

ACHIEVING BUSINESS RESILIENCE THROUGH DATA-DRIVEN DECISION-MAKING: A MIXED-METHOD ANALYSIS

Dr. Tapish Panwar, Dr. Kalim Khan, Ravi Radhadrishna & Nishant Singh*

Abstract

Purpose:

This paper explores the concept of business resilience and examines the role of data-driven decision-making (DDDM) in enhancing organizational resilience across sectors. It aims to identify the key drivers of resilience and assess how effectively businesses are leveraging data in decision-making processes.

Design/methodology/approach:

A two-stage research design was adopted. The first stage involved exploratory research through personal interviews to understand how business resilience is defined and to identify its key drivers. The second stage employed a descriptive research approach using a structured questionnaire to measure the impact of DDDM on business resilience.

Findings:

The exploratory study identified five key drivers of business resilience: financial strength, leadership, brand equity, anticipation, and decision-making. The descriptive study revealed that DDDM significantly contributes to business decision-making and resilience across industries. However, organizations often fall short of fully utilizing DDDM due to internal barriers such as a lack of strategic foresight and resistance to change.

Research limitations/implications:

This study is limited by its sample size and sectoral coverage, which may affect the generalizability of the findings. Future research could explore sector-specific adoption of DDDM in greater depth.

Practical implications:

The findings encourage organizations to institutionalize data-driven practices and build internal capabilities to overcome resistance and align data strategies with long-term goals.

Social implications:

Improved business resilience can contribute to economic stability and workforce sustainability, especially in times of crisis.

Originality/value:

This study uniquely combines qualitative and quantitative approaches to examine how DDDM can serve as a critical enabler of business resilience, offering practical insights for both scholars and practitioners.

Keywords: Business resilience, Data-driven decision making; data insights, mix-model research

Dr. Kalim Khan, Director, Brains Trust, kalim.k.khan@gmail.com (+91 - 98202 83973)

Ravi Radhakrishnan, Managing Director, MetrixLab, Mumbai, (ravi1504@gmail.com, +91 - 98205 75633)

Nishant Singh, GM-Strategy and Business Development, Crompton Greaves Consumer Electricals Limited,

Mumbai, (nishantsingh76@gmail.com, +91 - 08110 26820)

^{*}Dr. Tapish Panwar, Assistant Professor, Atlas Skilltech University, Mumbai, tapish.panwar@gmail.com (+91 - 9521215121)

Introduction

Often, a crisis tests the foundation, fundamentals, values, and strength of businesses, and plays a valuable role in the long-term sustenance, growth, and often survival (Williams & Vorley, 2017). Bhamra et al. (2011)) argued that a crisis significantly affects business continuity as well as sustenance. It is well known how the business continuity around the world was severely hampered by the onset of Covid-19 putting forth the discussion about businesses' ability to anticipate, and withstand the crisis. Such uncertainties reinforce the thought of building resilient businesses that can stand the test of time, and bounce back from adverse volatile circumstances.

Resilient businesses that can absorb shocks and recover from such crises are not just able to survive during the crisis, but also thrive after the crisis is over (Linnenluecke & Griffiths, 2010). Kurtz and Varvakis (2016) claimed that resilient businesses are able to adapt more quickly during a crisis than businesses that are not resilient. Despite the advances in the research on business resilience and ways to achieve the same in the western markets, there is a dearth of such literature in the Indian context. Further, limited research was found on how data-driven decision-making actually leads to business resilience and the hurdles that keep businesses from taking this approach for building business resilience.

Planning and preparing for building a resilient business invariably requires leadership driven by a long-term vision (Aldianto, et al., 2021), the ability to acknowledge the absolute reality, and an appreciation for the strengths, weaknesses, & advantages of the business. The ability to make critical decisions that can chart the way towards building resilience is what finally makes a difference for the business entity (Barasa, et al., 2018; Holling, 1973).

Review of Related Literature

The literature review looks at the evolution of the definition of resilience from various perspectives and discusses the importance of building resilience for any business.

Methodology

An SLR (Systematic Literature Review) was conducted by choosing relevant keywords with an open duration range to understand the evolution of the concept of business resilience and data-driven decision-making by businesses. Further related literature was also referred to on areas around data-driven decision-making and its influence on business resilience. Further details are given in the Review Protocol in Table 1.

Table 1 Review Protocol (Source: Authors' own representation)

Keywords	Inclusion Criterion	Exclusion Criterion	Databases
Resilience <i>OR</i> Business Resilience <i>OR</i> Organization Resilience <i>OR</i> Resilience in Business <i>OR</i> Resilience in Organizations <i>OR</i> data-driven <i>OR</i> Data-driven Decision making <i>OR</i> Data-driven decisions <i>OR</i> Data-driven Business decisions	Papers with discussion on resilience (theoretical/ conceptual/ empirical) around business, and on decision making around data and data-driven systems	Resilience in Ecology, Environment, and non- business domains. Technical papers on IT systems in organizations	SCOPUS, J-Gate, Emerald, Web of Science

What is Business Resilience

Table 2 shows a list of various definitions of Business or Organization Resilience and an evolutionary state of the definitions in the last 50 years. The major themes around these definitions are Absorption of disturbance, Adaptability of functioning, and Risk mitigation, with variations in factors that lead to these forms of resilience.

Table 2 Evolution of Perspectives around Business Resilience (Source: Authors' own Representation)

No.	Authors	Year	Resilience Definition	Theme
1.	(Holling, 1973)	1973	The skill to absorb change and disturbance and maintain the same relationships between variables	Absorption of Disturbance
2.	(Pimm, 1992)	1992	The length of time that a system takes to return to equilibrium following a disturbance	Time to Equilibrium
3.	(Perrings, 1998)	1998	Resilience involves system stability after a disturbance	Achieving Stability
4	(Horne & Orr, 1998)	1998	Capability to adapt to the environment and manage environment's variability	Manage Variability
5.	(Walker, et al., 2002)	2002	The ability to maintain the functionality of a system when disrupted or the ability to retain the elements needed to update	Maintain Functionality
6.	(Lengnick-Hall & Beck, 2003)	2003	It is a complex blend of behaviours, perspectives, and interactions that can be developed, measured, and managed	Blend of Attributes
7.	(Hamel & Valikangas, 2003)	2003	The fundamental quality to respond productively to significant change that disrupts the expected pattern of event	Productive Response
8.	(Starr, et al., 2003)	2003	How businesses can withstand systematic discontinuities as well as the capability to adapt to new environments	Withstand and Adapt Risks
9.	(Scott & Laws, 2006)	2006	The capacity for recovery from the crisis by following the order of rescue, restoration of damaged infrastructure, and then rebuilding markets	Recovery and Restoration
10.	(Vogus & Sutcliffe, 2007)	2007	Positive changes in crisis leads to a stronger and more resourceful organization	Positive Adjustments
11.	(Seville & McManus, 2008)	2008	Resilience is a function of both the vulnerability of a system and its adaptive capacity	Adaptive Capacity
12.	(Seville, et al., 2008)	2008	When an organization is aware of its general situation, managing vulnerabilities and adaptive ability	
13.	(Donnellan, et al., 2009)	2009	Resilience is related to predicting and preventing unexpected threats	Prediction and Prevention
14.	(Linnenluecke & Griffiths, 2010)	2010	The capacity to absorb impact and recover.	Impact Absorption

15.	(Sullivan-Taylor & Branicki, 2011)	2011	Ability to manage the threat from extreme weather events that can severely affect businesses	Flexibility
16.	(Lengnick-Hall, et al., 2011)	2011	The ability to survive, adapt and even thrive on disruptive surprises that potentially threaten companies' longevity	Survive, Adapt, and Thrive
17.	(Bhamra, et al., 2011)	2011	The ability of an element to return to a pre-disturbance state after a disruption	Reach Pre- disturbance Stage
18.	(Rose & Krausmann, 2013)	2013	. The ability of a system to maintain function when shocked (Static economic resilience), and capacity to hasten the recovery from a shock (Dynamic economic resilience)	Maintain Function and Recover
19.	(Bruneau, et al., 2003)	2013	The ability of the system to reduce the chances of a shock, to absorb a shock if it occurs (abrupt reduction of performance), and to recover quickly after a shock (reestablish normal performance	Reduce Probability of Shocks
20.	(Lampel, et al., 2014)	2014	Greater stability in performance despite the economic crisis	Enhanced Stability
21.	(Huggins & Thompson, 2015)	2015	Resistance to shocks, renewal, and recovery or bounce back from shocks	Resistance and Bouncing
22.	(Lima & Medda, 2015)	2015	The speed at which a system returns to equilibrium after a disturbance away from equilibrium	Speed to Equilibrium
23.	(Tognazzo, et al., 2016)	2016	The ability to bounce back and function over time in the face of an economic crisis	Bounce back
24.	(Ortiz-de- Mandojana & Bansal, 2016)	2016	Reduce financial volatility, record higher sales growth, and higher chances of survival for 15 periods	Survive and the Thrive
25.	(Kurtz & Varvakis, 2016)	2016	The ability of a system to cope with disturbances caused by external phenomena, and still remain unchanged	Unchanged against Disturbances
26.	(Barasa, et al., 2018)	2018	A system's ability to continue to meet its objectives in the face of challenges	Goal Achievement
27.	(Reeves & Whitaker, 2020)	2020	Company's capacity to absorb stress, and thrive in altered circumstances	Stress Absorption
28.	(Sarker, et al., 2020)	2020	The ability to address all the root causes of disasters through context-based adaptation strategy	Adaptation Strategy
29.	(Elgazzar, et al., 2022)	2022	The ability of a system to maintain its identity and to adapt its essential structure and function in the face of disturbances	Maintain Identity

Why do Businesses Need to be Resilient?

The contemporary business environment has become more volatile and uncertain than ever given factors like accelerated technological evolution, and interconnectedness of the global economy (Reeves & Whitaker, 2020). Building resilient businesses is known to be an effective approach to succeed in such an environment (Close, et al., 2020).

A resilient business organization is said to have a competitive edge due to a multitude of reasons (Reeves & Whitaker, 2020) like better anticipation and thus reduced probability of failure, better managing of consequences of failure, and also reduced the time taken for response and recovery (Lima & Medda, 2015). Resilience is also known to be a characteristic of the organizations which have higher probability to succeed in uncertain times (Samal & Chatterjee, 2020).

A resilient business organization is said to have a competitive edge against competition due to multitude of reasons. When a business faces an unanticipated crisis, a resilient business is able to tackle the crisis better than its industry peers (Reeves & Whitaker, 2020) Lima and Medda (2015) argued that resilient businesses are able to better anticipate and thus reduce the failure probability, manage consequences of failure better, and reduce the time for response and recovery. Resilient businesses are also shown to be able to find ways to take chances and take advantage of situations, which are deemed negative (Aldianto, Anggadwita, Permatasari,

Mirzanti, & Williamson, 2021).

Donnellan et al. (2009) showed that resilience helps businesses predict and prevent unexpected threats presented by the unanticipated crisis. Rose and Krausmann (2013) found out that resilient business is not only able to maintain their functioning in crisis but is also efficient in the utilization of resources for repair and reconstruction post the crisis. A resilient business can shake off a crisis faster than non-resilient businesses, and thus are in a much better position to thrive post the crisis (Elgazzar, El-Shahawy, & Senousy, 2022). This was in line with the remarks made by Singh and Padmakumari (2020) in their assessment of benchmarked performance assessment for mutual funds players in India.

What makes a Business Resilient?

Resilience is a function of planning as well as preparation for an unanticipated event in the future, and is not a factor of a specific source or input, but is achieved through a mix of factors. The extant is outlined in Table 3.

Table 3 Sources and Factors Leading to Business Resilience (Source: Authors' own Representation

No.	Authors	Factors/Sources of Resilience Definition
1.	(Felland, et al., 2003)	Availability of resources and ability to access these resources at the right time
2.	(Pal, et al., 2014)	Financial and Technological knowhow relevant to the business needs
3.	(McManus, et al., 2007)	Efficient and up-to-date planning for all possible contingencies
4.	(Achour & Price, 2010; Andrew, et al., 2016)	Information Management and Usage/ Flow of information in the system
5.	(Stephenson, et al., 2010)	Knowledge management, and seamless communication
6.	(McManus, et al., 2007)	Situation awareness about the current business environment

7.	(Lapao, et al., 2015)	Well planned and implemented monitoring and reporting system
8.	(Lembani, et al., 2015)	Collateral pathways representing multiple alternative courses of action also bestows resilience
9.	(Moore & Westley, 2011)	Social networks that offer avenues for increased mobilization and innovation
10.	(Brinkerhoff & Bossert, 2014)	Governance, including the rules and processes that guide operations and affairs of organizations
11.	(Beermann, 2011; Seville, et al., 2008; Parker, et al., 2015; Attar & Abdul-Kareem, 2020)	Leadership practices, and approach about leading a business, especially during the crisis
12.	(Booher & Innes, 2010; Kachali, et al., 2012)	Clear and shared vision
13.	(Sawalha, 2015; McManus, et al., 2007)	Culture that drives organizational attitude towards every day and acute challenge
14.	(Ager, et al., 2015)	Human resources and the requisite skills
15.	(Aldianto, et al., 2021; Lu & Ram, 2011)	Dynamic capabilities and technological capabilities
16.	(Khanna & Jha, 2021)	Role of Tech-driven data generable abilities to improve organization performance

Data-driven Decision-making for Business Resilience

Data-driven decision-making (DDD) refers to the practice of basing decisions on the analysis of data rather than purely on intuition (Brynjolfsson, et al., 2011). Data-driven Decision-making (DDD) is credited for the improvement of performance in businesses in crisis, thus helping build resilience in organizations (Brynjolfsson & McElheran, 2016a; Brynjolfsson, et al., 2011). DDD offers benefits to businesses by leading to robust decision-making practices that make businesses more resilient (Brynjolfsson & McElheran., 2016b) However, despite the contribution of DDD to business resilience, Spieske and Birkel (2021) argued that the adoption of DDD in organizations remains uneven, at best.

DDD has also been argued to lead to an effective approach of decision-making that is considered quick and efficient (Meerja & Almustafa, 2016).

DDD received support as millions of data points were made available to businesses to take necessary actions during and after disasters like an early warning system, (Sarker, et al., 2020). This is due to the advances in IT, which has changed what is measurable, analysable, and communicable within firms. Firms that shift to being more data-driven also invest in the advancement of their IT systems significantly.

Literature Gaps

The area of business resilience lacks systematically structured literature (Tognazzo, et al., 2016; Sutcliffe & Vogus, 2003) and robust definition of resilience for businesses (Williams & Vorley, 2017; Akgün & Keskin, 2014; Ortiz-de-Mandojana & Bansal, 2016) especially in developing markets (Saad, et al., 2021). Further, Bhamra et al. (2011) and more recently, Barasa et al. (2018) concluded that a lot that is written around resilience is from a theoretical perspective.

Further, even with a larger agreement about existence of research on various aspects, definitions, measurements, and outcome of resilience for businesses, researchers argued that focus on developing countries and markets in these research is missing.

This is surprising given the rising contribution of the developing economies to the world GDP. As per a recent report by UNDP (2021), the world will witness a larger contribution of the developing economies toward global GDP (upwards of 60%), as compared to the developed economies. Such studies are especially difficult to come by in the Indian context and that too in light of the recent Covid-19 crisis.

Finally, the inside-out perspective is not found in the concept of business resilience and the company's own assessment of its state of business resilience through data-driven decision making does not exist. This is the crucial missing link to understanding, if a business' resilience, or lack of it, is acknowledged, and is in line with what the business executives of that organization believe of it.

Research Methodology

Study 1 - Exploratory Research

The mixed-model research was conducted in two stages, and two separate studies were conducted in a sequential manner. In the first step, an exploratory research was conducted which led the researchers to a set of results. Basis these results, a second study, which was descriptive in nature was designed and conducted.

This effectively narrowed down the scope of the research leading to T-shaped research. The first study was intended to explore the idea of resilience

from the business point of view, and the various drivers that help an organization to become resilient in a time of crisis.

Research Objectives

- To gauge what defines resilience for an organization.
- To understand key drivers of resilience for organizations wading through tough times.
- To identify challenges faced by organizations in building resilience.

Research Method

The exploratory research was conducted through personal interviews between 3 Jan 2022 and 24 Feb 2022. The interviews were open-ended and were intended to generate insights about business resilience, specifically around key drivers for resilience. The qualitative analysis was conducted and specific themes were generated around the responses.

Sampling Framework

Mid-management and corporate executives with at least Eight years of experience were interviewed. 53 executives were reached out for the survey, and 34 interviews could be conducted during the stipulated time. All executives were based out of India, and the most interviews were conducted through phone/zoom calls.

Results

The below table (Table 4) detail the companies that were associated with a particular sector, along with the number of years of experience that the executives who were interviewed from those companies had.

The respondents were a healthy mix of four sectors – FMCG, Consumer Durable, IT/ITes, and Pharma. Each respondent was the unique one for

the given company, so none of the companies had two executives being part of the interview process for this round of the study.

Table 4 Sample Descriptive I

	Experience of Executives Interviewed						
Sectors	Up to 10 Years 10 -15 Years More than 15 years						
FMCG	4	8	2	14			
Consumer Durables & Electronics	2	5	1	8			
Pharma	2	3	2	7			
IT/ITes	3	1	1	5			
Total	11	17	6	34			

Based on the responses given by these executives, a set of themes was formed, and an exclusive classification was established for the key drivers that help build resilience in businesses. Business resilience was identified as an organization's ability to withstand and manage a crisis better than others, and be able bounce back faster than others. This was in line with the definitions proposed by researchers as discussed in the literature review.

Further, the key drivers for business resilience

were found, and ranked in order of importance as—

1. Financial Strength, 2. Decision Making, 3.

Leadership, 4. Brand Equity, and 5. Anticipation.

Decision-making is also somewhat related to the leadership, and anticipations drivers, as both of them are directly and indirectly responsible for real-time decision-making that leads in making a business resilient. Financial strength is an obvious choice since it would help a business sustain for long in a time of crisis. Thus, the second study was conducted with decision-making as the key, with the additional perspective of the role that data plays in the decision-making.

As far as the challenges that an organization faces while trying to build resilience, the most common reason identified was the lack of long-term strategic vision and missing bias for execution. Often, businesses become too comfortable in the processes and eco-systems that work with, and it becomes difficult for them to break free and accept dynamic realities and appreciate the importance of change.

Study 2 - Descriptive Research

Basis the first survey, data-driven decisionmaking was ranked second as a critical driver in building business resilience. This was picked up as the theme for the second research, which was descriptive in nature.

The influence and role of data-driven decisionmaking in building business resilience were assessed. Primarily, the role of data and its use in decision-making that lead to business resilience were evaluated.

The analysis suggested that the role of data-driven decision-making is not only understood but also appreciated within the organizations universally; however, the same cannot be said about the actual conduct within the organizations. Further, it was found that there is not a simplistic "Yes" and "No" answer for the data-driven decision-making

capability of an organization, as businesses often find themselves on the wide range of a spectrum when it comes to these capabilities, and as well as intent.

Research Objectives

- To assess the importance of data in decisionmaking in organizations.
- To identify the role of data-driven decision making in building business resilience
- To assess the data-preparedness of organizations for data-driven decision-making
- To understand the extent to which organizations rely on data-driven decisionmaking for business resilience.

Research Method

The second study was conducted as descriptive research with the help of a structured questionnaire that was shared online with a pre-decided sample between 27 Feb 2022 and 20 March 2022. The questionnaire had closed-ended questions and was intended to generate specific insights around the role, and influence of data, and data-driven decision-making in building business resilience. The analysis brought forth the role of data in the decision-making of contemporary Indian businesses, and how it influences business resilience. The respondent group was spread across the four sectors, which were referred to for the initial exploratory study – FMCG, Consumer Durables & Electronics, IT/ITes, and Pharma. Statistical methods used for this analysis were Chisquare test of association, and goodness of fit, Wilcoxon Signed-Rank Test, t-Test, and ANOVA tests.

Hypothesis

A set of the hypothesis was formed to test the role that data-driven decision-making play in building resilience for an organization. Since four different sectors were used for the study, the applicability of the insights generated across the four sectors was also tested. Below is the hypothesis that was formed for testing:

- H0₁: Data and Data-Driven Insights do not play a significant role in Business Decision making
- 2. **H0**₂: There are no significant differences across sectors in the role of data and data-driven insights and business decision making
- 3. **H0**₃: There are no significant difference between the importance of data in the business decision and its influence in the respective organization
- 4. **H0**₄: There are no significant differences across sectors for the role of data and data-driven insights and business decision making
- 5. **H0**₅: There are no significant difference between the importance of data in business decision and its influence in the respective organization

Sampling Framework

Mid management, corporate executives with at least Eight years of experience were reached out for filling out the questionnaire. 350 executives were reached out for the survey, and 323 complete and usable responses were received. All executives were based out of India.

Result

The below table (Table 5) has details of companies from a specific sector, along with the number of years of experience that the executives who responded to the survey who came from four sectors – FMCG, Consumer Durable, IT/ITes and

Pharma. Unlike the exploratory study, multiple executives from a single company were allowed to fill the survey; however, all companies, which were reached out to, for the exploratory research, were covered in the second study with the descriptive study.

Table 5 Sample Descriptive II

	Experience of Executives Interviewed					
Sectors	Up to 10 Years	More than 15 years	Total			
FMCG	38	66	8	112		
Consumer Durables & Electronics	13	46	8	67		
Pharma	22	34	12	68		
IT/ITes	29	34	13	76		
Total	102	180	41	323		

The data analysis for the second study was conducted to generate insights as well as test the hypothesis. The data largely suggested that the role of data-driven decision-making is appreciated within organizations universally. However, it was found that said despite this acknowledgment of the positive influence of data-driven decision-making on businesses, most businesses are not harnessing the power of data and data-driven decision-making

to its full potential. Further, there is not a simplistic "Yes" and "No" answer for the data-driven decision-making capability of an organization, as businesses often find themselves on a wide range of spectrum in terms of these capabilities, and intent. The top reasons cited for the importance of data for decision-making are mentioned in the below table (Table 6).

Table 6 Ranked Benefits of Data-driven insights

How Data-driven Insights Aids Businesses Decisions		Rank 2	Rank 3	Rank 4	Rank 5
Gives direction for decision making	184	88	13	28	10
Provides a rationale to the decision	78	113	66	53	13
Makes decision-making objective	33	43	128	45	74
Adds conviction and hence confidence in execution	16	22	53	164	68
Allows for decisions based on a holistic view	12	57	63	33	158

Further to the above insights, the role of data-driven decision-making is also seen to be rising in all functions of the business like product development, brand and market tracking, and consumer insights. The below figure (Figure 1) depicts the functions of an organization where data-driven decision-making is considered to be more useful than others.

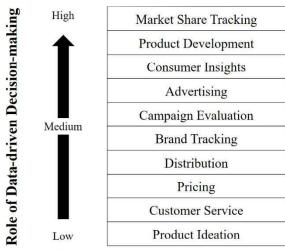


Figure 1 Functions influenced by Data-driven Decision-making (Source: Authors' own Representation

Hypothesis Testing

The below table depicts the results of the hypothesis testing conducted on the data received through the structured questionnaire. Interpretation of the hypothesis testing is added in the last column of the table (Table 7).

Null Hypothesis	Normality	Stat. Test	Result	Interpretation
Data-driven Insights do not play significant role in Business Decision making	Yes Shapiro Wilk's Test (p>0.05)	One-sample t-test p<0.05	Rejected	Data-driven Insights do play a significant role in Business Decision making
There are no significant differences across sectors for the role of data and data-driven insights and business decision making	Yes Shapiro Wilk's Test (p>0.05)	K-sample ANOVA p<0.05	Could not be rejected	Role of Data and Data- driven decision- making is sector agnostic
There are no significant difference between the importance of data in business decision and its influence in the respective organization	Yes Shapiro Wilk's Test (p>0.05)	Two- sampled paired test p>0.05	Could not be rejected	Importance of data and its perceived influence in respective organization is in line
There is no significant dissatisfaction with the current use of data in decision making	Yes Shapiro Wilk's Test (p>0.05)	One-sample t-test p<0.05	Rejected	Data-driven Insights are not satisfactorily used in Business Decision making
There are no significant differences in the reason for importance of data in DDM	Yes Shapiro Wilk's Test (p>0.05	Wilcoxin Signed-Rank Test P<0.05	Rejected	Significant difference in ranking, and "Gives direction for decision" is the highest ranked reason

Discussion

The underlying research done for this paper laid out insights regarding the need for resilience in a business, and how it can be built for organizations. Business resilience is critical for organizations to build a sustainable and profitable business. It not only helps a business handle the crisis more adeptly but also helps it bounce back faster than its competitors. While business resilience can be built through a range of drivers, some of the more critical ones are — Financial Strength, Decision Making, Leadership, Brand Equity, and Anticipation.

The role of data in decision-making came out as a critical factor in making decisions that lead to building business resilience, as data-driven decision-making emerged as one of the top ways to build a resilient business. Data-driven insights are said to help give direction for business decision-making, provide a rationale to the decisions, add objectivity to the decisions made, and adds to the conviction in execution. Above all, it also results in the optimum and efficient return on the investments made. Data-driven decision-making, while useful in all functions of a business, was found to be especially relevant when it comes to market share tracking, product development, consumer insights, and advertising.

From the hypothesis testing, it was found that Data-driven Insights play a significant role in Business Decision making, and it is true for all sectors, as the data collected was from multiple sectors, both products, and services. It was also found that the perception of the importance of data generally, and in an organization in particular is not very different, which means that there is no confusion among the executives about the

importance of data-driven decision-making.

However, it was found that despite the importance of data-driven insights being clear, not many organizations are satisfactorily using data or datadriven decision-making for helping businesses build resilience.

Conclusion

Robust decision-making has been established as one of the key drivers of resilience in businesses. This paper followed a mixed-method approach, which included a thorough literature review around the meaning of resilience, business resilience, and the importance of business resilience. The review was followed up with the primary research, the first of which was an exploratory study for qualitative research, and the second one was a descriptive study for quantitative analysis.

The results from the secondary and primary research led to the conclusion that data-driven decision-making plays a significant role in building business resilience for organizations that help them to survive in times of crisis.

Data-driven decision-making was also established as a proven way to build robustness in the business decision across various functions and domains of a business, and this generic applicability was true for different sectors. Thus, the ability to make coherent and progressive business decisions based on data is largely applicable to multiple sectors. The contribution of data-driven insights is seen in multiple ways, but the most important contribution is to given business decision a clear and far-sighted direction. Thus, data-driven decision-making helps businesses build resilience by helping businesses take objective and robust decisions.

Significance and Limitation of the Study

Businesses shall continue to face black swan events in future, and business resilience is going to be a critical competency for businesses to survive and thrive. Role of data and data-driven decision-making as discussed in this paper shall help businesses organize their efforts and focus towards building resilience through data-driven decisions build on a strong data foundation. Thus, the paper is expected to help build a data culture in businesses with resilience in focus, and data-driven decision-making becoming the mainstay for decision-making process at organizations.

The study has its limitations, as the number of sectors covered by the study is limited to four, with only one sector from service domain. Further, the data was collected during the third wave of Covid-19 in India, and thus almost all the personal interviews were conducted online. While this may have led to COVID-induced response, it could have also restricted the depth of the discussion due to missing personal physical interaction.

References

Achour, N. & Price, A., 2010. Resilience strategies of healthcare facilities: present and future.. *International Journal of Disaster Resilience in Environment, Vol 1, Issue 3*, p. 264–276.

Ager, A., Lembani, M. & Mohammed, A., 2015. Health service resilience in Yobe state, Nigeria in the context of the Boko Haram insurgency: a systems dynamics analysis using group model building. *Confldential Health. Vol 9*, pp. 30-45.

Akgün, A. & Keskin, H., 2014. Organisational resilience capacity and firm product innovativeness and performance. *Int Journal of*

Production Research, Vol. 52, Issue 23, pp. 6918-6937.

Aldianto, L. et al., 2021. Toward a Business Resilience Framework for Startups. *Sustainability, Vol 13*, pp. 3132-3150.

Andrew, S. et al., 2016. Sources of organisational resiliency during the Thailand floods of 2011: a test of the bonding and bridging hypotheses. *Disasters, Vol 40, Issue 1*, p. 65–84.

Attar, M. & Abdul-Kareem, A., 2020. The Role of Agile Leadership in Organisational Agility. In: *Agile Business Leadership Methods for Industry* 4.0. Bingley, UK: Emerald Publishing Limited, p. 171–191.

Barasa, E., Mbau, R. & Gilson, L., 2018. What Is Resilience and How Can It Be Nurtured? A Systematic Review of Empirical Literature on Organizational Resilience. *International Journal of Health Policy Management, Volume 7*, Issue 6, p. 491–503.

Beermann, M., 2011. Linking corporate climate adaptation strategies with resilience thinking.. *Journal of Clean Production, Vol 19*, Issue 8, p. 836–842.

Bhamra, R., Dani, S. & Burnard, K., 2011. Resilience: the concept, a literature review and future directions. Int J Prod Res. 2011;49(18). *International Journal of Production Research, Vol* 49, Issue 18, p. 5375–5393.

Booher, D. & Innes, J., 2010. Governance for Resilience: CALFED as a Complex Adaptive Network for Resource Management. *Ecology and Society. Vol 15, issue 3*, pp. 35-45.

Brinkerhoff, D. & Bossert, T., 2014. Health governance: principal-agent linkages and *health* system strengthening. Health Policy Plan, Vol 29, Issue 6, p. 685–693.

Bruneau, M. et al., 2003. A framework to quantitatively assess and enhance the seismic resilience of communities. *Earthquake Spectra, Vol. 19, Issue 4*, pp. 733-752.

Brynjolfsson, E., Hitt, L. M. & Kim, H. H., 2011. Strength in Numbers: How Does Data-Driven Decisionmaking Affect Firm Performance?. *SSRN Electronic Journal 1*.

Brynjolfsson, E. & McElheran., K., 2016b. *Data in Action: Data-Driven Decision Making in U.S. Manufacturing*, Rotman School of Management Working Paper No. 2722502: US Census Bureau Center for Economic Studies Paper No. CES-WP-16-06.

Brynjolfsson, E. & McElheran, K., 2016a. The Rapid Adoption of Data-Driven Decision-Making. *The American Economic Review, Vol 106, Issue 5*, pp. 133-139.

Close, K. et al., 2020. *The digital path to business resilience*, NY: BGC Report.

Donnellan, M., Conger, K., McAdams, K. & Neppl, T., 2009. Personal characteristics and resilience to economic hardship and its consequences: Conceptual issues and empirical illustrations. *Journal of Personal, Vol 77, p.* 1645–1676.

Elgazzar, Y., El-Shahawy, R. & Senousy, Y., 2022. The Role of Digital Transformation in Enhancing Business Resilience with Pandemic of COVID-19. *Digital Transformation Technology, Vol 224*, pp. 323-333.

Felland, L. et al., 2003. The resilience of health-care safety net, 1996-2001. *Health Serv Res Vol 38, issue 1*, p. 489–502.

Hamel, G. & Valikangas, L. .., 2003. The quest for resilience.. *Harvard Business Review*, 81 (9), p. 52–65.

Holling, C., 1973. Resilience and stability of ecological systems. *Annual Review of Ecology and Systems Vol. 4*, p. 1–23.

Horne, J. & Orr, J., 1998. Assessing behaviors that create resilient organizations. *Employment Relations Today*, 24, p. 29–40.

Huggins, R. & Thompson, P., 2015. Local entrepreneurial resilience and culture: The role of social values in fostering economic recovery. *Cambridge Journal of Regions Economy and Society, Vol.8, Issue 2*, p. 313–330.

Kachali, H. et al., 2012. Organisational Resilience and Recovery for Canterbury Organisations after the 4 September 2010 Earthquake. *Australasian Journal of Disaster and Trauma Studies, Vol 1*, p. 11–19.

Khanna, P. & Jha, S., 2021. Can IoT boost Organization Productivity. *South Asian Journal of Management, Vol.28, Issue 2*, pp. 137-163.

Kurtz, D. & Varvakis, G., 2016. Dynamic capabilities and organizational resilience in turbulent environments. In: *Competitive Strategies for Small and Medium Enterprises*. Cham, Switzerland: Springer, p. 19–37.

Lampel, J., Bhalla, A. & Jha, P. P., 2014. Does governance confer organisational resilience? Evidence from UK employee owned businesses. *European Management Journal*, *32(1)*, p. 66–72.

Lapao, L. et al., 2015. Ebola impact on African health systems entails a quest for more international and local resilience: the case of African Portuguese speaking countries.. *Pan Africa Medical Journal, Vol* 22, pp. 23-43.

Lembani, M. et al., 2015. A Case Study of Maternal Health Service Provision in OR Tambo District, Eastern Cape, in the Context of Chronic Poor Health Performance, London: Department for International Development. UK.

Lengnick-Hall, C. A., Beck, T. E. & Lengnick-Hall, M. L., 2011. Developing a capacity for organizational resilience through strategic human resource management. *Human Resource Management Review*, 21(3), p. 243–255.

Lengnick-Hall, C. & Beck, T., 2003. *Beyond Bouncing Back: The Concept of Organizational Resilience*.. Seattle, WA, USA, Academy of Management, p. 3–6 August.

Lima, M. & Medda, F., 2015. A new measure of resilience: An application to the London. *Transportation Research Part-A*, Vol 81, pp. 35-46.

Linnenluecke, M. & Griffiths, 2010. A. Corporate sustainability and organizational culture.. *Journal of World Business*, *Vol* 45, p. 357–366.

Lu, Y. & Ram, K. R., 2011. Understanding the link between information technology capability and organizational agility: An empirical examination. *MIS Quarterly, Vol 35*, p. 931–954.

McManus, S., Seville, E., Brunsdon, D. & Vargo, J., 2007. Resilience Management: A Framework for Assessing and Improving the Resilience of Organisations, Auckland, NZ: Resilient Organisations Research Report.

Meerja, A. K. & Almustafa, K., 2016. Arch. Considerations for Big Data Management. *International Journal of Advanced Computatopm Scientefic Application*, Vol 7(8), pp. 334-342.

Moore, M. & Westley, F., 2011. urmountable chasms: networks and social innovation for resilient systems. *Ecology and Society. Vol 16 issue 1*, pp. 15-24.

OECD, 2021. Perspectives on Global Development 2021, Paris doi-https://doi.org/10.1787/22224475:OECD.

Ortiz-de-Mandojana, N. & Bansal, P., 2016. The long-term benefits of organizational resilience through sustainable business practices. *Strategic Management Journal*, *37*(8), p. 1615–1631.

Pal, R., Torstensson, H. & Mattila, H., 2014. Antecedents of organizational resilience in economic crises—an empirical study of Swedish textile and clothing SMEs. *International Journal of Production Economy, Vol 147*, p. 410–428.

Parker, D., Holesgrove, M. & Pathak, R., 2015. Improving productivity with self-organised teams and agile leadership. *International Journal of Production Performance Management, Vol 64*, p. 112–128.

Perrings, C., 1998. Special Issue on Resilience and Sustainability. *Environment and Development Economics Vol. 3, Issue 2*, pp. 417-427.

Pimm, S. L., 1992. The *Balance of Nature?*. Chicago: The University of Chicago Press.

Reeves, M. & Whitaker, K., 2020. A Guide to Building a More Resilient Business. *Harvard Business Review*, 2 July.