By Matthias Hillner

As market environments in areas such as information and communication technologies, social media, online retail and services, and music and gaming are becoming less predictable and more prone to disruption, dynamic capabilities are widely perceived as increasingly significant.

A Prescriptive Framework for the Effective Deployment of Dynamic Capabilities

"DYNAMIC CAPABILITIES" IS A TERM that has come to dominate discussions and research in the area of design innovation and management. Although linked to the notion of creative destruction as initially conceived by Schumpeter in the mid-twentieth century, this concept has not taken center stage in strategic management until a decade or two ago. The purpose of this article is to introduce a framework to systematically guide the strategic decision-making of creative entrepreneurs and innovation managers who seek to take new designs to market. For reducing the failure rate of design innovations, we need a heuristic decision-making model that is transferrable and can be deployed by innovators across the whole spectrum of design and innovation practices to enhance their dynamic capabilities.

As market environments in areas such as information and communication technologies, social media, online retail and services, and music and gaming are becoming less predictable and more prone to disruption, dynamic capabilities are widely perceived as increasingly significant. The basic argument surrounding dynamic capabilities is that small businesses are finding it easier to adjust to rapidly changing market environmental conditions than large corporations because the latter are hindered by their portfolios of acquired (integrated) assets that are designed for specialized purposes (e.g., the manufacturing and distribution of specific products or services, etc.). Strategizing around dynamic capabilities rather than standard operating procedures (SOPs) is believed to lend businesses a greater degree of agility that allows them to pivot their value propositions and modus operandi more swiftly in response to sudden and unexpected market-environmental changes.

Small businesses, startups and scale-ups are by default more agile because they do not tend to own as many complementary assets that are costly to maintain. Traditionally, asset acquisition was perceived as a competitive advantage since owners benefit from economies of scale when competing on price, reliability, and production efficiency. In the context of disruptive innovation, acquiring resources through contracting is often perceived to be of benefit as business strategic changes can be actioned more quickly.

However, framing the concept of dynamic capabilities in a prescriptive manner proves rather difficult. The underlying argument is that a shift in emphasis from tangible toward intangible assets, and an intensified focus on research and development (R&D) and on design and innovation, enhances a firm's survival and growth prospects. The management-specific recommendations that are derived from dynamic capabilities theories rest with principles of sensing, seizing, and reconfiguring. However, rules and principles that could guide decision-making processes are left for companies to define. While this may be feasible, perhaps even desirable for medium and large corporations who have the manpower and financial capacity necessary for defining, trialing, and implementing their own bespoke decision-making heuristics, small firms may find it rather difficult to develop and deploy decision-making principles and processes in response to turbulences in a disrupted market environment.

At DMI's ADMC (Academic Design Management Conference) in 2022 in Toronto, I presented a framework (see Figure 1, p 20) combining some more and some less established models for the assessment of market dynamic characteristics, market power distribution, and value proposition quality analysis with strategic response options to facilitate transformative change. The question is how these data sets can be systematically connected to elicit reliable insights to guide innovation-strategic decisions.

The strategic decision-making framework uses three evaluative tools, the combination of which allows designer-entrepreneurs and innovation managers to examine the competitive market potential of a new value proposition. The first tool is a variation of the Value Proposition Canvas (VPC) developed by Osterwalder and Pigneur; the second is derived from David Teece's Appropriability

Dynamic capabilities revolve around an innovator's ability to sense and seize opportunities and to reconfigure capabilities surrounding resource deployment and the value proposition itself.

FIGURE 1 (RIGHT)
A route-to-market strategy framework (revised from original).

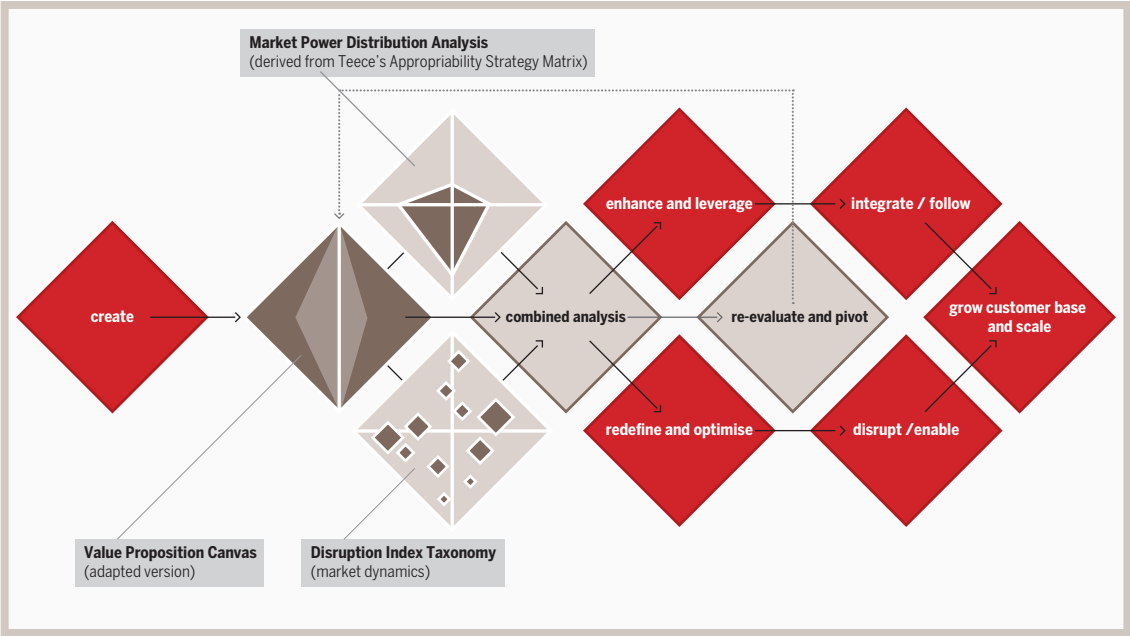
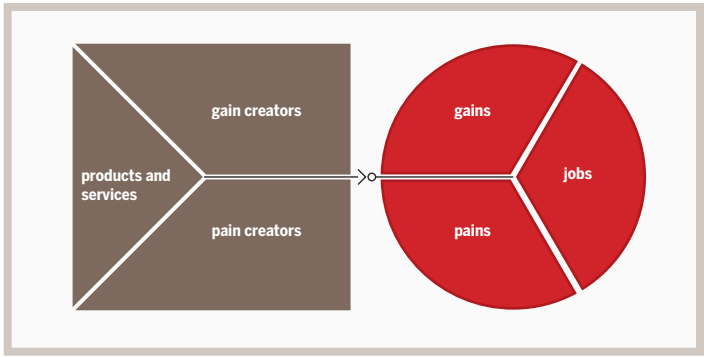


FIGURE 2 (BELOW)
The value proposition canvas, after Alexander Osterwalder and Yves Pigneur.
Source: www.strategyzer.com/canvas/business-model-*canvas*

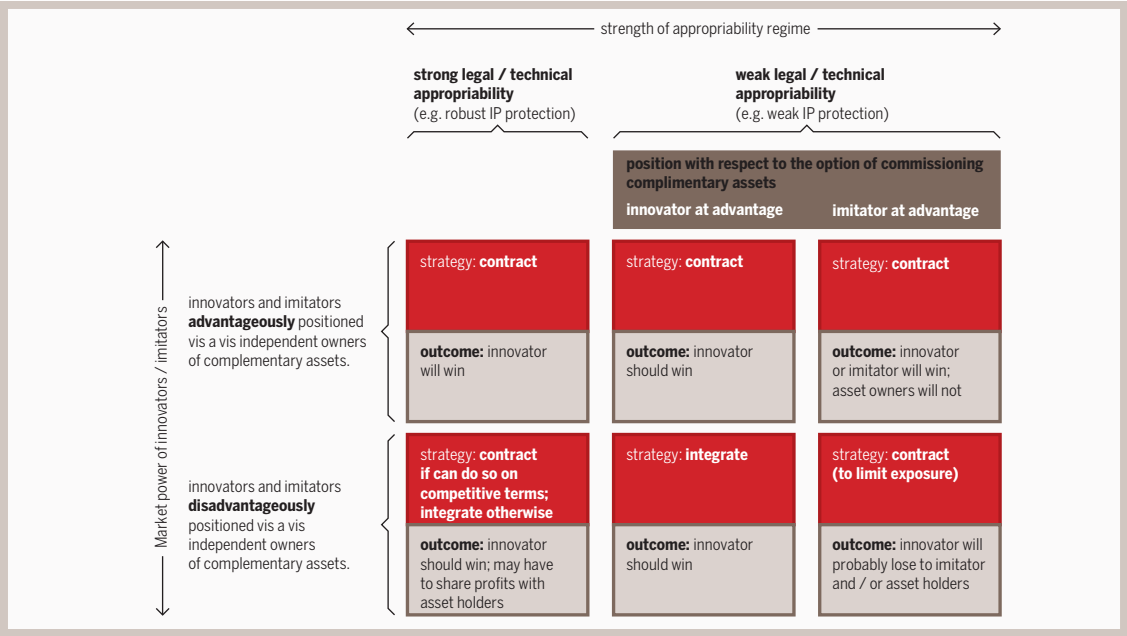


Strategy Matrix (ASM), and the third is a Disruption Index Taxonomy (DIT) as introduced by Alexander Manu in 2022. The triangulation of these analyses allows managers to determine if the market introduction is best pursued through alignment with existing market players or through a disruptive approach, and whether or not a strategic-collaborative approach is advisable.

The VPC (see Figure 2) reveals the extent to which a design solution meets or exceeds the needs and expectations of an audience (product-market fit). The challenge is that target audiences can be diverse, and each audience segment may experience different sets of pain points and gain points with the same design proposition. Since the value-add is based on the subjective or intersubjective perceptions of customers and users, it can also be challenging to convert customer evaluations into reliable sets of quantitative data. Where designs are adapted or pivoted, the process needs repeating.

The ASM (see Figure 3, p 21) was originally intended for businesses to establish whether it is more advisable to secure complementary assets through contracting, or if it is best to secure independence through the integration (i.e., acquisition of assets). (I will use the term "acquisition" instead of "integration" from here on, as integration is used in a different way as part of the DIT.) The ASM builds on the market power distribution between the innovator, competitors (imitators), and asset owners (suppliers and distributors), with a view on the strength of the intellectual property held by the innovator. Intellectual Property (IP) owned by the innovator along with strategic market positioning can be used as proxies to determine the degree

FIGURE 3
Contract and integration strategies according to David Teece. Source: Teece, 1986



to which an innovator ought to seek autonomy through acquiring complementary assets instead of securing access through contracts. When strategizing around dynamic capabilities, IP is not a given. Instead, the question arises to what extent it is advisable, if not to say necessary, to invest in the development of an IP portfolio based on the given market-environmental settings and the value-adding qualities of the new design proposition.

Dynamic capabilities revolve around an innovator's ability to sense and seize opportunities and to reconfigure capabilities surrounding resource deployment and the value proposition itself. The question of how these capabilities are put to best use requires foresight. To obtain such vision, one needs to examine not only the design value proposition and the market environment but also the market environmental dynamics.

The DIT (see Figure 4, p 22) maps the competitors on a quadrant to indicate their impact on the market environment. This may provide an indicator for the way in which the key market players relate to one another, and it can reveal their strategic intent, particularly if changes in the position of individual firms are tracked over time. This information allows designers and innovators to position themselves strategically within the market environment to enhance the success and survival prospects of their value propositions. It is important to bear in mind that medium and large enterprises may occupy a variety of positions with different value propositions or operations. Where market leaders change position, we can begin to speculate on the market-environmental changes ahead and monitor the reactions of other market players.

The decision-making framework

One could argue that the value proposition itself determines the required route-to-market approach. However, it is important to carefully examine the success prospects before committing large amounts of time and excessive budgets to a new design invention.

Simply put, we can say that the VPC focuses on the relationship between the design product and the audience; the ASM examines the relationship between the innovator and the other market stakeholders; and the DIT highlights the strategic positioning of the competitors and potential partners within the market environment.

The framework raises the questions:

• What insights can be generated by the system?

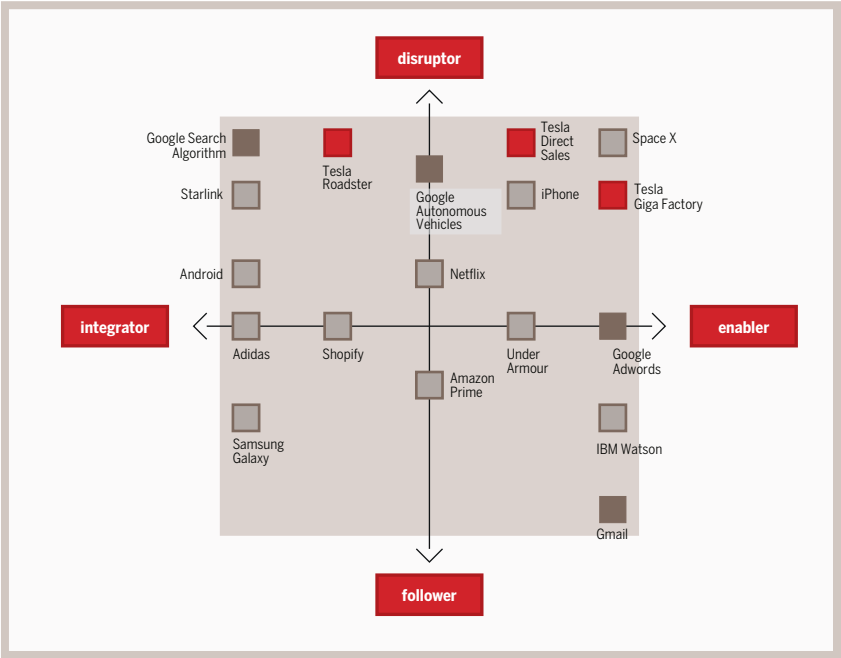


FIGURE 4
The disruption index in application.
Source: Manu, 2022

- How are they to be interpreted?
- How reliable are they?
- What do they mean in combination with one another?
- Is the system sufficient to generate data sets from which designers and design managers can deduce decision trees?

To answer these questions, we need to revisit the assessment models, adjust them, and examine the benefits of using them in combination. The purpose of this article is to explore how this innovation strategy framework can support creative entrepreneurs, designer inventors, and design managers and innovation leads in pursuit of informed decisions on how to take novel design products and solutions to market. The key question is how to predict the commercial prospects of the design value proposition, how to interpret the relevant market data, and how to triangulate the insights to determine if a disruptive approach is preferable to a non-disruptive one, or vice versa.

We will see how triangulating the insights gained from these data sets helps to determine the most promising approach to introducing a design to the market, or if the design needs pivoting to mitigate risks of failure or to overcome route-to-market barriers.

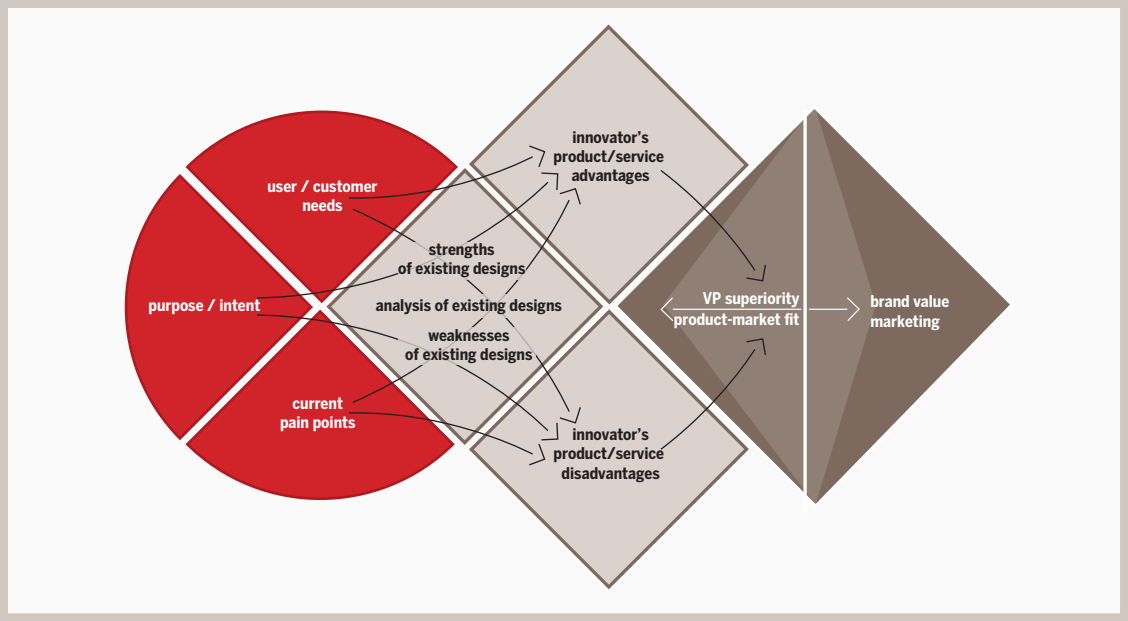
Value proposition analysis

I usually recommend using the traditional VPC in reverse order: to position the user/customer needs and intentions to the left and the evaluation of the value proposition to the right (see Figure 5). This helps avoid the impression that the value proposition is the determining factor in the assessment of the strengths and weaknesses of a design product or service. Secondly, I suggest that the strengths and weaknesses be assessed not only directly against the user needs and existing pain points, but also in comparison to the quality of competing products or services. This process then lends itself not only to validating product-market fit but also to assessing the degree to which the new design invention is superior to existing design solutions.

From James Dyson's wheelbarrow in 1974 to Amazon's Fire Phone in 2014, history shows that superior designs are not by default destined for success. Established market players benefit from customer loyalty and from their proven reliability, whereas novel designs rely on early adopters to build the necessary credentials. Where customer perception plays a significant role, effective marketing and advertising can help enhance brand perception, and this may, at least to some extent, compensate for initial limitations in product reliability and value proposition (VP) superiority. The superiority of a design invention over existing products or services is determined by the degree to which it corresponds to or transcends the customer needs and expectations (including those needs that may be unknown to the customer). The amount of marketing spending required depends not only on the competitiveness of the market environment but also on the degree to which a new product needs to be promoted in order to be perceived as preferable to competing products. The VP superiority and the brand value, in combination with marketing-related opportunities and available budgets, determine the innovation's competitive potential.

The objective behind disruptive innovation is to establish a dominant design paradigm around the new design invention so that other market players, particularly the owners of complementary assets,

FIGURE 5
A revised version of the value proposition canvas shown in Figure 2.



are forced to re-orientate and align their offerings to that of the innovator's design. Conversely, non-disruptive market entries will need to align their value propositions and route-to-market strategies with the existing market leaders.

Examining Market Power Distribution

From Teece's ASM (see Figure 3), we can deduce that strategic decisions about whether to aim at market disruption or compliance should be made with a view on the way in which market power is shared between the owners of the complementary asset needed to generate revenue (i.e., suppliers and distributors, the innovating firm, and the competitors of the latter).

As noted above, there is a range of other relevant factors such as the strength of the innovator's IP portfolio as well as the accessibility of complementary assets to be considered. However, the simplified model used here as part of the strategic framework is designed to establish insights that help determine to what extent it may be advisable for the innovator to invest in the development/expansion of an IP portfolio and in the acquisition of complementary assets, and also if the market-environmental conditions are conducive to market disruption. In other words, some of the factors which Teece treated as given conditions—IP and strategic market position and market relations—are instead treated as variables within this framework.

The diagrams used here (see Figures 6 and 7, p 24) reveal the distribution of market power across the four most basic categories of market players. Useful information that could be added includes the number of significant market players and possible strategic relations (e.g., exclusive or non-exclusive partnership agreements) between individual market stakeholders. Such data could elicit in better detail how (dis)advantageously an innovator is positioned vis-à-vis the pool of competitors. For instance, Tesla's ownership over a sizeable proportion of the grid of charging stations for electric cars put the firm into a very advantageous position regardless of the revenues generated by the charging stations themselves. However, this level of detail would make it much more challenging to read and interpret the data sets. The simplicity of the diagrams used here allows for an easy overview of the general market

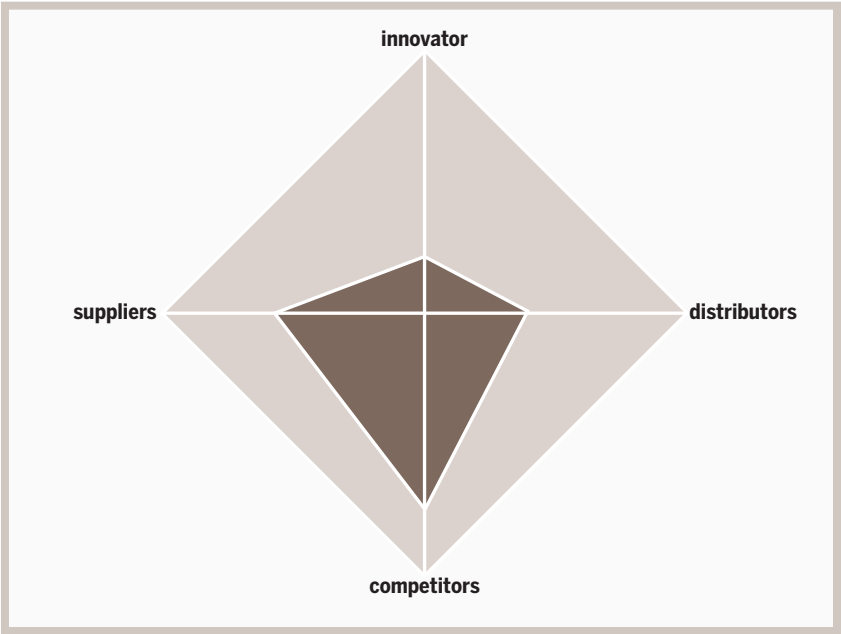
Mapping the competitors helps make informed predictions on how the market players may interact and influence one another in the foreseeable future.

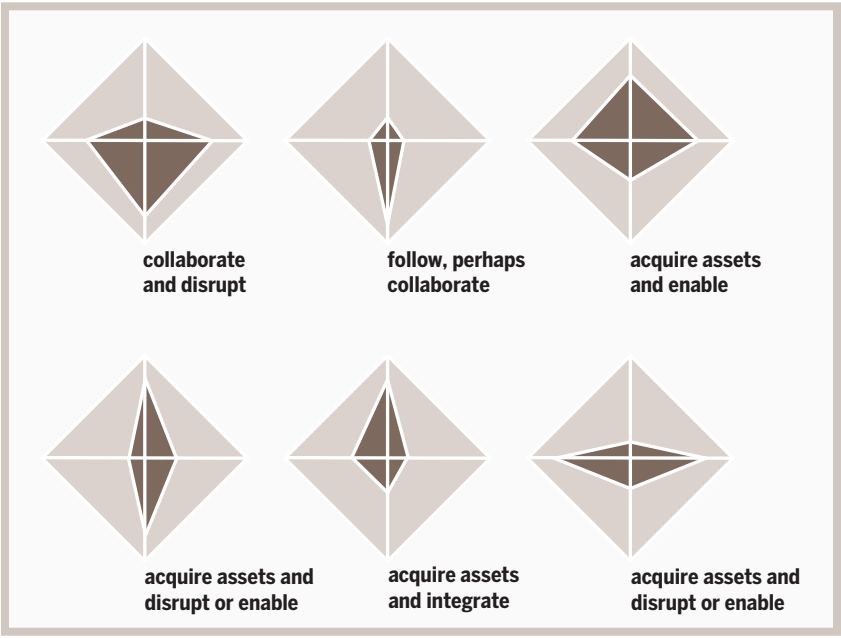
FIGURE 6 (TOP)
Mapping the market power distribution.

FIGURE 7 (BELOW)
Possible key constellations in the distribution of market power.

environmental conditions and opportunities, and basic approaches can be devised with reference to the DIT discussed in the next section.

If the market is dominated by incumbents with a range of suppliers and distributors also in possession of significant market power (see Figure 7, top left),





the designer inventor may want to build strategic alliances with individual key partners who may enable the designer inventor to disrupt the market. Although the acquisition of assets may pave the way toward independence, it is unlikely to lead to a market advantage over competitors in such a scenario.

If the design firm dominates the market (see Figure 7, top right) (e.g., Dyson vacuum cleaners), then there is usually no incentive for the innovator to disrupt the market. Instead, the design firm may want to acquire complementary assets to establish autonomy, and to increase revenues through capturing a greater segment of the value chain.

If the market is largely captured by one or a few incumbent competitor(s), with suppliers and distributors heavily depending on the dominant firm(s) (see Figure 7, top center) (e.g., Amazon), then settling for a non-disruptive approach (e.g., to collaborate and follow) may be the innovator's best option unless perhaps a niche market can be identified to which the design can be introduced before branching into mainstream market segments.

If the market is dominated more or less equally by the innovating firm and its competitors (see Figure 7, bottom left), then the innovating company may wish to acquire complementary assets related to supply and distribution in order to secure independence or to secure exclusive agreements with asset owners, and to then enhance its capacity to disrupt the market through the introduction of dominant designs.

The incentive to disrupt is not a given if the design firm already dominates the market. Breaking into new market sectors through new designs may be the preferred option here (see Figure 7, bottom center) (e.g., Apple introducing the Apple iPhone in 2007).

Finally, if the majority of market power rests with neither the innovator nor competitors but with the owner of complementary assets—as can be the case in niche markets or emerging markets—there is an opportunity for the innovator to fight for dominance (see Figure 7, bottom right).

The market-environmental dynamics

The aforementioned Disruption Index Taxonomy was introduced by Professor Alexander Manu in his

Notes

1. A. Manu, *The Philosophy of Disruption* (Bingley: Emerald Publishing Limited, 2022) 224 pp.

book *The Philosophy of Disruption*.[1] The quadrant (see Figure 8, adapted version) positions industry players according to four categories: disruptor, integrator, enabler, and follower. Each category is characterized by specific strategic behaviors.

- Disruptors:
  - Introduce new categories for products or services
  - Stimulate other entrepreneurs to come into the industry
  - Transform customer needs into wants
  - Set a new bar of innovation
- Enablers:
  - Focus on sustainable long-lasting models
  - Continue to drive innovation through the introduction of new products
  - Shape or reshape market environments
- Integrators
  - Respond to market-environmental changes through quality enhancements or cost efficiency
  - Rely on speed-to-market
- Followers
  - Leverage disruptor technology and compete through enhancing existing modus operandi (e.g., resource optimization, customer services, or increase in market capture)
  - Stick with primary markets to drive revenue through the use of disruptor technologies

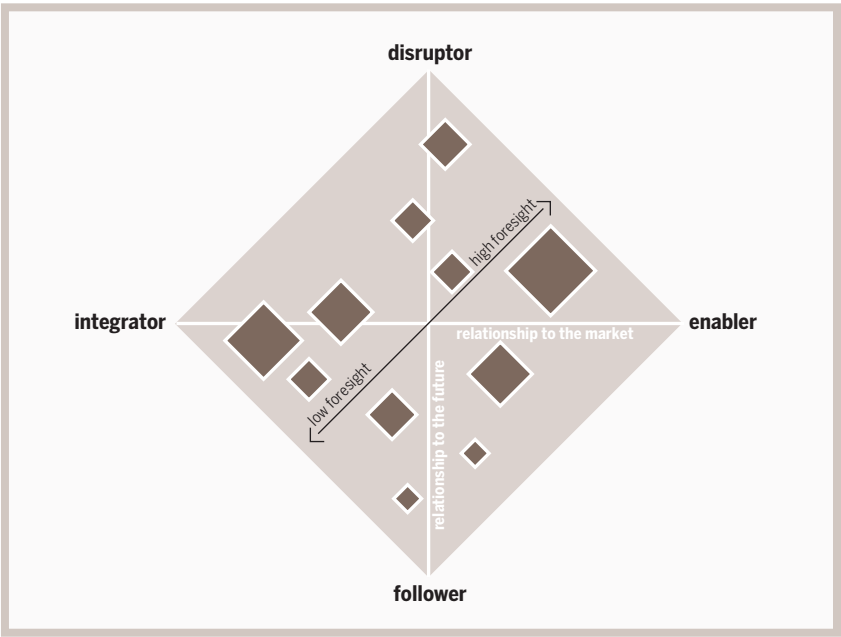


FIGURE 8
Disruption index taxonomy diagram (revised).
Source: Manu

The Disruption Index Taxonomy can be used to illustrate how competing firms are positioned toward each other, the extent to which they rely on strategic foresight, and how their behavior may influence the market environment in the future. To avoid confusion, I would recommend including only key competitors in this instance. Adding asset owners would lead to complicated constellations that are difficult to dissect.

Mapping the competitors helps make informed predictions on how the market players may interact and influence one another in the foreseeable future. The market share, which can be indicated through variations in the sizes of the diamond shapes representing individual firms in Figures 8 and 9, provides a proxy measure for the market power distribution. This can provide an inkling of how significantly the market may be affected by the actions of individual firms. The question that designer inventors and design managers need to resolve is how to engage in the market environment and what market positions to pursue for their design innovations.

If the market data is monitored periodically, changes in size and position (see Figure 9) can be used to make informed predictions on changes in the market leadership. This may indicate where there are opportunities for innovators to disrupt or reposition themselves. It may also help to decide whether to pursue strategic partnerships or acquisitions, and how to direct R&D spending, sales efforts, and IP investments. Significant changes in the market environment are likely to require a response on behalf of the innovator if in pursuit of a prominent or dominant market position.

This is where dynamic capabilities can be systematically deployed. The question is how to respond to specific changes in the demographic distribution of competing firms.

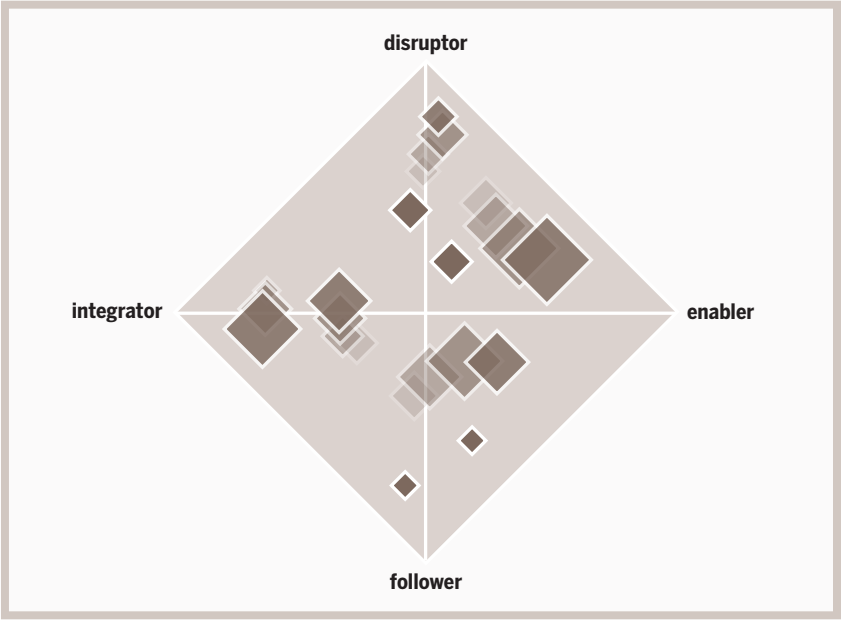
Based on the preceding market power distribution analysis (see Figure 7), an innovator can make a reasonably informed guess regarding what position is most likely to pave the way toward successful market entry. As previously highlighted

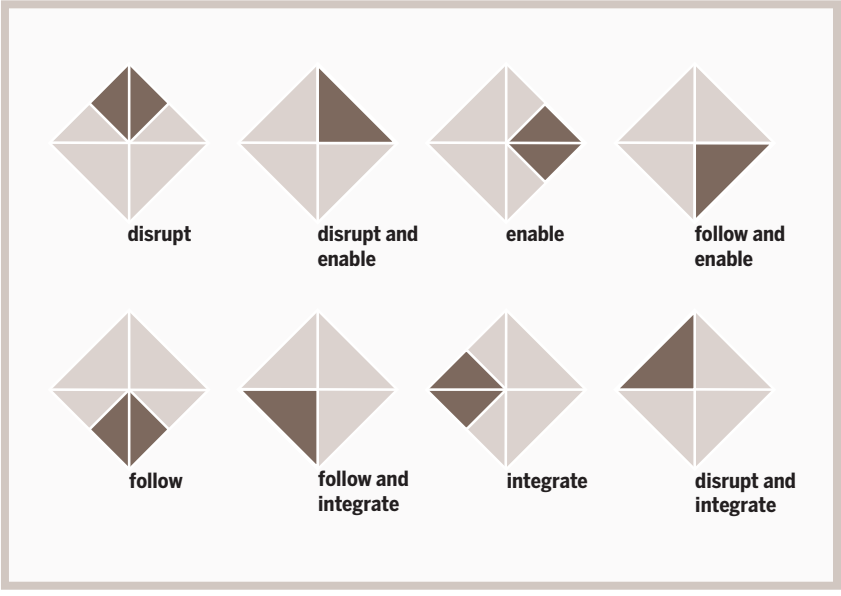
FIGURE 9 (BELOW)
Disruption index taxonomy used to monitor market dynamic changes.

FIGURE 10 (BOTTOM)
Position advice for successful market entry.

(see Figure 10), the latter depends on other aspects including the VP superiority, the communication and marketing capabilities, and the innovator's capacity to secure exclusivity around the VP.

For this stage of the analytic process to be reliable, it is very important for innovators to establish exactly what the revenue strategy is and which market players constitute a threat to the innovating firm. Facebook, for example, has disrupted the market of digital communications to a significantly lesser degree than the market of advertising and marketing. That said, imitators may not only compete for the same market space, they may also pose a threat at some stage in the future. Identifying the relevant key players is very important to avoid ill-conceived conclusions.





The combined analysis, first step: VP re-evaluation

When combining the data for analysis, we start with re-evaluating the VP by assessing its superior quality (see Figure 11c, top half of the left square) against the pricing model. Where products and services do not compete sufficiently on quality, they must be priced competitively. It is important for the VP superiority to be combined with a viable cost/price strategy because shortfalls may lead to an increased need to invest in marketing and advertising to generate market traction (see Figure 11, bottom half of the left square, p 27). Of course, the chances to succeed in promoting a new design depend also to an extent on the competitive field (as illustrated in the market power distribution diagrams), on the nature of the market—mainstream, niche, or emerging—as well as the level of demand for the value proposition in general.

As explained, the VP superiority is grounded in the degree to which the novel design outperforms the competing products/services in response to the user/customer needs (VPC). The performance-enhancing aspects or components constitute key selling points (KSPs), which can be converted into unique selling points (USPs), provided they can be protected against imitators and competitors through formal or informal IP, secrecy, etc. (see Figure 11c, left and right squares). The density of the market environment (number of market players) and the market power distribution have an impact on the effectiveness of such defense mechanisms. Niche markets and emerging markets are typically less densely populated and pose a lower risk of IP infringement and imitation than mainstream markets, in part because market value and revenue prospects tend to be lower.

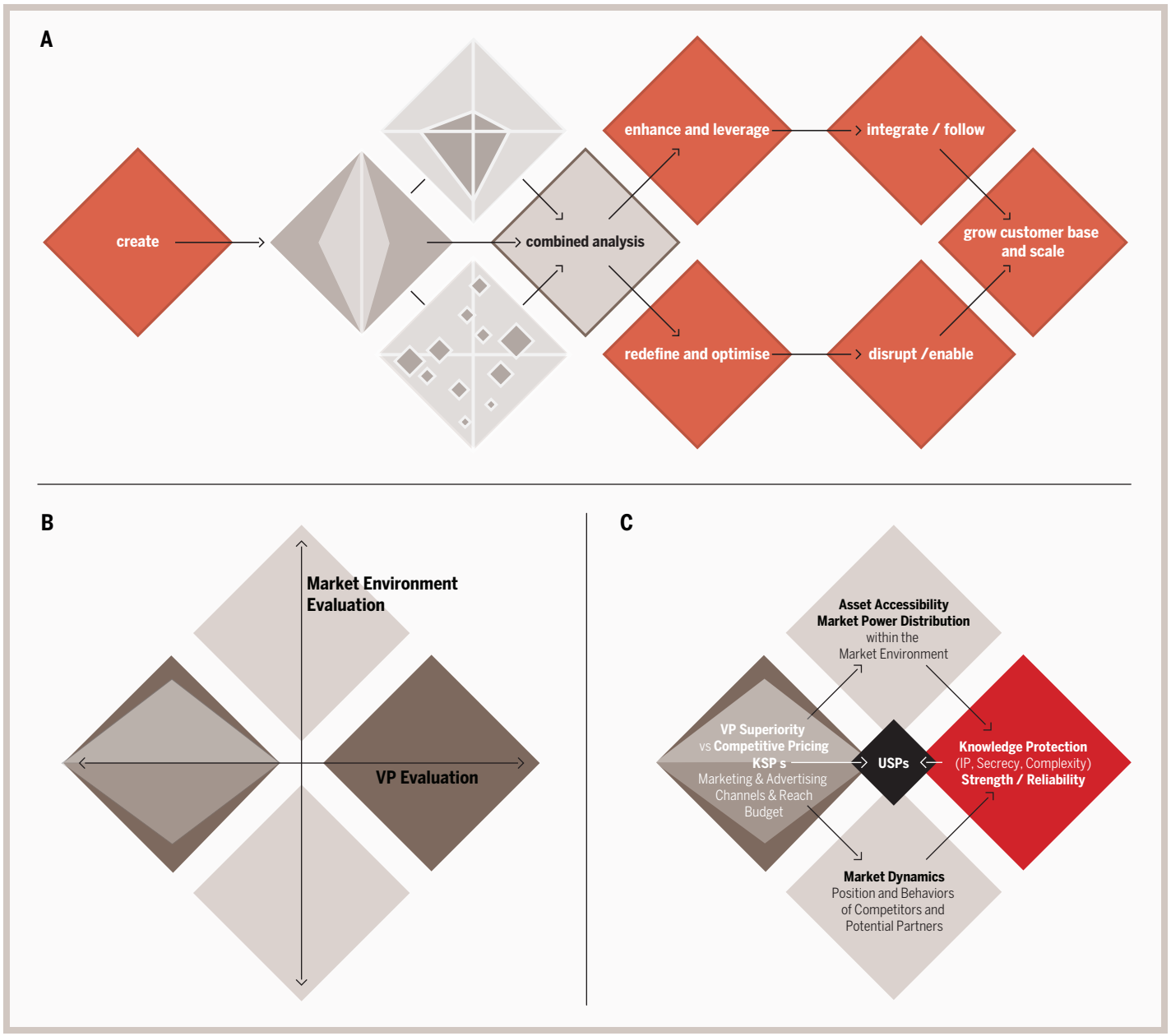


FIGURE 11
Combining the data for analysis.

The reason for using the term "knowledge protection" instead of "IP" is that formal and informal IP are but a few facets in the range of means available to innovators to protect their USP. Other options of knowledge protection include secrecy, VP complexity, time-to-market, etc. For design elements for which exclusivity cannot be secured, designer inventors may want to consider securing freedom to operate through defense publications or open innovation initiatives. Combining different forms of knowledge protection for different elements of the value proposition can significantly increase the strength and robustness of the innovator's knowledge protection regime.

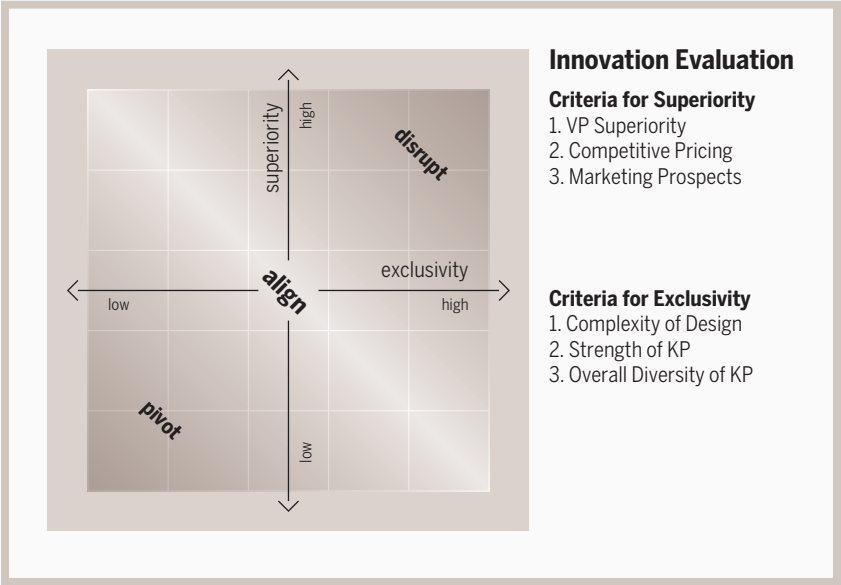
As creative practitioners, we usually long for positive assessment outcomes, and this can significantly cloud our judgment.

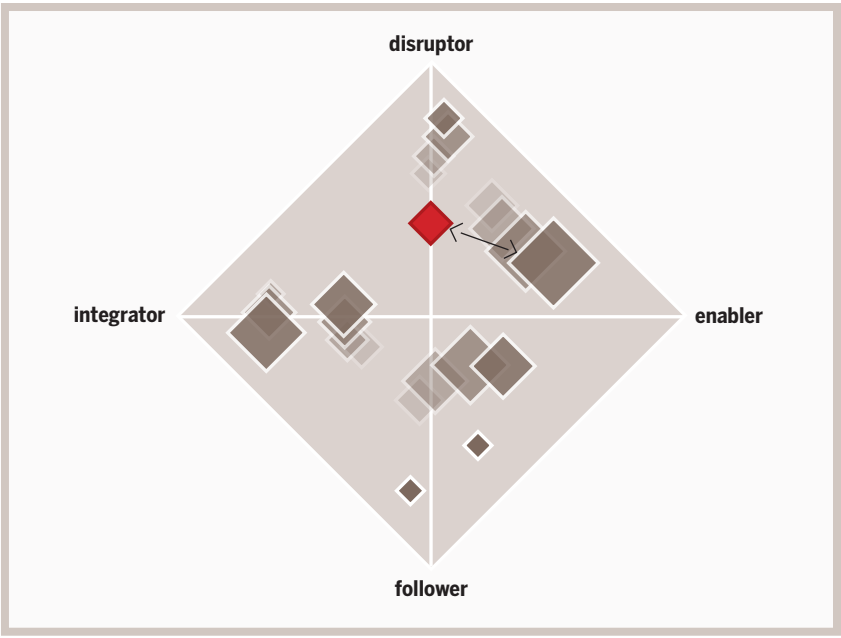
FIGURE 12 (BOTTOM)
Evaluating innovation.

FIGURE 13 (BELOW)
A disruptor takes center stage.

Establishing defenses is also important for entering into alliances with suppliers and distributors—and even more so when pursuing partnerships with competitors or trade sales. Having analyzed the market power distribution to determine whether to secure assets through contracting or acquisition and to gauge whether to approach market entry with a view on disruption or alignment, the question now is how the market dynamics as well as the strength of the value proposition and the robustness of the knowledge protection regime may impact these sets of recommendations.

The analysis of market dynamics is less straightforward and is ideally repeated periodically to identify trends and changes. If a new disruptor takes center stage, there is an opportunity for new design value propositions to be aligned and for designers to follow the disruptor in pursuit of business growth. While it may be difficult to predict who will have the upper hand—the disruptor or the incumbents—disrupted market environments generally provide good opportunities to pivot designs in order to enhance commercial success prospects. Following disruptions, there can be multiple players fighting for the lead, and the success of followers hinges on the right alliances and/or the timing of their pivots.





Conclusion: from insight to strategy

This article advocates a combination of adapted versions of established assessment models and new ones to generate a framework that helps elicit data-driven comprehensive insights into the quality of inventive designs with a view on audience needs and wants, exclusivity, and market environmental factors. These insights are key to determining the most effective route-to-market strategy and to optimize the competitive performance from the beginning through the effective deployment of dynamic capabilities. Due to strong interdependencies between the various factors at play, the assessment is often carried out holistically. Focusing on individual variables consecutively using the models discussed in this article allows a much more rigorous approach and helps to mitigate the risk of cognitive bias. As creative practitioners, we usually long for positive assessment outcomes, and this can significantly cloud our judgment. Skewed analysis can jeopardize our investment of time and funds and compromise our overall prospects for success. As intricate as the framework may seem at first

Matthias Hillner *works as Associate Professor for Design at Anglia Ruskin University in Cambridge, UK. In 2005, he secured a startup business development award from the National Endowment of Science, Technology and the Arts in the UK and ten years later a commission from the UK IPO to investigate design right infringement in the UK. He holds three postgraduate degrees from the Royal College of Art, London, including a PhD in Innovation Management, has authored two books on design and innovation, and speaks regularly at international design and innovation conferences.*

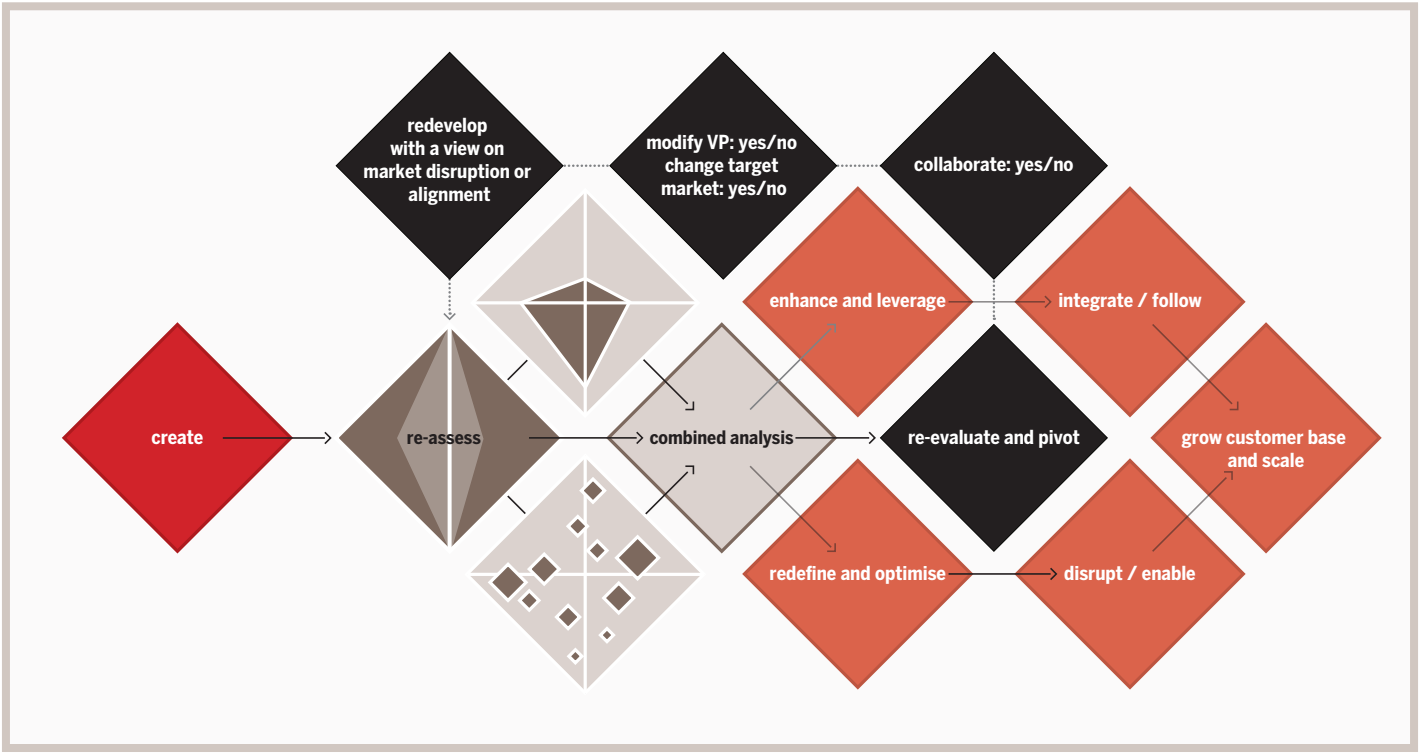


FIGURE 14
Overview of the framework.

glance, it can protect creative entrepreneurs from investing years of commitment and sizeable sums in design innovations that are destined to fail in a commercial context.

The framework components provide an opportunity to process even more granular data than outlined here. However, discussing the possibilities at a deeper level would exceed the scope of this article. It is also likely that data sets and analytics might vary from case to case depending on the VP itself, the diversity of the target audience, the target industry sector, and the characteristics of the innovating firm (e.g., business size, market position, financial capacity, etc.).

Not all questions raised in the decision-making framework have been answered. While it is clear what insights can be generated by the system, how they are to be interpreted, and what they mean in combination, the reliability depends on the way in which the framework is used and on how quantitative data is sourced. It is highly likely that data sets can be converted into prescriptive decision trees, but to establish how they are to be converted one may want to carry out a series of tests or comparative case studies. I would welcome feedback and suggestions. After all, collaborations might help to further develop and enhance the framework. ■