

Organizational Preparedness for Navigating Disruption Towards Sustainability: Strategies' Analysis

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Abstract. The study explores how design thinking principles can be leveraged to enhance an organization's preparedness for disruptive innovation. To address this challenge, the authors sought to empathize with their clients, recognizing the need for a comprehensive evaluation. A framework guided by five fundamental principles – Scrutiny, Bravery, Resilience, Prosperous and Perseverance – was developed that integrates user-centred design methodologies to evaluate an organization's strengths and weaknesses in the face of disruption. We analysed and interpreted the intricacies of emerging market disruptions, providing organizations with the GroKalp Assessment Tool, an automated tool for self-evaluation and strategic adjustment leading towards a sustainable future. These principles were further broken down into fifteen distinct parameters, each thoughtfully designed to offer organizations a detailed and insightful method for evaluating their responses to the relentless waves of transformative innovation. By utilizing the GroKalp Assessment Tool, organizations can position themselves in one of three categories: Innovators, Adapters, or Resistance Fighters. Design thinking tools are vital in this process, as they encourage creative problem-solving, innovation, and adaptation in an era of rapid technological change.

Key Words: Design thinking; Sustainability; Disruptive business; Disruptive innovation.

1 Introduction

Governments across nations are encouraging the use of zero/low-carbon fuels in power and propulsion systems to achieve energy security and meet emissions targets [12, 16]. Consequently, many countries are implementing policies to encourage the adoption of

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electric vehicles and phasing out fossil fuel vehicles [5]. The advancements in battery technology and the development of charging infrastructure are making electric vehicles a viable option for consumers [9]. Notably, emission norms make it more difficult for IC Engine technology to meet the technological advancements in electric vehicles [8].

Digital disruption, characterized by entrants leveraging information-based assets and following an exponential price-performance trajectory, further enriches the framework by illustrating how digital technologies can disrupt traditional business models [6]. This holistic approach provides a robust foundation for understanding and leveraging disruptive innovations across various contexts and industries.

Investigating how the design thinking approach can help firms develop strategies to respond effectively to disruptive innovation, leveraging established technologies and capabilities, requires the development of a specific toolset. By integrating multidisciplinary teams and encouraging a culture of experimentation, design thinking facilitates the identification of a firm's latent potential and the rapid development of viable solutions. This iterative process not only increases the adaptability of the firm, but also ensures that the solutions are both feasible and desirable, thereby increasing the likelihood of successful adoption.

Considering the paradigm shift, the current research is an attempt to highlight the potential extinction of products invested in by IC Engines Tier 1 suppliers. Therefore, it is important to develop a skill set that is required to innovate and find solutions for sustainable development. The technique of design thinking is an analytic and creative process that engages every person in the process of quick experimentation to create and prototype models, gather continuous feedback to learn from mistakes, and redesign [15].

Market disruptions powered by technological advancements create a continuous hazard to businesses. This research investigates how design thinking principles can support to rate and boost client preparedness for such disruptions. The authors acknowledge the need for an assessment tool that goes beyond simply identifying threats. They aimed to create a structure that promotes empathy within the clients and guides them through a self-ranking tool, eventually locating them for success in a quickly evolving landscape. Disruptive technologies have profoundly changed company environments and industry landscapes, creating unpredicted opportunities and problems. Studies have shown that there is a need to develop an efficient assessment tool to analyse the possible influence of disruptive technologies on the company's survival as businesses traverse the difficulties of implementing such technology.

2 Literature Review

A conceptual framework for disruptive innovations integrates various elements from different research perspectives to provide a comprehensive understanding of how these innovations emerge, evolve and impact markets and societies. Disruptive innovations often start in niche markets and gradually displace incumbent products or services by offering new value propositions that incumbents cannot easily replicate. The framework includes the role of entrepreneurship as a key driver, emphasising the need for companies to embrace disruption rather than fear it and to devise strategies to manage change to improve business outcomes [10, 19].

Managerial activities at middle and lower tiers are crucial in fostering disruptive innovations through strategic actions across different phases of the disruption process [11]. In the context of sustainable development, disruptive frameworks and circular business models are essential for creating products and services that reduce dependence on non-renewable resources and increase efficiency.

Technological advancements are a double-edged sword for businesses. They can offer new opportunities but also pose a significant threat of disruption. The research by Stoiber et al. [19] emphasizes the importance of innovation for survival in such a dynamic environment. They suggest that organizations can benefit from evaluating their responsiveness to potential disruptions.

Several frameworks exist to assess organizational readiness for disruption. However, this research proposes a unique approach by incorporating design thinking principles into the development of a tool that can evaluate the readiness and responsiveness of organizations for disruptive innovation. In the initial research phase, the paper only focuses on tier1 companies in the automobile sector and their senior executive readiness for disruptive innovation. Here, we have explored existing frameworks used by management consultancies like Deloitte, Ernst & Young, and McKinsey. Analyse how these frameworks identify strengths and weaknesses of organizations facing disruption.

Design thinking is a human-centered approach to problem-solving that emphasizes empathy, iterative prototyping, and user testing evangelized and popularized by IDEO beginning in the early 1990s [1]; which highlights its effectiveness in fostering innovation and adaptability within organizations. Organizations are consistently looking for innovative ways to advance their products, profits, and goals, and design thinking has emerged as a driving force to meet these challenges.

While existing research offers valuable insights into disruptive innovation and organizational preparedness, a gap exists in leveraging design thinking principles for assessment. Our research addresses this gap by proposing the GroKalp Assessment Tool.

3 Material and Methods

3.1 Developing GroKalp assessment tool

Companies need to consider a number of important issues when responding to disruptions. In highly volatile workplaces, good risk management techniques are essential. These include teamwork, effective communication, supportive leadership and continuous adaptability. To manage disruptions effectively, organisations need to build on their strengths, such as agility and adaptability, and implement appropriate coping mechanisms [14].

Improving performance outcomes and resilience to disruptions can be achieved by building a flexible organisational structure and maintaining congruence between the ideals leaders proclaim and practice. By considering these variables, organisations can better manage disruptions and maintain their competitive advantage.

To foster a culture of innovation and creativity within the auto industry, the GroKalp Assessment Tool is created to provide a metric-based approach for evaluating ideas. The metrics comprise parameters such as research, innovation across fields, diversification schemes, patent applications, innovative teams, R&D investments for new products, start-up collaborations from diverse markets, and risk management models. Other considerations include consultant recruitment choices made by the organization along with its adoption of sustainable practices while considering top management vision and team agility in adapting to market dynamics including a proactive pivot towards future technologies coupled with an inclination to take risks [17].

According to the scholarly investigation conducted by researchers, the evaluation of players' preparedness for modification can be conducted using five fundamental principles. The parameters of this study are chosen based on reports of big consultancy firms like Deloitte, Ernst & Young, McKinsey, etc. Expert consultations with industry practitioners contribute to framework development, ensuring practical relevance [7].

3.2 Conceptual framework

To effectively scrutinize an organization's behaviour to discover its capabilities for innovation, a multifaceted approach is essential. This involves examining various dimensions such as psychological, entrepreneurial, behavioural, and managerial perspectives to identify individual innovation capabilities. To enhance the GroKalp performance conceptual framework was developed by comprising such critical principles as Scrutiny, Bravery, Resilience, Prosperous and Perseverance. The factors comprehensively encompass all facets of organizational conduct, ranging from research and development to the mitigation of potential risks [4]. A brief description of the same is enlisted in Table 1.

Table 1. Metric assessment model.

Parameters	Criteria	Options A	Options B	Options C	Options D
Scrutiny	Discovering human capabilities toward innovation	Depending on Customer behaviour can play a big role	Developing leadership principles to cultivate human capabilities.	Developing interactive cross-functional team with external experts	Shifting mindsets towards new technology
	New Technological Adoption	Prepare strategy for future technology	Combinations of present & future technologies will help	Reinforce the dominance in the market	Technology isn't the greatest disruption driver
	New opportunity diversification	Opting some defensive measures	Challenge the management to revisit their strategies	Use wait-and-see approach of the industry	Don't forget the older generation
Bravery	Diverge today's threat to future opportunity	Look outside the traditional enterprise walls	Focus on developing innovative culture and leadership	Focus on refinement of the current technology	Technologies are not affordable
	Embrace the change and accept failure	Use traditional ways of competing	Create a new role to focus exclusively on disruption	Review the complete industry analysis	Learn from the failure and restart
	Focus on solution rather reaction	Working towards being leaders in a fresh market	Developing ecosystems	Focus on maintaining business continuity	Focus on the current strategy
Resilience	Multiple concepts development & quick evaluation	Innovation is inherently risky	Leads to struggle in determining which ideas to support	Make a bold move to develop a new core business	Focus on prototype & testing
	Deliberate innovation strategy	develop external resources	Create boundary & conditions for the opportunity	Study the past behaviour of the market	Set a clear Goals of the company
	Industrial incumbents to create new businesses	courage to decide what not to do & what not to fund	Ambiguity to enable the strategic pivots	Adapting the core to meet shifting customer needs	Confident in the current strategy
Perseverance	Yield on current investment	Invest in new forms of education and infrastructure	Spot emerging changes in customer behaviour	Follow the trends	start different project for regular profits
	Risk Consideration for future	Partnership and M&A can reduce risk	Separate traditional business from	scrutinized strategic analyses	No risk involvement in current business

Parameters	Criteria	Options A	Options B	Options C	Options D
			new emerging business		
	Value innovation for stakeholders	Develop team around a promising concept	Re-evaluate the innovation	Opportunity to displace big companies	Implementing safety measures against innovation
Prosperity	Monitoring critical uncertainties	Net effect has been on total market growth	Test new businesses for progress and learning	Changes to sales models and price	Introduces gradual improvements in existing product
	Transformation through business model innovation	Use low cost for upending established business models	Building the foundation for post crisis growth	Outside experts can give you a new angle	Improving the existing model
	Long term strategy for sustainability	Making better products that can be sold for profits	Only regulatory changes are driver of disruption	Revision on mission & vision of the company	Adapt to new market realities

Table 2 presents a comprehensive breakdown of the allocated marks corresponding to each of the four available options for evaluation against specific criteria. Each option is given a score out of 10 for each criterion. The allocation of marks to each option in the table is based on a predetermined scoring system that reflects the importance of each criterion within a specific parameter. These marks have been meticulously determined through a thorough analysis of the inherent characteristics of these key points by the various management consultants concerning the articles and research of Big 4.

Here is the breakdown of how the scoring system has been developed:

- Options that directly address the specific criterion within a parameter have been allotted with higher marks. This multi-source analysis, focuses on alignment with the five key principles and shows a strong approach to handling disruption receives higher marks.
- The panel of consultants and experts considered how well each option equips an organization to handle the challenges of technological advancements and other disruptions caused by changes in achieving sustainable goals.
- A thorough analysis of relevant literature, case studies from major consulting firms, real-world organizational behaviour, and expert insights revealed that options that closely adhere to the overarching principles of Scrutiny, Bravery, Resilience, Prosperity, and Perseverance received higher marks.

The scoring system is designed to provide a quantitative assessment of how closely an organization's approach aligns with best practices for responding to disruption. Table 2 outlines the scoring bands used to categorize respondents into three distinct groups. The scoring is on a scale from 1 to 10. Interpretation of the scoring band range for the three categories:

- Innovators (high readiness): the 8-10 points range reflects a strong approach to handling disruption and achieving sustainability goals which represents by the Green Zone (green colour). The organizations falling in this category thrive in disruption, foster innovation, and adapt quickly.
- Adapters (moderate readiness): the 5-7 points range which suggests an ability to adapt to changing markets but potentially lacking a proactive innovation culture represents Yellow Zone (yellow colour). These organizations can endure by adapting to market changes, likely less proactive than innovators.

- Resistance Fighters (low readiness): the 1-4 points range which indicates a low level of preparedness for disruption, potentially a resistance to change and risk becoming obsolete represents Red Zone (red colour).

By using this scoring system and categorisation, GroKalp Limited can provide organizations with valuable insights into their strengths and weaknesses regarding disruption readiness. This allows them to develop targeted strategies for improvement and navigate disruptive changes more effectively. Table 2 below specifies the range for each category.

Table 2. The breakdown of the scoring band range as Innovators, Adapters and Resistance Fighters.

S. No.	Category	Scoring Band
1	Resistance Fighters	1 ~ 4
2	Adapters	5 ~ 7
3	Innovators	8 ~ 10

Goal: the goal is to comprehend how senior executives in various organizations react to potential threats or changes in their industry. A covert survey was conducted on over 100 top executives from 20 different companies. Covert means that the executives likely weren't aware they were part of a study on disruption response. The data gathered the executives' direct opinions on potential disruptions. The covert survey provides direct insight into the executives' stated opinions and perceptions and can help to minimize social desirability bias, where participants might report what they think they "should" think rather than their true opinions. GroKalp Limited, a consulting firm, analysed data from two years of interactions with the companies' upper management. This data likely included emails, meetings, and project discussions to understand their actions and strategies. This data reveals the executives' actual actions and strategies, allowing this research to see if their stated views align with their real-world behaviour.

Analysis: GroKalp's team then impartially evaluated the organization based on the combined data from the survey and their interactions. Combining self-reported perceptions with analysis of actual actions highlighted a more nuanced understanding of how executives translate their views into concrete strategies. The research was conducted in an academic manner, suggesting it followed ethical research protocols and aimed for objective findings. This analysis also reveals insights into:

- Gaps between perception and action: Do executives accurately assess the threats? Do their actions reflect their stated concerns?
- Decision-making processes: How do executives gather information, evaluate threats, and formulate strategies in response to potential disruptions?
- Effective strategies for disruption response: By analysing successful projects or well-communicated plans, the research also identifies common elements of effective strategies.

4 Results and Discussion

The authors conducted a survey based on the assessment tool on 100 executives of a total 20 companies that belong to a clientele of GroKalp Limited (GroKalp Assessment Tool) designed by GroKalp Limited team (<https://www.grokalp.com/post/disruption-preparedness-assessment-tool>). Based on the responses collected as listed in Table 3, the parameters were fed into the assessment tool presented in Table 1.

Table 3. The breakdown of the survey participants' feedback.

Parameters	Criteria	Option A	Option B	Option C	Option D
Scrutiny	Discovering human capabilities towards innovation	26	22	9	44
	New Technological Adoption	29	52	10	10
	New opportunity diversification	5	81	10	5
Bravery	Diverge today's threat to future opportunity	10	76	14	0
	Embrace the change and accept failure	5	29	10	57
	Focus on solution rather reaction	10	67	14	10
Resilience	Multiple concepts development & their quick evaluation	5	10	48	38
	Create deliberate innovation strategy	25	20	5	50
	Industrial incumbents to create new businesses	40	25	30	5
Perseverance	Yield on current investment	50	35	5	10
	Risk Consideration for future	25	20	50	5
	Value innovation for stakeholders	70	10	10	10
Prosperity	Monitoring critical uncertainties	5	55	10	30
	Transformation through business model innovation	25	20	50	5
	Long term strategy for sustainability	29	5	48	19

The survey responses were analysed and categorized into three groups using scoring bands. This categorization is illustrated in Table 4, where respondent feedback is color-coded. These colour codes can be used to calculate the percentage of respondents in each category.

Table 4. The average of the feedback collected through the survey plotted on the GroKalp Assessment Tool.

Parameters	Criteria	Option A, %	Option B, %	Option C, %	Option D, %
Scrutinize	Discovering human capabilities towards innovation	26	22	9	44
	New Technological Adoption	29	52	10	10
	New opportunity diversification	5	81	10	5
Gallantry	Diverge today's threat to future opportunity	10	76	14	0
	Embrace the change and accept failure	5	29	10	57
	Focus on solution rather reaction	10	67	14	10
Fortitude	Multiple concepts development & their quick evaluation	5	10	48	38
	Create deliberate innovation strategy	25	20	5	50
	Industrial incumbents to create new businesses	40	25	30	5

Parameters	Criteria	Option A, %	Option B, %	Option C, %	Option D, %
Prosperous	Yield on current investment	50	35	5	10
	Risk Consideration for future	25	20	50	5
	Value innovation for stakeholders	70	10	10	10
Grit	Monitoring critical uncertainties	5	55	10	30
	Transformation through business model innovation	25	20	50	5
	Long term strategy for sustainability	29	5	48	19

On having compared the results, we eventually evaluated the GroKalp Assessment Tools' performance efficiency. Noteworthy, the metric assessment can act as a guide for organizations to analyse their conduct and identify themselves in three categories: those who will thrive in the disruption thanks to their culture of innovation, those who will survive through reactive adaptation, and those who will fail due to their reluctance towards change (Table 5).

Innovators: companies that innovate appear to be in the green zone and have a good chance of surviving market disruptions. They have an innovative culture and may change course quickly in response to new situations. To stay ahead of the competition, these businesses are proactive and take calculated risks.

Adapters: companies that are adapters are those that are situated in the yellow zone and are more likely to endure market upheavals. Even though they may not have an innovative culture, businesses may respond to market developments and adapt. These organizations are more circumspect and perhaps move more slowly, but they can modify their operations and plans as necessary.

Resistance Fighters: organizations that are Resistance Fighters are situated in the red zone and more prone to fail when there are market disruptions. They have a rigid organizational culture and are averse to change, which makes it challenging to change with the times. These companies could take a while to realize that change is necessary and struggle to adapt quickly enough to remain competitive.

Table 5. Illustration of the three zones, with the Innovators in the green zone, Adapters in the yellow zone, and Resistance Fighters in the red zone.

Parameters	Criteria	Innovators, %	Adapters, %	Resistance Fighters, %
Scrutinize	Discovering human capabilities towards innovation	30	44	26
	New Technological Adoption	29	52	19
	New opportunity diversification	81	5	14
Gallantry	Diverge today's threat to future opportunity	76	10	14
	Embrace the change and accept failure	29	57	5
	Focus on solution rather reaction	67	10	24
Fortitude	Multiple concepts development & their quick evaluation	38	10	5
	Create deliberate innovation strategy	75	5	20
	Industrial incumbents to create new businesses	40	25	35
Prosperous	Yield on current investment	50	35	15
	Risk Consideration for future	75	20	5
	Value innovation for stakeholders	10	70	20

Parameters	Criteria	Innovators, %	Adapters, %	Resistance Fighters, %
Grit	Monitoring critical uncertainties	5	55	40
	Transformation through business model innovation	50	20	30
	Long term strategy for sustainability	67	5	29

Based on the input from top management within these organizations, the assessment tool determined that only one of the twenty targeted companies belonged to the Innovators category. These firms are poised to navigate the disruptive innovation phase successfully by embracing change, challenging themselves, and implementing strategies to address the shifts in the business landscape.

Similarly, one falls into the Adapters category. It is worth highlighting through the assessment model that while the companies may lack an inherently innovative culture, it exhibits responsiveness to market developments and is adaptable.

The remaining eighteen are categorized as Resistance Fighters, and their survival is at risk if they persist in their current behaviour. With a rigid organizational culture and an aversion to change, these companies find it challenging to evolve with the times. Hence, seeking assistance from consultants and experts is crucial for their survival in this transformative phase.

Stoiber et al. [19] indicated in their research that “Today’s organizations are increasingly focusing on innovation as a key factor in success and competitive advantage. Innovative organizations can adapt and respond to rapid and unstable environments and technological changes and survive in the present environment. Organizations can better understand their strengths and shortcomings when it comes to responding to market disruptions by evaluating themselves against these criteria. Organizations can pinpoint opportunities for improvement using this evaluation tool so they can adapt to market changes more effectively. This could entail increasing spending on R&D and innovation, creating a more flexible organizational culture, hiring innovation consultants, or sharpening their customer focus. The ultimate objective is to position organizations for long-term success while assisting them in remaining competitive in a quickly evolving business environment [2, 3, 13, 20].

As per the Harvard Business Review companies that innovate during a downturn are more likely to come out stronger and gain market share. Conspicuously, companies heavily reliant on core IC engine products, such as pistons, crankshafts, and connecting rods, face a high risk of extinction or substantial losses. To survive in this changing landscape, they must pivot towards producing components for electric vehicles or hydrogen-based technologies. This will require implementing new business models and transitioning their operations accordingly.

Henceforth, by conducting this evaluation and taking steps to pivot towards new technologies, a company can not only survive but thrive in the rapidly changing automotive industry. Through this carefully evolved assessment matrix, we can plot an organization's culture and its readiness for disruptive changes, and its ability to innovate in the face of dynamic market conditions. This model can help IC Engine component suppliers stay ahead of the curve and successfully transition to new technologies, ultimately securing their future [18].

5 Conclusion

The study report emphasized the necessity of a structured evaluation tool for determining how disruptive technology may affect a company's ability to continue operating. By moving beyond traditional threat identification towards a more comprehensive assessment

framework, this research aimed to empower businesses to adapt to changing landscapes, seize opportunities, and mitigate risks associated with technological disruptions.

This study investigated how design thinking principles can be leveraged to enhance an organization's preparedness for disruptive change. We proposed the GroKalp Assessment Tool, a framework built upon five core principles (Scrutiny, Bravery, Resilience, Prosperity, and Perseverance) based on literature review and expert opinion on design thinking's application to wicked problems, the tool integrates user-centred design methodologies to evaluate an organization's strengths and weaknesses in the face of disruption.

The GroKalp Assessment Tool offers several advantages over traditional assessment methods. First, its design-thinking foundation incorporates empathy and user-centred testing, leading to a more holistic and actionable evaluation. Second, the tool's five core principles encompass a broad range of factors crucial for navigating disruption, going beyond simple technological awareness. Third, the criteria within each principle provide a granular assessment, enabling organizations to pinpoint specific areas for improvement.

By implementing the GroKalp Assessment Tool, organizations can gain valuable insights into their preparedness for disruption. The tool's structured approach facilitates data-driven decision-making, allowing organizations to develop targeted strategies to address weaknesses and capitalize on opportunities presented by technological advancements. Ultimately, the GroKalp Assessment Tool empowers organizations to cultivate a culture of innovation and adaptation, fostering long-term sustainability in a dynamic technological landscape.

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