail.com

* Corresponding author

ABSTRACT

Aim/Purpose	Globally, small businesses are experiencing alarmingly high failure rates. The Business Failure Modes and Effects Analysis (BFMEA) framework was developed as a proactive solution to address this challenge, specifically targeting small technology enterprises representing approximately one-third of the small enterprises sector. This research illustrates how targeted practitioner interventions and iterative refinements, guided by the elaborated Action Design Research (eADR) methodology, significantly enhanced the effectiveness of the BFMEA worksheet – evolving it into a structured, practical tool for improving business resilience.
Background	The BFMEA artifact, presented as a structured worksheet, enables business owners to systematically identify potential failure modes while emphasizing proactive risk identification and prioritization within small businesses or industries. Following its preliminary implementation in select small technology enterprises, the BFMEA framework is positioned for broader adoption across various industry sectors.
Methodology	The author applied the eADR methodology to evolve the BFMEA theory and the artifact (worksheet). Through the four stages of diagnosis, design, implementation, and evolution, eADR facilitated the iterative refinement of the BFMEA worksheet. Practitioner interventions throughout this process enhanced its effectiveness and expanded its scalability.
Contribution	Enhancing the resilience of small industries is vital to ensuring regional and global economic stability. This study presents the development and refinement of the BFMEA framework – a scalable, structured tool designed to

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Interventions and Iterations

	reduce failure rates among small technology businesses – emphasizing the value of academic-practitioner collaboration in driving sustainable business solutions.
Findings	This study underscores the value of the eADR methodology in developing innovative, sustainable solutions for small industries through iterative, practitioner-driven artifact design. It also highlights the importance of qualitative analytics and academic-practitioner collaboration in refining the BFMEA framework and enhancing the effectiveness of its worksheet.
Recommendations for Practitioners	This study highlights the essential role of practitioner involvement in applied research and developing practical business tools. The BFMEA worksheet empowers small industries to proactively identify and prioritize potential failure modes using the Risk Priority Index (RPI), enabling targeted mitigations that enhance operational resilience and support long-term sustainability.
Recommendations for Researchers	For applied research to effectively benefit the community, selecting the appropriate research methodology and engaging in relevant businesses, industries, or organizations is essential. The academics-practitioner collaborations ensure the collection of valuable insights that contribute to the refinement and evolution of the solutions.
Impact on Society	Small industries gain significantly by strengthening their growth, sustainability, and resilience while minimizing failure rates. This study supports global economic stability by offering practical insights and solutions that contribute to the long-term success of small businesses.
Future Research	Future research will focus on broadening the implementation of BFMEA across a wider spectrum of companies, investigating its potential to enhance small industry funding criteria through engagement with venture capitalists and business angels, and developing an AI-driven BFMEA application that can be universally adopted by businesses.
Keywords	business resilience, intervention, iteration, eADR, BFMEA, thematic analysis, academic-practitioner collaboration

AUTHOR



Krishnakumar Nair holds a Doctor of Business Administration (DBA) and a Master of Business Administration (MBA) from the University of South Florida, Tampa, Florida, USA. He also earned a Master of Science (MS) in Computer Science from the University of Illinois at Chicago, Illinois, USA.

With over 25 years of experience in the technology industry, Nair has held key roles at Lucent Technologies, Motorola Inc., Motorola Mobility LLC (a Google and Lenovo company), the University of South Florida Information Technology, and Humana Inc. His research and publications span multiple disciplines, including engineering management, artificial intelligence, data engineering, cybersecurity, software modeling, and electronic materials.

Nair is a certified Project Management Professional (PMP) and holds Lean Six Sigma Green Belt, Black Belt, and Master Black Belt certifications, as well as a Certified Manager of Quality and Organizational Excellence (CMQ/OE) credential. Additionally, he has obtained several Agile and

SAFe certifications. He is recognized as a Fellow of the Institution of Engineers (India), a Senior Member of the Institute of Electrical and Electronics Engineers (IEEE), a Senior Member of the American Society for Quality (ASQ), and a Member of the Project Management Institute (PMI).