Gamifying Strategic Foresight for Disruption in the Post-COVID Era

by

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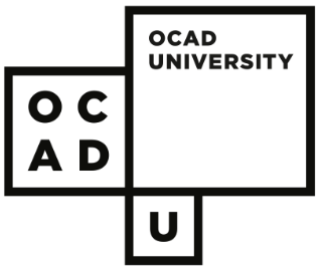

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Abstract

The COVID-19 pandemic has disturbed the day-to-day activities of businesses around the world in ways few had foreseen. Despite its various economic and social impacts, however, the pandemic has catalyzed a wave of entrepreneurship that will give birth to a cohort of market disruptions. Although industry leaders are aware that they must innovate to defend themselves against disruption, their behaviours are constrained by cognitive traps that make them path-dependent, ignorant to novelty, and inflexible to change.

The literature on innovation suggests that practicing strategic foresight can help firms break away from path dependency by enabling them to think creatively about the future and imagine how they might be disrupted by their competitors and non-competitors. However, previous research in this domain leaves gaps that may hinder firms' ability to execute foresight in their organizations. First, it places a relatively high focus on scanning for signals without offering guidance on how to evaluate and act on them. Second, it assumes that foresight is strictly the responsibility of upper management and disregards the role that people at the bottom of the organizational hierarchy could play in the process.

This report offers an exploration into a possible solution to help firms leverage strategic foresight so that they can break away from path dependency and manage the threat of post-pandemic disruption. It culminates with the presentation of a proof of concept for a game designed specifically for business professionals to develop their strategic foresight capabilities and realize the possibilities for disruption. This work includes further secondary research to inform the proof of concept, followed by a user testing session to evaluate its design and performance in addressing the research goals. This research contributes to the business community by providing an engaging and enlightening approach for anyone within an enterprise—not just executives—to think about the future and plan for disruption, even long after the end of the pandemic.

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Intended Audience

This report is intended for both academic and non-academic audiences interested in the domains of strategic foresight, business disruption, and innovation. It is particularly targeted toward upper-level managers and executives of private-sector enterprises as well as of public-sector organizations which may compete with the private sector. This project offers an exploration into a potential solution for readers to implement within their organization to help lower-level managers and employees adopt a more *foresightful* approach to thinking about opportunities and threats for disruption in their industry. Scholars in fields related to innovation management, strategic foresight, and game design/psychology are invited to review, critique, and build upon the theories, approaches and findings encapsulating this work.

Chapter 1: Introduction

"The world is changing very fast. Big will not beat small anymore. It will be the fast beating the slow."

- *Rupert Murdoch*, Chairman of Fox Corporation
(Rohrbeck & Gemünden, 2008, p. 10)

Among its numerous social, economic and public health impacts, the COVID-19 pandemic has brought about a global wave of business interruptions. Industries—from retail to manufacturing and from hospitality to professional services—have all experienced some level of impact from lockdowns, supply chain shortages and physical distancing protocols (Haydon et al., 2021). Faced with discontinuity, businesses scrambled to stay afloat. The International Monetary Fund approximated that the pandemic shrunk the global economy by 4.4 percent in 2020, marking the steepest economic recession since the Great Depression (Jones et al., 2021).

Although the global economy rapidly picked itself back up and many large enterprises generally fared well during this time, COVID-19 distracted firms from the looming threat of post-pandemic innovations that will significantly challenge the way they do business in the future. Two underlying arguments support this hypothesis: (1) COVID-19 distracted firms from innovation, and (2) COVID-19 created conditions for new products, services and business models to emerge and disrupt the industries in which they operate.

First, the immediacy of the pandemic pulled firms' attention away from innovation. Although 90 percent of corporate executives said in 2020 that they believe COVID-19 would fundamentally change how they do business in the next five years, only 23 percent of them made innovation a top priority during the pandemic (Bar Am et al., 2020). Responding to discontinuity required firms to minimize risk by focusing on the short term, seeking efficiencies, prioritizing their core business activities, and pursuing known opportunities (Scoblic, 2020; Bar Am et al., 2020). In their respective writings on the topic, Scoblic (2020) and Bar Am et al. (2020) both comment that this decision to focus on the present may pose long-term consequences that will make it more difficult for firms to grow in the future. Considering that the average lifespan of a Fortune 500 company has decreased from 75 years in the 1950s to 15 years in 2015 (Gutsche, 2020), COVID has made firms more vulnerable to being overtaken by a competitor than they already were.

Second, although COVID-19 resulted in many business closures and job losses, it also catalyzed the formation of new businesses that will change consumer behaviours and expectations and potentially disrupt the markets in which they compete. Although the Canadian economy experienced a sharp increase in business closures in April 2020, the number of new business openings rose above the historical monthly average just two months later, with new business openings consistently exceeding

business closures from July 2020 to November 2021 (Statistics Canada, 2022). In other words, the sudden spike in business closures was shortly followed by a wave of new entrepreneurship. This is not unique to Canada, as the United States, the United Kingdom, Germany, France and Japan have also recorded significant increases in new-business applications compared to pre-pandemic years (Sneader & Singhal, 2021). For these strong, influential economies to also observe increased entrepreneurial activity makes it all the more plausible that the near future will be characterized by a foray of novel, potentially disruptive innovations.

To appreciate the significance of these upticks, it is important to understand that increases in innovation and entrepreneurial activity during times of uncertainty are not unprecedented. Companies like Disney, General Motors, Microsoft, FedEx, Uber, AT&T and Instagram were all born during economic recessions (Ballard, 2020; Wilson, 2020). Although a considerable share of new *COVID ventures* may remain small and insignificant to their industry contemporaries, others may be underestimated. McKinsey even reported that the number of applications for "high propensity" businesses—that is, those that are deemed likely to become businesses with a payroll—in the United States was 50 percent higher in 2020 than they were the year before (Sneader & Singhal, 2021). History also demonstrates that private equity firms tend to gain higher returns on investments made during these periods of recession (Sneader & Singhal, 2021). Therefore, it is reasonable to believe that many COVID ventures will pose a plausible threat to today's market leaders.

Despite the increased threat of competition, opportunities for innovation during times of uncertainty are not reserved strictly for new ventures. Many academics and business experts have asserted that periods of economic uncertainty provide businesses with unique opportunities to create competitive advantages through innovation (Mahajan & Wind, 1989; Scoblic, 2020; de Smet et al., 2021). Some businesses have already proven this by successfully reinventing their business models to continue serving their customers under the constraints of the pandemic. Examples include food distributors selling direct-to-consumer and entertainment companies providing digital experiences their customers can enjoy from home (Bar Am et al., 2020). This project serves as a proposition that firms can more effectively uncover and tap into unique opportunities for innovation and thereby mitigate the looming threat of disruption by conducting strategic foresight at all levels of the organization.

Chapter 2: Context

This chapter frames the problem identified in the introduction by reviewing key concepts that guided the scope of this work. First, it establishes definitions of the debated concepts of innovation and disruption to drive a common understanding of how they were treated throughout the project. It then proposes that innovation-immature organizations suffer from path dependency, which makes them vulnerable to disruption, before offering a business case that strategic foresight can serve as a tool to reduce path dependency. The chapter concludes with the formulation of the research requestion, framed as a design challenge to guide the work that was subsequently completed for this project.

2.1 Intersections between Innovation and Disruption

2.1.1 Defining Innovation

The renowned political economist, Dr. Joseph A. Schumpeter, has been credited for offering the first published definition of the term *innovation*, describing it as "new combinations of new or existing knowledge, resources, equipment, and other factors" (Shah et al., 2014, p. 3) to create "novel outputs: a new good or a new quality of a good; a new method of production; a new market; a new source of supply; or a new organizational structure." (Crossan & Apaydin, 2009, p. 1155) Most notably, his work emphasized the distinction between *innovation* and *invention*, in which innovations can only be characterized as such if they are commercialized to fulfill an economic or social purpose (Shah et al., 2014). Expanding on Schumpeter's point of view, the famed management consultant, Peter Drucker (1985), added that innovation is not limited to the invention itself, but also to the new business opportunities created by the invention. Since then, and perhaps driven by the term's broadened use in business contexts, the definition of innovation has been extensively debated by academics. In their literature review on innovation research, Crossan & Apaydin (2009) observed that many scholars have challenged Schumpeter's point of view, arguing that there are other characteristics an invention must possess in order for it to qualify as an innovation. To reconcile this debate, the authors have amalgamated these various perspectives to offer a more extensive and inclusive definition of innovation:

> Innovation is [the] production or adoption, assimilation, and exploitation of a value-added novelty in economic and social spheres; [the] renewal and enlargement of products, services and markets; [the] development of new methods of production; and [the] establishment of new management systems. It is both a process and an outcome. (Crossan & Apaydin, 2009, p. 1155)

Given that the goal of this project is not to contribute further to this debate, Crossan & Apaydin's (2009) definition of innovation has been accepted for these purposes, as it accommodates a wide range of interpretations held by the modern, non-academic business professional. However, one aspect missing from this definition is the acknowledgement that innovation is not exclusively about the novelty of a product, process, or business model. Rather, it is also—and perhaps more importantly—about the behavioural change triggered by the use or implementation of said product,

process, or business model. For example, as a relatively newer social media platform, TikTok might not be viewed as a product that offers novel features as its first-mover competitors have. However, it could be argued that TikTok created new behaviours and *unwritten rules* governing how people create and consume content (e.g., short-form, unfiltered authenticity). As much as they are harder to produce, these more abstract, more subtle innovations are usually harder to notice. This is especially pertinent when thinking about disruption.

2.1.2 Defining Disruption

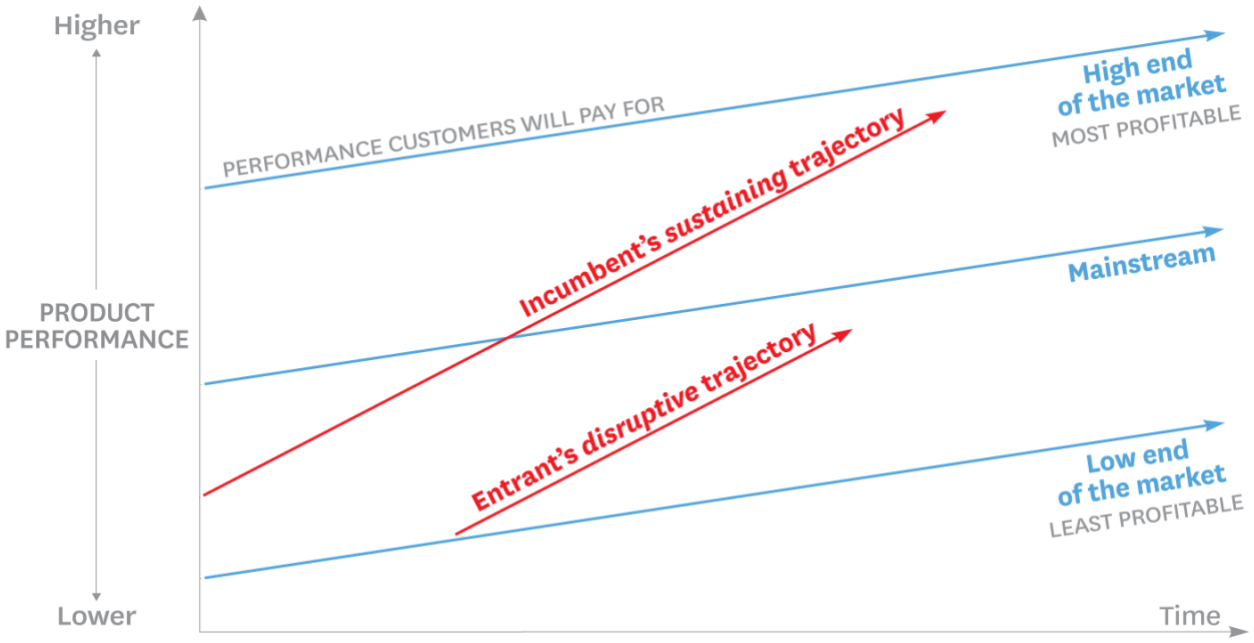
The meaning of the term *disruption* is somewhat controversial in that, similarly to *innovation*, it has become more loosely defined in its popular business use compared to its original academic definition. This section will give credit to the origin of the term and propose a definition that aligns more closely with what the modern business professional has come to understand about disruption.

When speaking about business disruption, management scholars will likely reference the tenets of *disruptive innovation*, which was first introduced in the 1990s by the late Harvard Business School professor, Clayton Christensen. He initially referred to disruption by the term *disruptive technologies* but later expanded the definition to include business model—and presumably other non-technological—innovations (Christensen & Raynor, 2003). Christensen et al. (2015) describe disruption as the "process whereby a smaller company with fewer resources is able to successfully challenge established incumbent businesses." Fundamental to their definition is the idea that, for an innovation to be considered disruptive, it needs to come from a smaller, resource-limited organization that incumbents may likely view as an underdog at first. More specifically, Moore (2019) summarizes that a disruptive innovation must have the following characteristics:

1. It is of low cost;
2. It delivers smaller margins than those of incumbents' products;
3. It initially appeals to a smaller, unserved or low-end target market; and
4. It is hard to see coming, or incumbents ignore it until it becomes a more serious threat.

In contrast, where the more liberal use of the word *disruption* originates is its confusion with *sustaining innovations*, which Christensen et al. (2015) describe as incremental or radical product improvements that "make good products better in the eyes of an incumbent's existing customers" and "enable firms to sell more products to their most profitable customers." Put in other words, sustaining innovations target existing customers by creating new and improved versions of products that eventually surpass customers' needs, whereas disruptive innovations target new or underserved markets with cheaper and feature-limited alternatives to existing products, which then progressively improve to serve the mainstream market. Figure I depicts the difference between disruptive and sustaining innovations based on how they perform and whom they serve in the market over time.

Figure I: Christensen et al.'s (2015) Disruptive Innovation Model



That said, where the confusion occurs is that business professionals who are unaware of Christensen's academic definitions of disruptive and sustaining innovations are likely to refer to both as *disruptions*. To the broader business community, a disruptive innovation could be summarized as one that simply *shakes up*, displaces or overhauls incumbent brands and other organizations within and/or outside an industry. This difference in understanding could be well illustrated using the example of Apple's iPhone. When it was introduced in 2007, the iPhone was viewed by the masses as a disruption to the mobile phone market for its user-friendly design and computer-like features, allowing it to challenge and overtake then-incumbents like Nokia and BlackBerry. However, the iPhone was an expensive, feature-rich, high-margin product that targeted the same customer segments as other players in the market, making it inconsistent with Christensen's definition of disruption. Although he would instead position the iPhone as a sustaining innovation in the mobile phone market, he later added that the iPhone disrupted the personal computing market, for example, as smartphones have gradually come to satisfy customer needs that previously could only be fulfilled using a computer (Harford, 2018).

Although Christensen's theory of disruption is probably the most extant in the management literature, some scholars have contested that his definition is too narrow in scope and have leaned towards the suggestion that it should align more with the more popularized interpretation of what constitutes a disruption. For instance, Danneels (2004) questioned whether the characteristics outlined in Christensen's theory must always apply for an innovation to be disruptive, referring to digital cameras and Amazon.com as examples of disruptive technologies that do not meet every criterion. Supporting this argument, King & Baatartogtokh (2015) studied 77 examples of cases referenced in Christensen's work and found that many of them did not align with his characterizations of disruptive and sustaining innovations. Like Christensen, to avoid confusing readers, they use the term *displacement* and its word family throughout their paper to refer to what the broader business community tends to speak of when talking about disruption.

Given the audience and purpose of this project, the term *disruption* will be used in reference to the broadest definition as adopted by the non-academic business community: an innovation that shakes up, displaces, or overhauls incumbent and other organizations within and/or outside an industry, regardless of its cost, market(s) served, or creator.

2.1.3 Barriers to Innovation that Increase Firms' Vulnerability to Disruption

With the concepts of innovation and disruption understood, it is now possible to observe the relationship between the two—particularly, how a firm's innovation readiness impacts its susceptibility to disruption. When thinking about the inherent meaning of the term *disruption*, it is reasonable to suggest that disruptions occur because the signals that precede them go unnoticed. However, a survey from CB Insights found that 41 percent of corporate strategy executives acknowledge that they are at "extreme risk of disruption" (Fischer, 2018). Therefore, what drives firms' vulnerability to disruption is not necessarily naivety to the fact that such a threat exists. Rather, it is their inability and/or hesitancy to adequately identify, assess and act on drivers of change. In fact, previous studies have found that the ability to sense and respond to drivers of change is often one of the weakest capabilities in firms' organizational structures (Hayward, 2004). Although the reasons for having such a deficiency are unique to each organization, they can often be characterized as symptoms or causes of path dependency.

From an economic standpoint, path dependency has been described as "the continued use of a product or practice based on historical preference or use [...] even if newer, more efficient alternatives are available." (Banton, 2021) This phenomenon has been characterized as an outcome of resistance to change driven by various factors. As it relates to the goals of this project, path dependency can result from several behavioural drivers that stifle innovation. Specifically, Sarpong, Maclean, & Davies (2013) observed that organizations "get entrapped in obsolete assumptions, schemas, expectancies, inferential processes and mental models" (p. 615) that misguide them into envisioning path-dependent futures.

In his work on innovation during times of chaos, the CEO of TrendHunter, Jeremy Gutsche (2020), proposes that organizations could lose up to 93 percent of their innovation potential by falling into "traps" that make them path-dependent. The remainder of this section takes inspiration from Gutsche's theory, combined with other innovation experts' and scholars' works to propose six behavioural drivers that stifle organizational innovation and increase vulnerability to disruption.

Quickness to dismiss uncomfortable, radical ideas

Gutsche (2020) argues that firms are vulnerable to disruption when they fail to see the merit in new ideas that may initially seem awkward or different. In fact, Kapoor & Klueter (2015) learnt that firms' research and development investments seldom lead to the production and commercialization of radical innovations, not because their research efforts fail, but rather because the resulting innovations do not align with their existing business model. Providing context as to why this is, Viki (2018) explains that in large corporations, organizational structures and processes are often designed to deliver their current business model and products, rather than to uncover opportunities for innovation. Many innovation scholars and experts agree that innovative organizations pursue two

innovation portfolios: (1) a lower-risk, "exploit" portfolio focused on improving existing capabilities, finding efficiencies, and optimizing current products and processes; and (2) a higher-risk, "explore" portfolio dedicated to researching and experimenting with new business opportunities (O'Rielly & Tushman, 2008; Heger & Rohrbeck, 2011; Satell, 2018; Scoblic, 2020; Johnson & Murray, 2020; Osterwalder et al., 2020). Businesses most vulnerable to disruption often have only an "exploit" portfolio and are hence less inclined to pursue strategies that may require the creation of new core competencies, especially if those would put their current competencies at risk of obsolescence. Kodak's failure to move into the digital photography market, which many attribute as the reason for its subsequent decline, exemplifies the dangers of this type of hesitancy.

Although necessary, accepting to pursue new, potentially radical ideas is not a sufficient condition to break away from path dependency. Gutsche (2020) explains that, even if path-dependent organizations identify a good idea they want to pursue, they might still give in to the temptation to abandon the engagement as soon as it becomes uncomfortable or inconvenient. He argues that successful innovations are not immediately evident and that firms must work through the discomforts of a project or idea before they can achieve a breakthrough.

False belief that past success will guarantee future success

Biased to their previous achievements, path-dependent enterprises choose to preserve what has already worked for them instead of seeking new opportunities for growth (Gutsche, 2020). As Dr. Joshua Gans of the University of Toronto's Rotman School of Management notes, "disruption describes what happens when firms fail because they keep making the kinds of choices that made them successful." (Harford, 2018) For example, Xerox, the printing equipment and services company, was the first to create a personal computer with a graphical user interface, keyboard and mouse. However, Xerox did not take its invention to market because management did not see its potential for success. Not only was it perceived to be too different for the company and its customers, but it was also not regarded as necessary for Xerox's continued success (Viki, 2018; Harford, 2018). Evidently, Microsoft's and Apple's subsequent successes in the personal computing market serve as a testimony to Xerox's short-sightedness in drawing that conclusion.

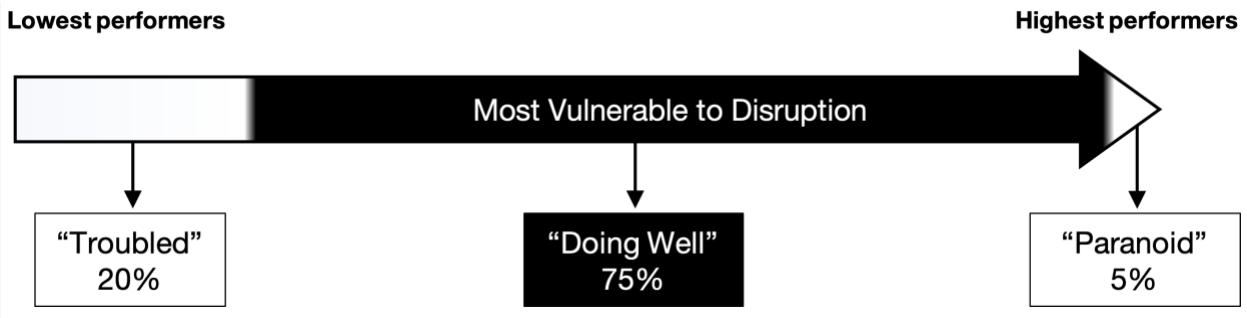
Part of what might manifest this thinking is what Johnson & Murray (2020) describe as the normalcy bias, in which organizations believe that their past experiences will reoccur in the future. However, Koberg et al. (1996) observed that relying on the past can damage future outcomes. Another challenge is that successful organizations experience inertia and cannot picture themselves in a future where they no longer exist (Sarpong, Maclean, & Davies, 2013; Viki, 2018). Rohrbeck & Kum (2018) even found that the highest-performing organizations of the past were likely to have been outperformed by their competitors in the present because their success had blinded them from seeing reasons to worry about the future.

Motivation to act only when in crisis

Gutsche (2020) articulates that companies vulnerable to disruption lack the sense of urgency to move quickly when they are not in a state of crisis. Without a sense of urgency, organizations are less inclined to pursue growth opportunities (Fisher, 2018). In their work on innovation during times of

crisis, Johnson & Murray (2020) explain that leaders prefer to maintain the status quo and will only respond to problems when there is enough information to make it undeniable that those problems are severe. They argue that periods of crisis create conditions for organizational innovation by increasing risk tolerance, reducing fears of failure, and instilling a sustained form of commitment from leaders which would otherwise dissipate in a non-crisis situation (Johnson & Murray, 2020). Gilbert's (2006) observations suggest that this behavioural response to crisis applies equally in the context of disruption, in which incumbents will not react to a disruptor until it is perceived as a threat. In this respect, where disrupting firms differ from the disrupted is that the former behave like they are always in a crisis, regardless of their reality. As depicted in Figure II, Gutsche (2020) explains that organizations with the highest and lowest self-perceptions of performance are more risk-tolerant—and thereby, more capable of innovation—than those in the middle. This is because the high-performers are paranoid that they will be disrupted, while the low-performers are fighting for their survival.

Figure II: Vulnerability to Disruption Based on Self-Perception of Performance (adapted from Gutsche, 2020)



Resistance to change and exploring new ways of working

In his book, Gutsche (2020) explains that as people repeat the same tasks and form routines over time, they develop *neurological shortcuts*, an automaticity that enables them to perform activities with little cognitive effort. For example, with enough practice, people can eventually learn to type on a computer without needing to look at their keyboard or even think about where each key is located. These cognitive shortcuts typically become helpful to businesses as they enable people to work more efficiently, but Gutsche (2020) argues that they also inhibit creativity by making employees and leaders less inclined to experiment with new work approaches. From a neurological standpoint, Berns (2008) explains that the human brain seeks to minimize the energy it expends by developing neural pathways to categorize experiences into memory; this allows us to seamlessly draw from our previous experiences instead of conceiving new ways to perform familiar tasks in the future. As such, taking these cognitive shortcuts comes at the expense of creativity by reducing the brain's need to exercise imagination. This trade-off between efficiency and creativity implicates vulnerability to disruption because many organizations now view creativity as a prerequisite for innovation in a post-pandemic world. In fact, a study by the Royal Bank of Canada found that creativity was employers' most in-demand skill in 2019 and 2020, describing this competency as "a critical economic variable [...] that enables a company to dominate, or even create, an industry." (Do, Bell & Schrumm, 2021) This suggests that firms need creativity not only to disrupt, but also to avoid being disrupted.

As implied by its impact on worker propensity to explore new ways of working, the relationship between neurological shortcuts and organizational creativity may also be associated with resistance to change. Although not directly suggested by Berns (2008), it is plausible that the brain's preference for past experiences over imagination could cultivate resistance to change if that preference prevails—intentionally or subconsciously—even when the alternative could have led to better organizational outcomes. This means that workers in path-dependent organizations might implicitly or explicitly resist change when asked to abandon their neurological dependencies in order to adopt a new tool or business process, for example. Change-resistant firms are relatively more susceptible to disruption because their change-embracing counterparts are more likely to identify and act on new ideas and opportunities and are better equipped to instill a vision to their people and help them believe in a case for change (Gutsche, 2020). Additionally, resistance to change creates a vicious cycle in which it inhibits creativity by "mak[ing] it less likely people will take the risks and engage in the new ways of thinking and doing that may be critical for creative performance," (Hon et al., 2011) resulting in the development of more neurological shortcuts that further increase resistance, reduce creativity, and so forth.

Underestimation of the pace of change

Gutsche (2020) argues that disruption-prone organizations erroneously assume that the pace of change has always been a linear constant, when in reality, it is getting exponentially faster. In other words, we will experience more change in the next ten years than we did in the previous ten, and so forth. Fischer (2018) explains that this acceleration of change is being driven by increasingly shorter innovation cycles, converging industries and fewer barriers to entry. Firms that think linearly about their business are more prone to disruption because they are less prepared to react to the speed at which their business model can become obsolete. Viki (2018) adds that if firms organize themselves heavily around their business model, then they can only survive for as long as their business model does.

Prioritization of short-term results over long-term possibilities

In his characterizations of path-dependent organizations, Gutsche (2020) refers to the financial theory of optionality, which suggests that organizations should make decisions based on what will maximize the number of opportunities available in the future—rather than profitability. A Boston Consulting Group study found that long-term vitality is created by developing growth options, thinking differently, and investing in the right capabilities (Reeves et al., 2018). However, many incumbent firms do not possess those characteristics, prioritizing short-term profitability over long-term optionality when choosing a course of action (Gutsche, 2020). In support of this argument, Johnson & Murray (2020) and Fischer (2018) add that leaders favour low-risk, short-term decisions because their job performance is tied to immediate financial results and not the creation of future options. Another reason why organizations steer away from optionality-based courses of action is that those options lack the levels of certainty and measurability that leaders need in order to feel comfortable pursuing them (Frenette & Fribance, 2020). The collective argument here is that, by limiting their available options for the future, firms make themselves more rigid and unable to adapt in the face of change, thereby increasing their vulnerability to disruption.

2.2 Strategic Foresight as a Toolkit for Business Innovation

The COVID-19 pandemic exposed firms' vulnerability to disruption by bringing to light the extent to which they were path-dependent. It also brought about a more substantial interest in strategic foresight (Scoblic, 2020). Earlier in this chapter, it was proposed that path dependency can be linked to organizational deficiencies in identifying, assessing, and acting on drivers of change. These behaviours can be effectively activated through the practice of foresight. This section establishes the premise that firms can turn to strategic foresight to develop their innovation capabilities and break away from path dependency, thereby reducing their vulnerability to disruption.

2.2.1 Defining Strategic Foresight

Strategic foresight is a domain of futures studies in which signals of the future, found in the present, are used to anticipate and plan for alternative futures. Put differently, Vecchiato & Roveda (2010a) articulate that, more contemporarily, "the term 'foresight' is used to encompass a range of approaches and methods that aim to improve future-oriented decision-making." (p. 99) In their literature review of the domain, Sarpong, Maclean, & Davies (2013) identify that foresight is both a human attribute and a process. For example, Slaughter (1995) asserts that foresight "is a human attribute that allows us to weigh the pros and cons, to evaluate different courses of action and to invest possible futures on every level with enough reality and meaning to use them as decision making aids." (p. 1) Later in his book, he then positions foresight as:

> a process that attempts to broaden the boundaries of perceptions in four ways: by assessing the implications of present actions, decisions, etc.; by detecting and avoiding problems before they occur; by considering the present implications of possible future events; [and] by envisioning aspects of desired futures. (Slaughter, 1995, p. 48)

Evidently, to successfully practice strategic foresight requires both the innate skill to detect and act on signals of the future as well as a toolkit or methodology to systematically guide the application of that skill. While there is no prescribed process for conducting strategic foresight, Sarpong, Maclean, & Alexander (2013) offer a categorization of foresight activities into four distinct phases:

1. *Prospective sensemaking*—the identification and interpretation of patterns, signals and drivers of change to identify problem spaces and develop narratives of the future; this is often facilitated through a process called *horizon scanning* (Sarpong, Maclean, & Alexander, 2013; Vecchiato & Roveda, 2010a).
2. *Multilateral participation*—a set of co-creative approaches used to imagine and evaluate the consequences of alternative conceptions of the future; this can be done through scenario-building exercises and similar participatory design activities (Sarpong, Maclean, & Alexander, 2013; Tsoukas & Shepherd, 2004; McGonigal, n.d.).
3. *Application of analytical foresight techniques*—methods to evaluate the alternative futures created in the previous step by identifying possibilities and limits, and by determining what is plausible, feasible, desirable and viable; this can be done by using methods like wind-

tunnelling and backcasting exercises (Sarpong, Maclean, & Alexander, 2013; Tsoukas & Shepherd, 2004).

4. *Cooperation and practical judgement*—a consensual process by which key stakeholders decide on the desired future they want to pursue (Sarpong, Maclean, & Alexander, 2013); a strategy formulation process usually follows this step to determine how the organization will propel itself towards its desired future.

A common area of confusion addressed in the foresight literature is its distinction from *forecasting*—the practice of predicting the future based on historical data trends. Rohrbeck & Gemünden (2008) explain that foresight differs from forecasting in that the former does not aim to predict the development of a known trend or issue; instead, foresight seeks to identify issues for which there is often no historical data available to support forecasting. Scoblic (2020) supplements this distinction by explaining that, despite its merits in helping to make more accurate predictions, forecasting reaches its limit when there are no analogies from the past to compare against present situations; he asserts that it is precisely under those circumstances that foresight becomes particularly beneficial.

Although strategic foresight is also used for policymaking, this project will focus specifically on foresight as a business practice used to inform strategic planning and organizational innovation activities. Some scholars refer to this application of foresight as *corporate foresight*. For example, Rohrbeck & Kum (2018) define corporate foresight as "a set of practices that enable firms to attain a superior position in future markets." (p. 106) From a more processual standpoint, Gordon et al. (2020) explain that corporate foresight is concerned with "identifying, observing, and interpreting factors that induce change, determining possible organization-specific implications, and triggering appropriate organizational responses." (p. 1)

2.2.2 Business Case for Strategic Foresight

In a 1931 lecture he gave at Harvard Business School, the famed philosopher, Alfred North Whitehead, spoke of foresight as "the crucial feature of the competent business mind." (Tsoukas & Shepherd, 2004, p. 2) In fact, several studies have observed that businesses use strategic foresight to improve their innovation capacity and break away from path dependency, thereby enabling them to be more resilient in the face of disruption and outperform their competitors (Heger & Rohrbeck, 2012; Rohrbeck & Kum, 2018). For example, firms like Daimler, Cisco, Pepsi, L'Oréal and Siemens have all invested in building internal strategic foresight functions (Rohrbeck & Kum, 2018).

Accordingly, the practice of strategic/corporate foresight has been linked to improvements in the following business capabilities and performance areas:

- Organizational innovativeness (Heger & Rohrbeck, 2012; Jissink et al., 2019; Gordon et al., 2020);
- Management of uncertainty (Vecchiato & Roveda, 2010a; Scoblic, 2020);
- Crisis management (Slaughter, 2002);
- Resource availability and access (Vecchiato & Roveda, 2010a; Gordon et al., 2020);

- Identification and definition of competitive advantages (Vecchiato & Roveda, 2010a);
- Decision-making quality and speed (Slaughter, 2002; Vecchiato & Roveda, 2010a; Heger & Rohrbeck, 2012);
- Ability to question assumptions and counter cognitive biases that typically stifle innovation (Frenette & Fribance, 2020; Johnson & Murray, 2020);
- Ability to anticipate challenges and identify new business opportunities (Slaughter, 2002, Gordon et al., 2020);
- Ability to manage and respond to change (Tsoukas & Shepherd, 2004; Gordon et al., 2020, Scoblic, 2020); and
- Business profitability and market capitalization—businesses with high foresight maturity can be as much as 33 percent more profitable than the average firm (Rohrbeck & Kum, 2018).

Given that only 25 percent of Fortune 500 companies were leveraging strategic foresight in 2019 (Schlehuber, 2019), firms still have a wide window of opportunity to differentiate themselves and get ahead of their competitors by institutionalizing this practice.

2.3 Design Challenge (Research Question)

This chapter advanced the propositions that path-dependent firms behave in ways that stifle innovation and make them susceptible to disruption, and that strategic foresight methods can be used to correct those behaviours and increase firms' future readiness. The introduction hypothesized that the COVID-19 pandemic sparked the creation of new business models, products, and services that will disrupt industry incumbents. Therefore, path-dependent firms that do not acknowledge and eliminate their barriers to innovation are at risk of experiencing further disruption in a post-pandemic future.

These reflections surfaced the following research question: How could we help firms leverage strategic foresight so that they can break away from path dependency and manage the threat of disruption in a post-pandemic era? The following chapters detail the process by which a solution was designed and evaluated in response to this design challenge.

Chapter 3: Design Process (Methodology)

"Games are the most elevated form of investigation."

- Albert *Einstein*
(McGonigal, n.d.)

This project was grounded in a combination of primary and secondary research methods used to scope, design and test a solution in response to the research question. This chapter begins by defining the solution space—that is, the direction taken to address the challenge identified in the conclusion of Chapter 2. It then dives into the additional research conducted and artifacts created to inform the solution's design, before providing a walkthrough of the solution itself and the procedure followed to evaluate its user experience and impact on meeting the project goals.

3.1 Solution Definition

3.1.1 Target Opportunity Area

Despite the benefits strategic foresight offers in cultivating innovative behaviours, many organizations struggle to institutionalize the practice to its fullest potential. In their study on organizational readiness for foresight, Rohrbeck & Kum (2018) observed that the most foresight-mature firms integrate foresightful practices into their research and development, marketing, and strategic planning functions. However, many firms experience difficulties embedding foresight into their everyday activities and instead rely on external consultants to perform this work, only for the insights gained from the work to be acted upon ineffectively (Sarpong, Maclean & Alexander, 2013; Frenette & Fribance, 2020). Given that the research question, left as-is, could have been addressed in a vast number of ways, there was value in investigating why these challenges exist in order to uncover key opportunities for intervention. The literature notably revealed two gaps that may be contributing to the challenge of institutionalizing foresight.

First, much of the literature on foresight relies on "a tacit assumption that top managers are the sole source of organizational 'foresightfulness'." (Sarpong, Maclean & Davies, 2013, p. 614) Sarpong, Maclean & Alexander (2013) argue that by focusing only on managers, organizations exclude the role of other stakeholders in developing the future. In his work on developing and applying strategic foresight within organizations, Slaughter (2002) asserts that "every individual has the capacity for foresight," (p. 2) and argues that cultivating this capacity is essential for organizations to attain foresight maturity. In fact, studies have proven that generalists tend to make better predictions than experts; the former are more open-minded and willing to make mistakes, while the latter are too emotionally attached to the subject matter (Asghar, 2016; Gutsche, 2020). Supporting this argument,

Manzoni (2021) suggests that employees at the periphery of an organization, like salespeople, have less of an "incumbent mentality" and are hence more likely than their leaders to spot disruption signals. This project would therefore attempt to offer a solution that positions strategic foresight toward individual contributors and lower-level managers (herein referred to interchangeably as *employees* and *business professionals* for simplicity).

Second, the literature falls short in advising readers on how to act on insights found during that process. Vecchiato & Roveda (2010b) argue that much of the research on corporate foresight emphasizes considering "the likely path of evolution of emerging drivers," rather than evaluating "the impact of drivers of change on the competitive position of the firm" or "how to take advantage of change drivers" (Gordon et al., 2020). Although environmental scanning is positively correlated with innovative activity and is necessary for firms to anticipate disruption (Koberg et al., 1996; Satell, 2018; Heger & Rohrbeck, 2012), it is not sufficient to inform strategic action. Therefore, this project would also aim to provide individual contributors and lower-level managers with a solution to help them (1) evaluate the impacts of drivers of change on their firm's competitive position and (2) contemplate ways to capitalize on those drivers.

3.1.2 Target Output

With the target opportunity areas identified, next was to consider the format or medium of the solution. Understanding how to activate foresightful behaviour was helpful in this assessment. While there is limited literature offering guidance on developing individual foresight capabilities, the role of conversation emerged as a theme among the sources consulted. Slaughter (2002) argues that "[t]he main catalyst for developing [individual capacity for foresight] is the use of futures concepts to create a futures discourse," (p. 2) as "[t]he mastery of such a discourse leads to the productive use of key futures methodologies." (p. 3) Furthermore, in Sarpong, Maclean, & Alexander's (2013) four-phase framework for foresight introduced in Chapter 2, having "strategic conversations" is identified as a peripheral activity in which members of the organization interact with each other to develop "compelling images of the future." (p. 37) Thus, it became evident that, for the solution to most impactfully introduce business professionals to the concept of foresight, it must invite them to engage with each other in a discourse about the future.

Upon reflecting on my professional experiences in human resources and change management, I posited that offering an interactive and engaging learning channel would be the most effective means to introduce a new knowledge base or skill to employees of any organization. More specifically, I hypothesized that a game could successfully help employees practice foresightful thinking in the context of business disruption. To test the plausibility of this hypothesis, I reviewed additional literature to examine the relationships between games and foresight as well as between games and foresight-enabling skills.

In his review of scholarly sources in education, psychology, and anthropology, Rieber (1996) concluded that "play is a powerful mediator for learning throughout a person's life." (p. 43) In a case study they documented while developing a foresight game of their own, Dufva et al. (2016) found that foresight games can effectively help individuals generate career-relevant insights about alternative futures, provided that those games balance the acts of generating, communicating, and experiencing ideas

about the future. They assert that games "can be used to support internalizing knowledge, communicating and sharing ideas, increasing and broadening participation, and creating new futures knowledge." (p. 560) Discussing the notion of *play* as a driver of creativity, Mainemelis & Ronson (2006) observed that games stimulate cognitive processes like problem framing, divergent thinking, mental transformation, practice with alternative solutions, and evaluation. Other research connects play to organizational benefits that foster strategic innovation, improve the management of uncertainty, and promote continuous learning (Statler et al., 2009). Games also contribute to the development of social capital—that is, the knowledge of "who is who" within a network or organization—by bringing together individuals who might not regularly interact with each other to share information and ideas (Harris & Daley, 2008; Mainemelis & Ronson, 2006). Although there has not been much research on the direct relationship between gameplay and foresight, the linkages described above gave reason to believe that a game may offer a compelling answer to the research question. As such, my response to the design challenge would include the design and evaluation of a proof of concept for a foresight game.

3.2 Determination of Solution Qualities

With the intent to design a game confirmed, additional research was required to identify the solution qualities. More specifically, the following questions needed to be answered to guide the game's design:

- What are the basic principles of learning experience and game design that will guide the creation of a prototype that effectively responds to the design challenge?
- What games, if any, already exist in the domain of foresight and could serve as inspiration? What do they do well? Where are there gaps?
- What are the desired outcomes of the game? What characteristics, capabilities and behaviours should players exhibit during gameplay to validate that the game achieves its intended purpose?

3.2.1 Characteristics of Serious Games

To effectively deliver on the intent of this project, it was crucial to consider the principles of game design by which the prototype should abide to be rightfully characterized as a game. More specifically, these principles should inform the creation of a game that would successfully deliver a set of learning outcomes. Abt (1970) first coined the term *serious games* to describe those that "have an explicit and carefully thought-out educational purpose and are not intended to be played primarily for amusement." (p. 9) He notes, however, that this does not mean serious games should preclude the provision of entertainment (Abt, 1970). Therefore, the challenge was to design a game that effectively balances seriousness and fun.

In their respective works on the sociology of games, Huizinga (1955) and Caillois (1961) give credit to the merits of play in learning contexts and help resolve the tension between seriousness and fun by

offering points of view on what elements properly define a game. Given that Caillois' work builds on top of Huizinga's, their frameworks have been combined to offer the following principles of *play*:

1. It is a voluntary activity that can start, end or be postponed at any time;
2. It is a regularly recurring relaxation that is complementary to—but separate from—one's real life, bringing a temporary, limited perfection to an otherwise imperfect world;
3. It cultivates a fluid contrast between play and seriousness, where play becomes serious and seriousness becomes playful;
4. It serves a purpose that is independent of one's immediate material interests or biological needs;
5. It suspends the law and order of "the real world" to offer a set of new, temporary rules;
6. It has an inherent secrecy in that it is not experienced by people who are not playing the game;
7. Its outcome cannot be predetermined or realized in advance; and
8. It is superfluous and unproductive, meaning that it creates no real value (e.g., wealth, goods), leaves players exactly where they were when they started the game, and is only as necessary as one's desire for pleasure (Huizinga, 1955; Caillois, 1961).

While Huizinga's and Caillois' characterizations of play are generally agreeable, the tenet that games are *superfluous and unproductive* may be called into question in the context of serious games. For example, suppose a serious game was designed to be played in a workplace setting. In that case, it could be argued that it should serve a productive purpose, like idea generation or knowledge creation/sharing for the betterment of the organization. Given that assessment, the notion of *creating no real value* has been interpreted to refer exclusively to the creation of immediate, tangible/material value, rather than the educational or intellectual value typically realized from playing serious games.

3.2.2 Games and Tools Review

To inspire the game's design, it was helpful to explore what foresight games and tools already exist in the market and evaluate their gaps in responding to the objectives of this project. Using examples cited by Dufva et al. (2016) as a starting point, an Internet search was conducted to curate games and tools made for the practices of foresight and disruptive thinking. Each game and tool was reviewed for its strengths, noteworthy observations, and limitations/weaknesses related to the project objectives. Although most were available to the public for free, a few were only available for purchase and could not be reviewed as comprehensively as the others. The outputs of this review are presented in Table I. It is necessary to note that there are likely other games and tools in the market and that this list should not be taken as exhaustive of all that are available.

The assessment revealed that there are few games and tools that focus on imagining the future of business and cultivating disruptive thinking, and that they are mostly missing a gamification aspect (i.e., they are, for the most part, simply workshop tools). However, what these games and tools did have in common was that they are generative in nature and utilize elements to prompt and constrain thinking to foster creativity.

Table I: Review of Existing Games and Tools for Foresight and Innovation

Game/tool	Objective	Strengths and noteworthy observations	Limitations and weaknesses
Models of Impact (MOI), by Matthew Manos	Generate new, sustainable business models	• Provides a creative avenue to ideate on new business models by working with constraints and combining unusual ideas together • Allows players to socialize their ideas and think through the key determinants of a business model through the MOI canvas	• Encourages players to think about what can become a disruptive idea, but does not enable players to think about how their organization might be disrupted • Does not necessarily provoke players to think about the future, as inputs might derive from the present
Brainstorm Cards, by Board of Innovation	Brainstorm new business ideas based on customer, market, technological and regulatory trends	• Prompts users with scenarios inspired by real companies • Utilizes a framework of four sources of innovation which can inspire/catalyze disruptive thinking	• Offers no additional "play" aspect beyond simple brainstorming
The Sarkar Game, by Peter Hayward and Joseph Voros	Introduce audiences to P.R. Sarkar's concept of social change	• Uses role play as a mechanism to illustrate the cycles at which civilizations have evolved	• Focuses specifically on the history of social change and how it has come about • Places little to no apparent focus on imagining the future, let alone the future of business
The Thing from the Future, by Situation Lab	Imagine how objects and other "things" might look like in any given future	• Pushes creative thinking because it demands that players exercise their imagination with very specific constraints and in ways they are not used to doing	• Might not provoke a kind of thinking that is tangible enough for players in a business context; hard to relate it back to their work • Does not encourage players to think about how they might implement or act on their ideas
World Game, by the International Futures Forum	Generate and build on ideas for sustainability and resilience in light of global issues that challenge humanity	• Delivers a feeling of competition through the challenges imposed by the game, rather than by having players compete against each other • Pushes players to think in systems as they imagine the future	• Promotes macro-level thinking that might not be focused enough to cultivate disruptive thinking in business contexts
Roadblocks, by LPK	Identify and resolve potential project challenges and organizational barriers to innovation	• Encourages players to challenge their organization's status quo and identify where they might be path-dependent	• Requires that players have a substantial level of understanding about their organization to drive meaningful conversations • Promotes only an internal view of the organization • Targets project teams for use in project contexts
IMPACT, by Idea Couture	Think critically and imaginatively about how new technologies will impact society in the future	• Provides key terminology to introduce players to futures thinking • Utilizes board game elements to provide a more gamified experience beyond a deck of cards	• Focuses exclusively on the impact of new technologies on society and not on other drivers of disruption (e.g., regulatory and social trends) • Targets a policy-making audience, rather than a business audience

3.2.3 Foresight Competency Dictionary

To frame the intended outcomes of the game, it was necessary to identify the competencies and behaviours players should demonstrate upon playing it. Through referring to various sources, I created a Foresight Competency Dictionary (Table II) containing a curated list of skills and attributes that foresight practitioners should possess. From this list, I identified a set of *target competencies* to promote as part of the game rules; these competencies would serve as indicators of the game's success in addressing the design challenge. These were selected in consideration of Vecchiato & Roveda's (2010b) argument that there is little literature on corporate foresight that provides direction on evaluating the impact and capitalize on drivers of change. Hence, competencies like *disruptive thinking*, *distentive thinking*, *worldbuilding*, and *divergent and convergent thinking* were chosen as focal targets for the game. Complementary skills and attributes (e.g., *imagination*) were also targeted to facilitate the intended outcome.

In addition to the target competencies discussed above, I also identified *emergent competencies*. These are skills and attributes may emerge naturally through gameplay (e.g., *scanning*, *empathy*, *debiasing*, *open-mindedness*) but could not be activated through instruction. The remaining competencies were excluded from the game's design, either because they extended beyond the project's scope (e.g., *change leadership*, *problem framing*) or because they are value-based attributes that cannot necessarily be trained (e.g., *progressivist*, *enterprising*).

Table II: Foresight Competency Dictionary

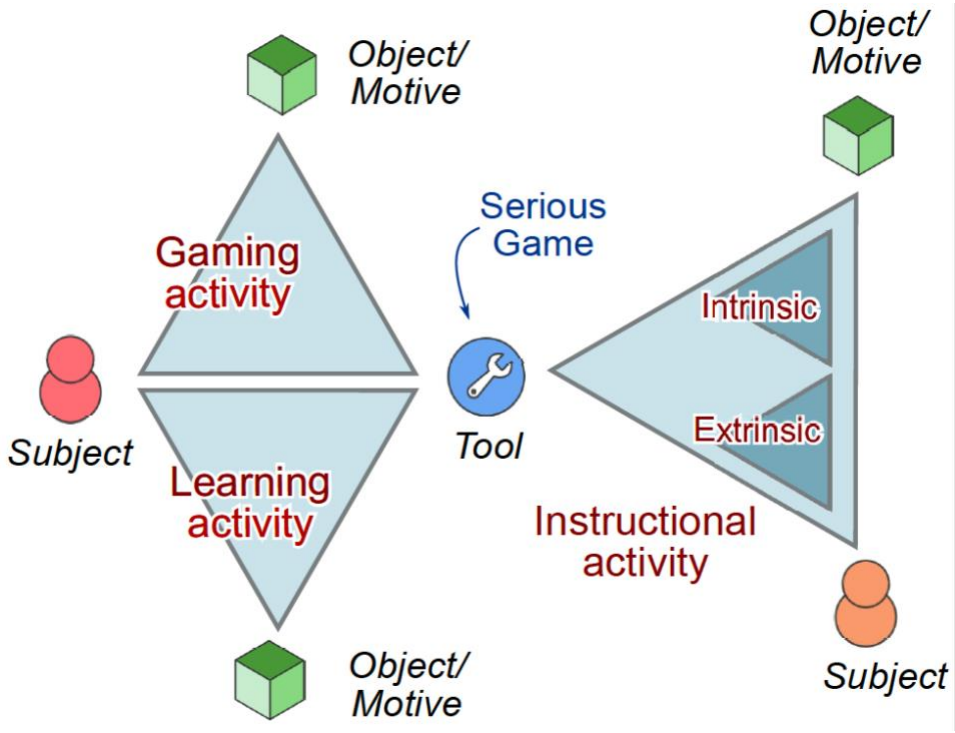
Competency	Description	Source(s)
Target competencies		
Disruptive thinking	Thinks differently, challenges traditional ways of doing, and brings about innovation that truly changes how people and organizations behave	University of Aberdeen (2021)
Distentive thinking	Evaluates the implications, consequences and risks of alternative futures by drawing connections between the past, present and future	Dator (1996); Hines et al. (2017); Tsoukas & Shepherd (2004)
Divergent and convergent thinking	Generates wildly imaginative ideas and collaborates with stakeholders to determine the most viable, desirable, and feasible opportunities for creating future value	Foresight University (n.d.); Plural Futures (n.d.); Woodman et al. (1993)
Imagination	Thinks creatively and boldly, and practices positive and negative imagination about the future; demonstrates a willingness to be ridiculed or viewed as a "weirdo"	Dator (1996); Rohrbeck & Germünden (2008); McGonigal (n.d.); Hines et al. (2017)
Planning	Develops and executes strategic, tactical and operational plans to bridge the current and future states	Hines et al. (2017); Foresight University (n.d.)
Practical skepticism	Looks at ideas for the future with extra scrutiny, and thinks critically about possibilities without getting caught up in the excitement	McGonigal (n.d.)
Worldbuilding	Generates alternative, provocative scenarios of the future based on signals, trends and drivers of change as well as critical uncertainties	Foresight University (n.d.); Hines et al. (2017); Plural Futures (n.d.)
Emergent competencies		
Debiasing	Suspends preconceived notions of the future, helps others see their biases, and challenges assumptions and worldviews that are not normally addressed within the company	Gordon et al. (2020); Hines et al. (2017)

Competency	Description	Source(s)
Empathy	Understands people and empathizes with their needs, hopes and fears; acts as an advocate or voice for the user, customer, citizen, etc.	Foresight University (n.d.); Plural Futures (n.d.)
Enterprise-view	Sees the big picture and thinks laterally across multiple departments, functions, or lines of business within one's organization	Rohrbeck & Germünden (2008)
Open-mindedness	Considers that, although one might be skeptical about any given future, another might have more evidence or motivation to believe that it is possible	McGonigal (n.d.)
Scanning	Scans for signals, identifies patterns, and synthesizes trends related to consumer behaviour, societal values, business practices, technology, etc.	Gordon et al. (2020); Foresight University (n.d.); Plural Futures (n.d.); Hines et al. (2017); Dator (1996)
Signal-spotting	Spots signals of change and can characterize whether change is transitional or transformative; identifies signs of disruption	Kindler (1979)
Systems thinking	Appreciates complexity; demonstrates curiosity towards the relationship between various actors in any given system and the undermining assumptions and worldviews that shape its context	Woodman et al. (1993); Hines et al. (2017); Plural Futures (n.d.)
Other competencies (excluded from this research)		
Broad and deep knowledge	Possesses a mix of specialized knowledge and broad interests, including the widest possible knowledge of the social sciences, arts, humanities, natural sciences, engineering, law, etc.	Dator (1996); Rohrbeck & Kum (2018); Woodman et al. (1993); Hines et al. (2017)
Change leadership	Leads, influences, and sustains change by communicating the vision and engaging closely with implicated stakeholders to foster commitment	Foresight University (n.d.); Hines et al. (2017); Plural Futures (n.d.)
Congruence in values	Possesses personal values in congruence with one's team and the choices of the future	Slaughter (2002)
Enterprising	Experiments and takes risks, fails fast and often, and learns from mistakes and criticism	Dator (1996)
Progressivism	Strives to continuously improve the current state and constantly relearn what it means to be or do better	Dator (1996)
Problem framing	Evaluates the current context of the foresight question or problem at hand by determining boundaries, understanding the historical context, identifying stakeholders, etc.	Foresight University (n.d.); Hines et al. (2017)
Program evaluation	Sets and tracks performance targets to measure the quality of the foresight work and assess progress towards realizing the foresight-driven vision	Foresight University (n.d.); Hines et al. (2017)
Prototyping	Designs activities or artifacts of the future to explore and evaluate scenarios; tests ideas on oneself, where possible	Foresight University (n.d.); Hines et al. (2017); Dator (1996)
Strategic visioning	Develops a mix of tangible and audacious goals to create a preferred future	Hines et al. (2017)

3.3 Activity-Theory Model of Serious Games (ATMSG)

Even with the solution qualities identified, still was missing a process or framework to guide the design of a serious game. To that end, Carvalho et al. (2015) developed the Activity Theory-based Model of Serious Games (ATMSG) to construct "a systematic and detailed representation of educational serious games, depicting the ways that game elements contribute to the achievement of the desired pedagogical goals." (p. 1) As depicted in Figure III, the ATMSG posits that serious games involve three components: gaming activities, learning activities and instructional activities. Each of these is subsequently broken down into actions, tools and goals that drive the performance or effectiveness of their respective activity (Carvalho et al., 2015). The example of a poker game will be used to illustrate each of these concepts further.

Figure III: Carvalho et al.'s (2015) Activity-Theory Model of Serious Games



3.3.1 Gaming Activities

Gaming activities drive the game's progress and usually provide the core elements that make the game fun and competitive. Gaming *actions* involve the tasks and events players must perform or trigger to advance through the game. In a game of poker, gaming actions would include distributing cards, placing bets, maintaining a "poker face", revealing one's hand and collecting (or losing) winnings. Gaming *tools* are the (usually tangible) elements that players use or manipulate to perform or trigger gaming actions. At a minimum, poker gaming tools would include a deck of cards and poker chips. Lastly, gaming *goals* are the underlying objectives or motives behind the gaming actions. In poker, the gaming goal is typically to win as much money as possible (or to minimize losses).

3.3.2 Learning Activities

Learning activities are what distinguish conventional games from serious games. While they function similarly to gaming activities, learning activities focus specifically on driving learning outcomes. Depending on the game, learning *actions* and *tools* may overlap with gaming actions and tools, respectively. However, where gaming and learning activities differ is in their *goal*. For example, if a cohort of university students were to play poker during a lecture on game theory, then the gaming goal of winning money would be complemented by the learning goal of understanding a specific concept or obtaining course credit.

3.3.3 Instructional Activities

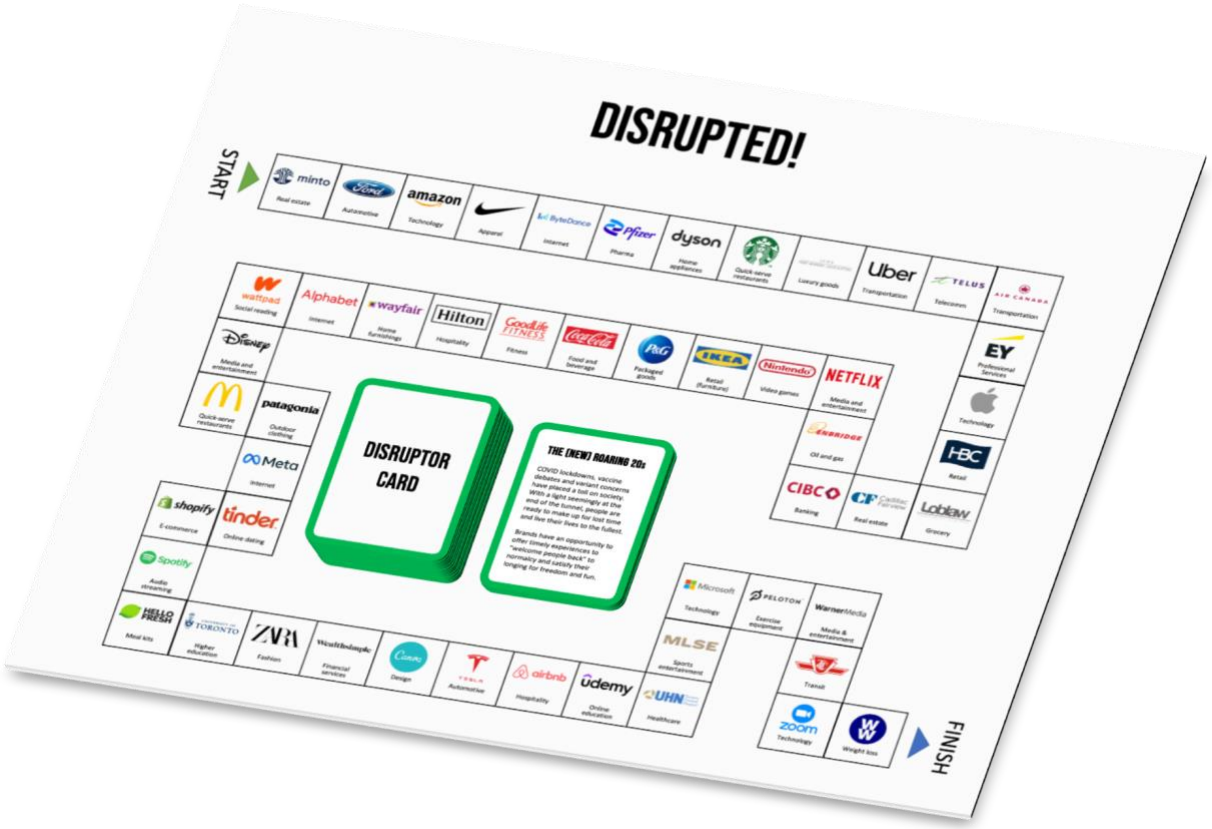
Instructional activities facilitate the game proceedings by guiding players toward achieving the gaming and learning goals. These can be driven by intrinsic or extrinsic sources. Intrinsic sources of instruction are elements built into the game that provide guidance without intervention from a third party. A typical example applicable to nearly all games, including poker, is a rule book or set of game instructions. It should be noted that Carvalho et al. (2015) classify game designers as an intrinsic source of instruction, as they make design decisions and create in-game assessment/feedback mechanisms to facilitate gameplay and learning. On the other hand, extrinsic sources of instruction are external to the game, and they usually take the form of human facilitators. Going back to the university lecture poker game scenario, the course professor might act as an extrinsic source of instruction by providing additional guidelines and facilitating a post-game debrief. Instructional activities are composed of *actions* and *tools* that may overlap with those of the gaming and learning activities. However, extrinsic sources' actions (e.g., teaching a concept) and tools (e.g., lecture notes) tend to be more distinguishable. Intrinsic and extrinsic sources may share the same instructional *goals*, which should ultimately support the gaming and learning goals.

3.4 Proof of Concept Walkthrough

The inputs presented so far in this chapter informed an iterative design process in which I envisioned a concept and created (then reconfigured or discarded) multiple game elements to support it. These efforts culminated in the output of a proof of concept for a tabletop board game called *Disrupted!*.

The object of the game is to imagine compelling ways in which the competitive positions of various real-life brands could be impacted by disruptors (signals, trends and drivers of change) observed in the economic, political and social environments. The desired ultimate impact of the game is for players to become acquainted with strategic foresight and realize the possibilities for disruption in their sector or industry. *Disrupted!* is intended for individual contributors and lower-level managers, specifically within private-sector firms as well as public-sector/non-profit organizations that compete with the private sector. *Disrupted!* could be played within a single departmental team or cross-functionally.

Figure IV: Digital Mock-up of *Disrupted!*



When the prototype was in conception throughout the fall of 2021, the conditions of the COVID-19 pandemic in Ontario, Canada (i.e., low daily case counts and high immunization rates) signalled that it would be possible to conduct user testing in-person by the planned research date. Because of this, the game elements were designed to be delivered in an in-person format. However, when the unexpected closures caused by the Omicron variant later called for the user test to be conducted in a virtual environment, I reproduced the game board on a Miro virtual whiteboard in a manner that allowed me to preserve as much of the fidelity of in-person gameplay as possible. Therefore, it must be noted that the remainder of this section will explain the proof of concept's design as it was intended for in-person play, with the understanding that it was temporarily adapted to function in an online format for user testing.

Using the ATMSG as a structuring framework, the remainder of this section details the underlying game objectives, tools and activities behind how the game works. These elements are summarized in Table III below.

Table III: *Disrupted!* Aligned to Carvalho et al.'s (2015) Activity-Theory Model of Serious Games

Actions	Tools	Goals
Gaming activities		
How does the game unfold? Which actions does the subject perform in the game?	Which elements are involved/used in the gaming actions?	What does the subject have to achieve in the game?
• Players read Disruptor Cards and discuss the implications of those disruptors on their lives. • They throw the Dice and move their Player Token around the Game Board. • They evaluate and write/share their thoughts on the impacts of disruptors on businesses. • They judge the strength of other players' disruptions and award points accordingly.	• Game Board • Brand Tiles • Disruptor Cards • Player Tokens • 6-sided Dice • Timer • Point Blocks • Headline Sheets • The Judge • Judge's Token	Accumulate the highest number of points by imagining compelling ways in which disruptions may impact various businesses.
Learning activities		
What tasks does the subject do in the game that are directed towards the learning goal?	Which elements are involved/used in the learning actions?	Which knowledge or skills is the learner expected to acquire with the learning actions?
• Players evaluate and discuss the implications of Disruptor Cards on their lives. • They evaluate and write/share their thoughts on the impacts of disruptors on businesses. • They consider aspects like creativity and plausibility of other players' disruptions during the judging phase. • They reflect on their knowledge, experiences as well as their inherent selves to help build their thinking about disruption.	• Brand Tiles • Disruptor Cards • Headline Sheets	Develop basic strategic foresight and disruptive thinking capabilities as outlined in the Foresight Competency Dictionary by: • Evaluating the impacts of drivers of change (disruptors) on various competitive positions; • Considering how businesses can capitalize on those drivers to create competitive advantages; and • Engaging in a futures discourse with other players by discussing the ideas and outcomes driven by the game.
Intrinsic instruction activities		
What happens in the game that supports the learner to achieve the learning goals (assessment, feedback)?	Which elements are involved/ used within the game to support the instructional actions?	What are the instructional goals of the game?
• The Disruptor Cards provide information to players as they play each round, and players can discuss the disruptors with each other to build their individual and common understanding of the underlying signal, trend or driver. • Upon sharing headlines with each other, players can comment and build up on each other's ideas if they so choose.	• Brand Tiles • Disruptor Cards • The Judge + Other players • Myself, as the game designer • Game Instructions (for the user testing	Help players adopt a foresightful approach to disruptive thinking so that they could ultimately help their firm anticipate and manage the threat of post-COVID disruption and break away from path dependency.

Actions	Tools	Goals
• The Judge's decision of the most compelling disruption acts as an implicit or explicit feedback mechanism, depending on whether his/her reasons for choosing the winner are shared. • For the user testing session, I will provide verbal instruction as the game designer, but the intent is for the game to utilize written instructions so that players could play the game independently of a facilitator.	round, I will provide extrinsic instruction instead)	
Extrinsic instruction activities (only applicable for user testing)		
What happens, during the game but outside of it, that supports the learner to achieve the learning goals?	Which elements are involved/used outside the game to support the instructional actions?	What are the instructional goals driving the instructional actions?
For the user testing session, I will facilitate the game by providing extrinsic instruction to guide players through the game and answer questions.	Myself, as the research facilitator	Ensure that the game runs smoothly as players (user testers) experience it for the first time.

3.4.1 Gameplay Goals

Disrupted! seeks to deliver on two objectives for gaming and learning, respectively. From a gaming standpoint, players are to accumulate the highest number of points by imagining compelling ways in which disruptions may impact various businesses. From a learning standpoint, players should develop basic strategic foresight capabilities as outlined in the Foresight Competency Dictionary from Section 3.2. The learning goal is supported by the intrinsic instructional goal to help players adopt a foresightful approach to disruptive thinking so that they could ultimately help their firm anticipate and manage the threat of post-COVID disruption and break away from path dependency. Because extrinsic instruction would only occur during user testing, its goal in this case is simply to ensure that the game runs smoothly as players (testers) experience it for the first time.

3.4.2 Gameplay Tools

Disrupted! utilizes the following tools to facilitate gameplay, learning and instruction:

- **Player Tokens:** Players each have a token to represent themselves as they move around the Game Board.
- **Game Board:** Using their Player Token, players navigate around the board to land on Brand Tiles. The board also houses the deck of Disruptor Cards from which the Judge draws at the beginning of each turn. A two-dimensional rendering of the Game Board is provided in Appendix A.
- **Brand Tiles:** These are placed in their dedicated spaces along the Game Board at the start of each game. Every round, players must consider how the company they have landed on could be impacted by the signal, trend or driver of change described on the Disruptor Card.

- **Disruptor Cards:** A card is flipped at the beginning of each turn. Each card indicates a signal, trend or driver that will set the context for disruption in each turn. A sample of 17 Disruptor Cards was created for this project and is provided in Appendix B.
- **6-sided Dice (x2):** Players roll the dice to determine the number of spaces to move their Player Token around the Game Board. A Miro add-in was used to simulate the dice roll experience in the online user testing environment.
- **Timer:** This can be a physical or digital timer. The game facilitator or Judge will use the timer as players think about their disruptions and headlines.
- **Point Blocks:** These serve as a score-tracking mechanism. From a gaming perspective, the object of the game is to collect the most blocks by conceiving compelling disruption ideas.
- **Headline Sheets:** Players write a headline on these sheets to describe their disruption idea at the end of each round. User testing participants were asked to write their headlines into Miro's chat platform, rather than on a sheet.
- **The Judge:** A player is assigned the role of the Judge at the start of each round. The Judge is responsible for deciding which player has come up with the round's most compelling disruption.
- **Judge's Token:** This token identifies and helps players keep track of who is the Judge. Players pass the Judge's Token around as they assume the role.

3.4.3 Gameplay Activities

The game is set up by having four to six players gather around the Game Board placed at the centre of a table, with the Brand Tiles placed along the board in their dedicated spaces. The deck of Disruptor Cards is then shuffled and placed face-down on its dedicated space on the board. Players each choose a Player Token and place it on the "Start" space on the Game Board, and they are each given a Headline Sheet. The group should ensure that the Point Blocks are ready on the side and that it is in possession of a Timer.

To start the game, players determine who will be the first to take on the role of the Judge by rolling the Dice. The player who rolls the highest number will be the first Judge—in the event of a tie, those who tied should roll again.

The first round begins with the Judge flipping a Disruptor Card from the top of the deck and placing it face-up on the board. The Judge reads out the card and invites players to take a couple of minutes as a group to discuss the signal, trend or driver described on the card, its significance as a disruptor, and what it means for them as individuals. The player sitting to the Judge's left will then roll the Dice and advance his or her Player Token accordingly along the Brand Tiles on the board. Moving clockwise around the table, each player except the Judge will subsequently advance his or her Player Token to land on a Competitor Tile. Players do not participate in rounds during which they are the Judge.

Once all players (except the Judge) have played their turn, they will take three minutes to think about how the disruptor might impact the company they landed on, and write a headline (or draw an

illustration) on their Headline Sheet to capture their ideas. An *impact* could be defined as an innovation that could disrupt (i.e., shake up, displace, overhaul) the company.

Once the three minutes have elapsed, players then take turns sharing and conversing about their headlines; they are also welcome to build on each other's ideas. After all the headlines have been shared, the Judge will review them and declare a winner for the round. The winning disruption/headline should be the one the Judge has deemed the most compelling. A Point Block is awarded to the winner, signalling the end of the round.

The next round is initiated by having the Judge pass the Judge's Token to the player sitting to his or her left, and the process of flipping a Disruptor Card, moving around the Game Board and identifying disruptions is repeated. The game ends once all players have advanced to the end of the board; alternatively, players can collectively decide to end the game after a certain number of rounds. The game officially ends by having players count their respective Point Blocks; the individual who has accumulated the most blocks is declared the winner.

3.4.4 Design Rationale, Considerations and Assumptions

The inclusion of a user testing session within the scope of this project allowed for the proof of concept to be designed with the recognition that any areas of doubt or possible imperfections could be evaluated with the test users. This acknowledgement, combined with the overall ambiguity of the game design process and the endless possibilities for how *Disrupted!* could have been structured, made it critical to document the rationale, considerations and assumptions underlying the decisions made for the prototype. These are listed below:

- The overall concept of *Disrupted!* depends on the following inherent assumptions about employees of path-dependent organizations:
    i. Employees of path-dependent organizations do not have a propensity to think about disruption or their employer's future.
    ii. In order to get employees to think about disruption and their employer's future, they have to be opened up to the possibilities of how they will be disrupted.
    iii. Employees would be interested in thinking about disruption and their employer's future if they were prompted to do so.
- Although the opportunities for post-COVID disruptions motivated the undertaking of this project, the game should still offer long-term value by being easy to update over time. Hence, elements like the Disruptor Cards and Brand Tiles were designed so that they could be seamlessly replaced if they become obsolete in the future.
- The Brand Tiles were initially conceived as a deck of cards akin to the Disruptor Cards. However, they were later converted into Game Board tiles to create anticipation and excitement around landing on (or avoiding) a particular company. I also believed that using a Game Board would make the game more game-like and engaging by offering a visual, hands-on element.

- The Brand Tiles were designed with the intent that they would not be printed directly onto the Game Board. This would allow the tiles to not only be replaced over time, but also reshuffled each game to create replay value.
- Out of concern that the game experience would become dull if players landed on the same Brand Tile, the Game Board was made linear instead of circular. Furthermore, providing two dice instead of one increased the variability of rolls (i.e., the possible differences in the number of spaces players move across the board) so that players become more staggered along the board, thereby reducing the chances of landing on the same tile.
- The prototype initially included fictitious persona organizations that would be used in conjunction with the Brand Tiles. They were removed out of concern that players would not be able to imagine them vividly enough to experience the game as intended.
- Choosing a scoring mechanism was a careful decision in that it was challenging to balance the aspects of competition and learning. In other words, the scoring mechanism should not be so frivolous that it would take away from learning. The judging mechanism was inspired by *Cards Against Humanity* and was also observed in some of the games reviewed in Section 3.2.
- In selecting brands to be represented on the Brand Tiles, I acknowledged a risk that players might land on one they know nothing about. Therefore, the selection of Brand Tiles was focused on relatively well-known organizations to increase confidence that players would have at least some level of knowledge of the brands found on the board.
- There was consideration to provide a *cheat sheet* of the various innovation or disruption types to help guide players' thinking, similar to the *Models of Impact* game reviewed in Section 3.2. However, including a cheat sheet would risk anchoring players' thinking or overwhelming them with information for an already cognitively demanding exercise.
- The signals, trends and drivers detailed in the Disruptor Cards are not equally broad or narrow in scope. This decision was made deliberately to manage the uncertainty regarding how granular they should be to provide the best gameplay experience.

3.5 User Testing Procedure

A user testing session was conducted in the winter of 2022 to evaluate (1) the effectiveness of the proof of concept in demonstrating potential to deliver on the research goals and (2) the desirability of the game for real-life workplace usage. Because the research was ultimately conducted in a virtual format, the game's usability became dependent on the required videoconferencing and whiteboarding tools; therefore, usability was given less attention in the evaluation.

3.5.1 Participant Recruitment and Selection

Five participants were recruited to test the proof of concept. The rationale for this number was based on Jakob Nielsen and Tom Landauer's rule that 80 percent of user experience problems are typically found by the first five testers, and that the marginal benefit of additional testing decreases with each tester from thereon (Nielsen, 2000).

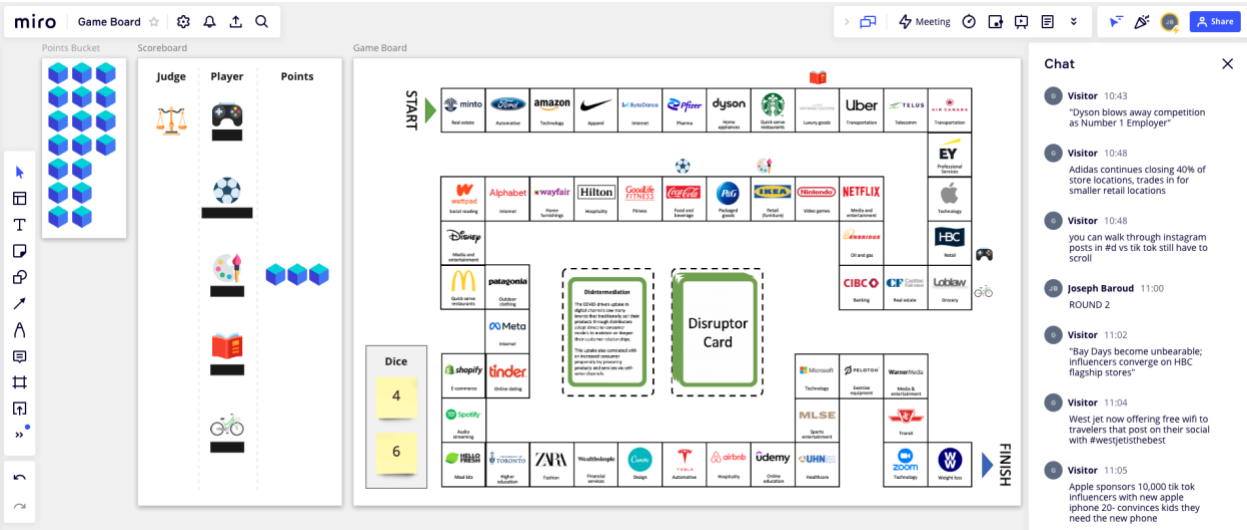
The participants consisted of business professionals representing private-sector industries like banking, professional services, software, aviation and aerospace, and telecommunications. They were recruited from my professional network via text messaging, Facebook Messenger and LinkedIn InMail, and asked to formally register for the user testing session by filling out an electronic form. The form was used to record participants' consent, obtain their basic employment information (as a potentially relevant data point for the research), and screen registrants according to the recruitment criteria outlined below.

Registrants were subjected to screening criteria in alignment with the objectives of this research. First, because this research sought to fill the gap highlighted by Sarpong, Maclean & Davies' (2013) observation that the foresight literature typically treats the practice as exclusively a managerial responsibility, participants had to be business professionals currently employed in a non-executive (i.e., non-supervisory or lower-level management) role. Second, because the desired outcome of the game is to drive strategic conversations within organizations about how to use foresight to create or defend their competitive advantage, participants had to be employed at either (1) a for-profit corporation, a limited liability company, a partnership, or a sole proprietorship, or (2) a governmental or non-profit organization that competes, or may enter into competition, with a for-profit organization. Third, as this research is intended to introduce its audience to basic strategic foresight capabilities, participants must not have received any formal education or professional training in the domain.

3.5.2 Data Collection Methods

Given the precarious state of the COVID-19 pandemic in Canada at the time of this research, the user test was facilitated virtually to ensure participant safety and comply with provincial and University guidelines. The testers participated in the study by joining a Microsoft Teams video call and accessing a virtual gameboard housed on a Miro whiteboard (illustrated in Figure V). The user testing session consisted of a contextual inquiry, a feedback questionnaire, and a focus group.

Figure V: Virtual User Testing Setup



Contextual Inquiry (Gameplay Rounds)

Participants began by playing the game in the virtual setup described above. I acted as both the game facilitator and observer/notetaker. As the game facilitator, I provided the group with guidance to help them navigate the game. Providing external instruction for the user testing session was necessary to allow the evaluation to focus on the quality of the game rather than the quality of instruction. As the observer and notetaker, I privately captured live reactions and comments throughout the game proceedings and occasionally intervened to clarify a participant's thoughts when not fully expressed or contextualized. Participants also provided consent to be video-recorded throughout the session, allowing for the recordings to be revisited as needed.

Post-Game Feedback Questionnaire

The gameplay rounds were followed by an anonymous feedback questionnaire issued to players via Microsoft Forms. The questionnaire sought to measure the game's fidelity to the solution qualities (i.e., characteristics of serious games and target foresight competencies) described in Section 3.2. Participants were asked to evaluate their agreement with 15 statements on a 5-point Likert scale and provide additional comments through three open-ended (paragraph text box) questions, one of which was optional.

Focus Group (Debrief)

The session concluded with a semi-structured focus group to capture deeper context into participants' experiences with, reactions to and feedback on the game elements and project objectives. Questions were prepared in advance to prompt conversations as needed, but the debrief was allowed to drive itself based on the pertinence of the discussions and emerging themes.

3.5.3 Data Analysis and Synthesis Methods

In alignment with the research methods used, the analysis was performed using both qualitative and quantitative approaches. The notes captured during the gameplay rounds and the written feedback from the post-game questionnaire were populated into an online whiteboard (Miro). During this exercise, I attached personal commentary to the notes to document my first reactions to the feedback. Given that the research sought to target input on specific areas, I tagged the notes based on the experiences or aspects of the game they addressed (e.g., judging mechanism, experience of thinking about disruption, Disruptor Cards). The quantitative data gathered in this research came from the 15 Likert-scale questions asked in the post-game feedback questionnaire. Given the small sample size and relative simplicity of the data, no sophisticated quantitative analysis methods were applied beyond basic averaging calculations. A holistic review of all of these data points allowed for improvement opportunities and other relevant implications for future research to be drawn, which are detailed in the next chapter of this report.

Chapter 4: Discussion of Findings

This section begins with the presentation of the user testing findings with no interpretation or analysis. It then offers a rationalization of the results concerning the board game's design and its performance against the goals of the project, as well as managerial considerations for implementation. The chapter concludes with an acknowledgement of the project's limitations to offer directions for further research.

4.1 User Testing Outcomes

Reactions to the game were generally positive. Participants commented that the game was fun, relatable, and challenging, and praised it for inspiring discussion, broadening one's thinking, and provoking ideas on how to be innovative.

The table below displays the quantitative results from the Post-Game Feedback Questionnaire, in which participants ranked their level of agreement with 15 Likert-scale questions. The first eight questions serve to measure whether the prototype effectively possesses the characteristics of a serious game. The latter seven questions then evaluate the prototype's delivery on meeting the research objectives as informed through the literature review and design process.

Table IV: Quantitative Post-Game Feedback Questionnaire Results

Statement	**Participants who indicated they "Agree" or "Strongly Agree" (n = 5)**	
	Count	Percentage
Game elements and qualities		
The game was fun	4	80%
The game was educational	5	100%
The game was competitive	2	40%
The game was challenging	4	80%
The game was frustrating	0	0%
The game was rewarding	5	100%
The game offers repetitive value (i.e., there is value to gain in playing it over and over again)	5	100%
The game offers a healthy balance between seriousness and play	2	40%
Alignment of prototype solution to research objectives		
The game encouraged me to think creatively and imaginatively about the future of business	5	100%
The game encouraged me to think critically and pragmatically about the future of business	5	100%

Statement	Participants who indicated they "Agree" or "Strongly Agree" (n = 5)	
	Count	Percentage
The game broadened my perspective on how businesses might be disrupted in the future	5	100%
If fully developed, this game could encourage firms to think outside the box and have deeper conversations about how they might be disrupted in the future	4	80%
If fully developed, this game could help firms evaluate the potential impacts of drivers of change on their competitive position	4	80%
If fully developed, this game could help firms consider how to capitalize on drivers of change to improve their competitive position	4	80%
If fully developed, this game could encourage firms to be more proactive and agile in their innovation efforts in order to be disruptive and/or reduce the threat of disruption	4	80%

The remainder of this section details the findings and themes consolidated from the user testing session, organized as they pertain to each of the major gameplay elements and experiences as well as the intended impact on firms' innovation potential.

4.1.1 Game Board and Brand Tiles

During gameplay, participants quickly understood the Game Board's layout and were able to guide themselves along with little instruction after being directed to choose their Player Token. They confirmed the ease of this experience during the debrief, commenting that "the overall concept was familiar and easy to process visually," with "not too many moving parts." Although players enjoyed the visual appeal of the board and compared it to Hasbro's *Monopoly* despite its low-fidelity design, they questioned its utility or purpose. In particular, the board's linear, start-to-finish layout sparked uncertainty about the game's objective: Is the goal to race to the finish? Can players no longer play if they make it to the end of the board before everyone else? There was a consensus among the participants that the board could be eliminated simply by converting the Brand Tiles into a deck of cards adjacent to the Disruptor Cards.

Regarding the board's contents, participants appreciated the diversity of Brand Tiles, commenting that the game invited players to think creatively about how any business—and not just large technology companies—could be disrupted. However, one participant observed that the brands were largely business-to-consumer (as opposed to business-to-business), anchoring many participants' ideas on aspects related to marketing over operations. Furthermore, although the group expressed difficulties imagining disruptions for companies they knew less about, they disagreed that it would have been necessary to have more information about the brands and what they offer. On a couple of occasions, some participants asked the group for clarification on the company they landed on, but did so with hesitation as they thought it was against the rules. One participant thought she would have to use some of her three-minute ideation time to look up her company on the Internet because she did not know enough about it.

4.1.2 Disruptor Cards

Upon observing them during gameplay, participants appeared to react positively to the Disruptor Cards. When the Judge drew a card at the start of each round, players engaged in meaningful discourse about the disruptor before playing their turns. When a disruptor was unclear, they held a sensemaking conversation to rationalize its meaning. Some cards prompted players to share anecdotes of their own experiences with the disruptor, while others shared their personal opinions, sentiments and concerns about it. They shared examples of companies they knew that were adopting the disruptor and discussed its business benefits. In some cases, they also considered the broader societal implications of the disruptor. Some of the disruptors, which pertained to topics like the metaverse, the creator economy, cryptocurrencies and non-fungible tokens (NFTs), even provoked friendly debates about the viability and longevity of the disruptor based on participants' optimism or skepticism of the trend.

In the focus group, participants expressed their appreciation for being allowed to talk to each other about the disruptors before playing each round. They found the dialogue helped them get to know their fellow players and formulate enough context about the disruptors, especially if they were not familiar with them beforehand. One participant noted that she enjoyed considering not only how the disruptor would impact brands, but also what the disruptor would mean for herself. However, the group also noted a few disadvantages of the conversations. First, one participant expressed that, although the discourse stopped him from otherwise having "tunnel vision" thoughts about the disruptor, hearing other players' thoughts also influenced his ideas. Another participant commented that the discourse interferes with the game's competitive aspect by having players share their knowledge before creating their disruption headlines. They contemplated whether the conversations would still be valuable if they were instead held after players shared their disruption headlines.

4.1.3 Imagining Disruptions

Upon listening to players' ideas during the gameplay rounds, it was evident that participants engaged with their thinking about disruptors in different ways. Some players imagined that their assigned company could be directly impacted by a change in human behaviour triggered by the disruptor. Others considered how adopting a disruptor can lead a company towards disrupting its own business or service model. In some cases, disruptions implicated specific areas of an organization, like marketing/branding, employee experience or supply chain management. Although players were instructed to think about how the disruptor might disrupt their assigned company, many also considered how their company could capitalize on the disruptor to develop a new source of competitive advantage, enter an unserved (or underserved) market, or even create a new market/industry. One participant also imagined how a company might be impacted if it unsuccessfully tried to capitalize on a disruptor.

In the debrief, participants said they enjoyed ideating possibilities for disruption and hearing each other's ideas, adding that the latter helped expand their imagination. They explained that, although it was more challenging in the first round, they grew more comfortable and creative over time, agreeing that the game provided them with more confidence in their ability to think differently about the future.

Although participants successfully imagined compelling scenarios within the three-minute time limit allocated to them, one participant felt that the time constraint forced her to run with the first idea that came to mind instead of considering multiple possibilities. Others expressed that the parameters for imagination were too open-ended and that they might have preferred if the game required players to envision their disruptions in the context of a particular stakeholder group (e.g., customer, investor, employee) or area within the organization (e.g., human resources, marketing, operations). As alluded to earlier, another issue players experienced was the confusion around whether they could consider how their assigned company might disrupt, rather than be disrupted. One participant even said that because it was easier to do the former, he simply imagined how a competitor would disrupt his assigned company and wrote his headlines accordingly.

4.1.4 Headlines and Judging

During both the game and the debrief, participants shared that they found the process of creating a headline to be difficult. They expressed discomfort with the lack of a format or framework for writing a headline as they were not "apples to apples." When asked for their thoughts on what could have helped them in this exercise, they suggested showing an example or doing a trial run.

While not all participants had the opportunity to play as the Judge, those who did expressed difficulty comparing and evaluating disruption ideas. In the same vein as their experience of writing headlines, participants were unclear about my instruction for them to choose the idea they found to be the *most compelling*. One participant even described this stage of the game it as an "anxiety-filled experience" and asked for more specific criteria. In the spirit of user testing and learning what might work best, participants were invited to determine their own criteria individually and share their thought processes during the judging process. Collectively, the group considered various factors when judging ideas, including profitability, plausibility, practicality, neutrality, success potential, implications to stakeholders, business model impacts, and alignment with personal values. However, one participant was particularly fixated on the quality of the headline itself instead of the idea; another discounted ideas that did not constitute the given company capitalizing on the disruptor; and another focused mainly on the relationship between the company and the disruptor, with less regard to the disruption idea itself. Another issue raised by those who played as the Judge was that there was nothing for them to do during the three minutes as the other players created their disruptions/headlines.

When probed for their thoughts on the necessity and value of the judging and scoring mechanisms, participants commented that they create a sense of competition, drive engagement, and "give players a chance to feel special." One participant positively compared the judging mechanism to that of *Cards Against Humanity*. From a workplace standpoint, participants from this group also agreed that the scoring mechanism "communicates to employees (players) that each idea should provide some kind of value," adding that managers would be more likely to "get what they want from their team" when playing the game.

4.1.5 Business Value and Impact on Innovation Potential

When asked to comment on how they believe the game could influence a firm's innovation capacity, participants praised the game for opening them up to the possibility spaces for disruption and

innovation and making them "think outside the box." For example, they noted that the game might inspire players to imagine silly ideas as "no idea was a stupid idea," while also prompting them to pause and reconsider whether those ideas are truly silly. One participant added that "it's the so-called silly thoughts that give rise to meaningful opportunities." The group also agreed that the game provides a low-stakes environment where people could ideate without embarrassment.

The discussion also had participants share their views on how a game like this could benefit their respective workplaces. Participants praised the game for being "a social game" that stimulates the sharing of ideas and perspectives. They suggested it could serve as a team-building or training tool to develop disruptive and foresightful thinking. The group also saw potential for the game to be played in cross-functional teams, as participants appreciated the opportunity to hear ideas from people who work in different professions and industries. As one participant captured this sentiment, "I could tell we all come from different backgrounds because of the ways you approached each disruptor. We weren't thinking in the same line, same direction. What you guys do on a day-to-day influences your thinking." In another line of thought, participants noted that the game could benefit workplaces where employees are afraid to speak up and challenge the status quo. One participant expressed disdain for workplace activities "where certain people dominate the conversation," praising the game for providing a space governed by rules allowing everyone to have a voice in the conversation.

When asked about how the way of thinking they have practiced in the game could be brought back into their workplace, participants referred to resistance to change and a lack of organizational agility as potential barriers to doing so more comprehensively. However, at an individual level, they commented that the game encouraged them to pull themselves away from their day-to-day work to consider the broader purpose and "why" behind their work. Some noted that their day jobs require them to work on already-defined problems, whereas the game challenged them to think about "many problems and many solutions." One participant even said that *Disrupted!* "has you look at the macro level, [...] at what your president and vice-president are looking." Furthermore, those with an educational background in business commented that the game reinforced a way of thinking that they have not practiced since completing their schooling. When probed for their thoughts on how they viewed disruption before and after participating in the study, one participant commented that "disruption is synonymous with opportunity." For example, participants credited the COVID-19 pandemic for "[making] us realize that anything is possible," and shared how their views of specific industries changed after thinking about them in relation to the Disruptor Cards.

4.2 Prototype Evaluation and Opportunities for Further Iteration

One of the user test objectives was to gather feedback on the game elements and how they enabled or inhibited the gameplay experience. This section provides an analysis of the feedback obtained to draw improvement opportunities for the prototype.

4.2.1 Game Board Layout and Contents

The decision to utilize a Game Board was grounded in the assumption that it would effectively make *Disrupted!* appear more like a game by offering a more visual, hands-on element making it more fun

for players to engage with. To this end, the Brand Tiles—which were initially designed to be a deck of cards—became part of the Game Board to instill feelings of excitement and anticipation of landing on a specific tile. Although participants appreciated the board's visual appeal, they did not perceive that it added value to the game. During gameplay, players did not appear to react to the Brand Tiles, for example, by expressing any wishes or gratitude for landing on any specific logo. Participants' suggestion to convert the Game Board into a deck of cards confirmed that this design decision had little to no impact on their gameplay experience.

Furthermore, the board was designed to have a start-to-finish layout out of concern that the game would become dull if players landed on a Brand Tile more than once. However, participants questioned the meaning of the linear layout. While the game rules stated that a player who crosses the finish line is simply to wait for the others to finish navigating the board, this rule was not communicated to players because none had reached the finish line during the research (due to a time shortage). Hence, no feedback was directly collected on this mechanism. However, upon further reflection, it became plausible to consider that this rule could be problematic if a player were to reach the end of the board much sooner than his or her peers. For context, the decision to use two, rather than only one, six-sided dice was made to increase gameplay variety by decreasing the chances that players would roll the same, smaller numbers at risk of landing on the same Brand Tile multiple times. Yet, using two dice also increases the chances that a player could move significantly farther ahead on the board than the rest of the group, putting him or her at risk of crossing the finish line much earlier and losing the opportunity to score points for the rest of the game. Therefore, it seems that decisions made to minimize redundancy (i.e., landing on the same Brand Tile multiple times) resulted in possible compromises to the game experience by drawing attention away from the game's intended goals and potentially reducing opportunities for players to engage and learn.

Given this feedback, two possible courses of action could be followed: (1) repurpose and reorganize the Game Board, or (2) eliminate it entirely. In proceeding with the first option, the layout would have to be revised so that it neither distracts from the game's objectives nor deprives players of opportunities to engage with and learn from the game. The board's contents should also be revisited, either by adding to or replacing the Brand Tiles so that it becomes more essential and integral to the game. The game could look at Hasbro's *The Game of Life* and *Monopoly*, or Nintendo's *Mario Party*, as inspiration for board elements that add uncertainty and excitement to the gameplay experience. However, as I had initially taken caution when designing the game's first iteration, these gameplay elements should not be so frivolous that they would conversely take away from the game's learning objectives.

4.2.2 Knowledge and Diversity of the Brand Tiles

When creating the Brand Tiles, I intentionally chose well-known brands to reduce the possibility that players would become disadvantaged by landing on a brand they knew little about. However, user testing participants still struggled with some of the brands. Although they did believe more information about the brands was needed, participants were unsure if they could ask questions to each other to clarify their uncertainties. Although the rules allowed participants to ask questions, they were not made clear of these rules. Therefore, further testing sessions should explore whether explicitly allocating space for questions and discussions about the brands would alleviate this issue

and if providing more upfront information about the brands would effectively improve the gameplay experience.

Another impact of populating the board with only well-known brands is that it resulted in most Brand Tiles representing business-to-consumer companies, as one of the research participants called out. As such, the game had already narrowed down the scope of players' thinking through the selection of brands represented on the board. While the choice of Brand Tiles was done to best accommodate the diversity of user testers that was expected for this research, this observation reinforces the value of being able to swap *packs* of Brand Tiles to suit the target audience—akin to the themed expansion packs one can purchase for games like *Cards Against Humanity* or Klaus Teuber's *Catan*. Therefore, the game offers opportunities to curate assortments of Brand Tiles that may resonate more appropriately with different teams based on their function and industry.

4.2.3 Creativity Constraints for Disruption Ideation and Headline Composition

Given that this was the most cognitively demanding—and therefore the most challenging—aspect of the game, the disruption ideation and headline composition phase brought about particular difficulties for participants. They cited the three-minute time limit, open-ended parameters, and the lack of a framework or template as reasons for their troubles in assembling their ideas and crafting a headline. Participants also expressed the need for a mechanism, like an example of a headline, to guide their thinking about disruption. Despite these challenges, they were always able to put together a headline backed by an idea their co-participants found interesting. This raises a question about the appropriate balance of ambiguity and constraints to maximize creativity because, as discussed in Chapter 2, a certain level of discomfort is often necessary for innovation. If the game is too easy, then participants may lack the intellectual stimulation required to enjoy the game and produce innovative ideas, yet the same could occur if the game is too challenging. In the Feedback Questionnaire, four of the five participants agreed that the game was challenging, but none agreed that it was frustrating. This suggests that the game is near the right balance and could be improved through incremental, rather than radical, modifications. Therefore, future iterations of this prototype should experiment with adding and removing constraints to determine the best gaming conditions for creative thinking. These may include allocating more or less time for ideation, providing a fill-in-the-blank template for writing headlines, and adding game elements to govern how players should focus their disruptions (e.g., a deck of cards adjacent to the Disruptor Cards, which would instruct players to disrupt a specific stakeholder group or area of the organization in each round). Conducting a trial run before the game begins, as participants suggested, could be another avenue to explore in future testing sessions.

4.2.4 Judging Criteria and Activities

The user testing session also surfaced potential gaps around the judging component of the game. When participants were asked to choose the disruption idea they found to be the *most compelling*, they were intentionally given the freedom to decide what makes an idea compelling. However, those who had the opportunity to play as the Judge were not comfortable with this level of ambiguity and expressed a need for more guidance. As a result, although participants often judged ideas based on some aspect of the idea's merit or substance, there were occasions in which they overlooked the idea itself, thereby deviating away from the game's learning objectives. This suggests that the game's

purpose was not adequately communicated or understood. While providing explicit judging criteria could help players evaluate ideas more objectively and ensure that those ideas are not judged based on irrelevant factors, doing so would implicitly suggest to players that they should be following a specific definition and understanding of what constitutes a disruption. Therefore, the game could instead instruct players to select the idea they found to be the *most disruptive* and support them with a list of optional prompts they can follow to guide their evaluations.

Another area of feedback, although relatively minor, pertained to the lack of something for the Judge to do while the other players work on their disruption headlines. Hence, those who played as the Judge had one less opportunity to learn and apply disruptive and futures thinking than those who did not play this role. Therefore, further iterations should explore ways to keep the Judge engaged in learning, whether it is by having him or her write a headline for the simple pleasure of it or by introducing another gameplay mechanism specifically for the Judge.

4.3 Evaluation of Game Design Against Project Goals

In addition to evaluating the game elements themselves, the user test also served to assess the extent to which *Disrupted!* addresses the research goals set out for this project. This section provides an analysis of the findings in the context of the purpose and intended impact of the research.

4.3.1 Creation of Discourse and Impact on Competition

One of the gaps identified in the foresight literature pertained to the lack of employee involvement in the foresight process. It was then argued that this gap could be addressed by engaging employees in a futures discourse that will support the development of their individual foresight capabilities. Although participants were explicitly provided with time to do so, it was nevertheless evident that the game created a space for them to openly discuss the meaning and significance of the underlying signals, trends and drivers behind the Disruptor Cards. These moments of discourse also created unique opportunities for players to develop foresight skills and attributes as identified in the Foresight Competency Dictionary. Despite their brevity, the conversations enabled players to expand their *systems thinking*, for example, by relating the disruptors as intimately as to themselves or by considering the social impacts of the disruptor in environments that may not even implicate them directly. Some participants also displayed *practical skepticism* and *distentive thinking* upon taking a more critical view towards a disruptor, whether it was by expressing personal attitudes and sentiments about the disruptors or by debating about the futures of specific disruptors. Perhaps most importantly, participants displayed *open-mindedness* in acknowledging each other's thoughts on a disruptor even if they did not necessarily agree with them.

Despite finding benefits to these discussions, participants also criticized the conversations for influencing their ideas and diminishing the game's competitive edge. Upon reflection, it appears that having the discussions before players created their headlines imposed a trade-off in which participants could learn more about a disruptor than they would have otherwise, but at the expense of becoming fixated on that new knowledge when imagining disruptions. Yet, given that this game is intended to be played in workplaces, this trade-off may be necessary for equity's sake, as it would

allow for players who have less knowledge of a topic to still be able to engage in the game and feel that their participation is meaningful. However, what is particularly concerning about participants' feedback about the discourse is the suggestion that they viewed their personal knowledge about a disruptor as an asset to help them win the game. Accordingly, only two of the five participants indicated in the Feedback Questionnaire that they agreed the game was competitive. If players perceive the knowledge-sharing aspect of the game as a means of putting themselves at a disadvantage, then it would mean that the learning activities come into direct conflict with the gaming (competitive) activities. This calls for critical reconsideration on how to drive competition within the game. For example, having players compete against their individual selves or as a single team working toward a shared goal may be a more appropriate means to support the game's learning goals. In either case, the role of the game's judging and scoring mechanisms would also have to be reconsidered if they are not eliminated altogether.

4.3.2 Assessment and Capitalization of Drivers of Change

The other gap identified in the literature was its disproportionate focus on organizational horizon scanning, rather than on the post-scanning activities, which typically include evaluating the impacts of drivers of change and considering how to capitalize on them to increase competitiveness. *Disrupted!* was therefore designed to prioritize these areas of the foresight process to address this gap.

In the Post-Game Feedback Questionnaire, four of the five participants agreed that a fully developed version of the game could help firms evaluate the potential impacts of drivers of change on their competitive position. Participants exhibited this behaviour when sharing and explaining the disruption headlines they put together in each round. Whether they considered impacts on business models, human behaviours, or areas of an organization, they practiced *positive and negative imagination*, *divergent thinking* and *worldbuilding* skills as listed in the Foresight Competency Dictionary. The observation that participants initially struggled with this exercise but got more comfortable in subsequent rounds, combined with their assertion during the focus group that they did not have opportunities to practice disruptive and futures thinking at work, accentuates the value a game like *Disrupted!* could offer in helping firms to introduce their staff to these skills.

Where there might be a more critical call for reflection is the counterpartying question in the Feedback Questionnaire, in which four of the five participants also agreed that a fully developed version of the game could help firms consider how to capitalize on drivers of change to improve their competitive position. When designing *Disrupted!*, I acknowledged that the prototype might not be able to address this component of the research question because it lacked a strategy-planning component or explicit call to action for players to think about how their organization could respond to disruption. There was a consideration to include a *bonus round* at the end of the game, which would have had participants choose one of their disruption headlines and quickly devise a strategy for how the implicated brand (from the Brand Tile) could respond to the disruption. Still, the game ran longer than expected, so this component could not be included in the user test. With that said, for participants to agree in the questionnaire that the game delivered on this objective—despite not having included the component mentioned above—was surprising. Even though participants said in the focus group that the game could inspire learning for eventual players to take away into their respective jobs, it is plausible that the game's success in having participants consider how to capitalize on drivers of change occurred by

accident, particularly due to their interpretation of the rules. Specifically, the game instructions called for players to evaluate how the disruptor might disrupt their assigned brand in play. However, this rule was not clear to some players, and in some instances, they instead considered how their brand could leverage the disruptor to create a competitive advantage. Although this approach lines up with the research objective in discussion, it was not initially intended for the game to deliver on the goal in this manner. Yet, given that some participants found it easier to think about how brands could capitalize on, rather than be disrupted by, disruptors, it would be worth considering how this emergent rule could be institutionalized into the game's future iterations.

4.3.3 Impact on Organizational Path Dependency

One feedback area participants most undoubtedly agreed upon was the game's encouragement of creativity, commenting that the game offered a safe space to think wildly, risk-free and without fear of judgement. They also perceived that the game could create an environment where employees are encouraged to challenge the status quo. Therefore, not only did *Disrupted!* enable players to practice *imagination* precisely as defined within the Foresight Competency Dictionary, but it could also help to address path-dependent organizations' *quickness to dismiss uncomfortable, radical ideas* and their *resistance to change and exploring new ways of working* as described in Chapter 2. By immersing them in an environment where they are constrained to link a specific disruptor to a particular company, players imagined how disruptors could bring about unexpected innovations in unlikely industries (for example, how the creator economy could disrupt pharmaceuticals). Providing a space to exercise this kind of imagination also created an implicit social contract among participants ruling that they should openly welcome each other's ideas and think seriously about how they could work. If fully developed and deployed into organizations, *Disrupted!* could therefore instill more openness to new ideas by expanding individuals' creativity.

Furthermore, the research suggests that *Disrupted!* offers players the lesson that disruptors create opportunities for innovation. With this observation in mind, it could be argued that the game could help disruption-vulnerable organizations that display a *motivation to act only when in crisis* by challenging their assumptions and positioning them to see the possibilities for disruption. Should firms realize that their competitors (and non-competitors) have compelling opportunities to disrupt their organization or industry, then they may perceive a stronger urgency to act. Put differently, the game could influence firms that are "doing well" per Gutsche's (2020) model in Figure II to grow more "paranoid" and enter a mode of more continuous opportunity scouting and innovation.

4.4 Implications and Value for Management

This project was inspired by the proposition that the COVID-19 pandemic not only interrupted business in the short term, but also catalyzed a wave of entrepreneurship that will have a lasting disruptive impact on today's markets. Although the pandemic has made it particularly relevant to think about strategic foresight now, this is neither the first nor the last time businesses will experience some form of disruption, whether it is driven by innovation or a global event. In fact, the average company experiences a one-month interruption to its business or operations every 3.7 years (Sneader & Singhal, 2021). Therefore, possessing a functional level of foresight maturity would enable firms to

continually navigate through disruption long after the pandemic. This project sought to propose that by institutionalizing a game like *Disrupted!*, businesses that lack foresight capabilities can begin to introduce them within their organization.

Although it is not in this project's scope to provide directions to help institutionalize a game like this, it is vital to consider the managerial implications and value of doing so. The user test revealed that business professionals in the private sector typically work on defined, analytical problems that seldom require having a broader view of their organization and its external environment. Because of this, a game like *Disrupted!* can bring about ways of thinking that they have never practiced in their educational and career pathways. Through disruptive and foresightful thinking, employees within organizations can position themselves to think more like their leaders and better understand the purpose of their work, strengthening their feelings of empowerment and ownership in realizing their organization's mission and vision. Managers could therefore adopt *Disrupted!* as a training tool not only to cultivate their employees' disruptive and foresightful thinking capabilities, but also to promote leadership development and alignment to their organization's strategy. As suggested by the user test, another potential business benefit of the game is the socialization encouraged through the sharing and enlightenment of employees' respective ideas and perspectives. Characteristic of a serious game per Section 3.2, *Disrupted!* provides players with temporary relaxation and pleasure in getting to know their colleagues and learning how they think. Although the game could certainly be played within a single team, it may offer more substantial value if played cross-functionally. Having multiple teams represented in a game of *Disrupted!* could expose employees to the work of those with whom they would otherwise not interact, thereby reducing organizational silos and broadening employees' understanding of what happens across their organization.

However, the research also revealed potential barriers to institutionalizing such a game. For firms to realize the benefits mentioned above requires managers to perceive value in the game and endorse it to their staff. Even if the game were encouraged, high resistance to change and a lack of organizational agility might still make it difficult for individuals and teams to carry out action plans or ideas inspired through gameplay. Therefore, a game like *Disrupted!* might only successfully penetrate disruption-vulnerable firms that recognize their vulnerability and actively promote and act upon innovative thinking. If firms were to treat *Disrupted!* as a training tool, for instance, then they must put measures in place to reinforce employee learning. Examples include having leaders model the desired mindsets and behaviours, adjusting policies to reward experimentation and innovation, and providing low-risk opportunities (e.g., design jams and hackathons) for employees to bring their learnings from the game into their ongoing projects.

4.5 Project Limitations and Directions for Future Research

This project was subjected to limitations that may have impacted the game design inputs, the quality of the research findings, and the perspectives taken in approaching the analysis. However, these limitations—which pertain to subject matter expertise, solution scope, and research methods—also open opportunities for further research to be conducted from the point where this study has ended.

4.5.1 Subject Matter Expertise

I took inspiration for this project upon attending a webinar in which I learnt that it is during times of crisis that disruptive innovations are born, and I saw the potential for firms to leverage strategic foresight as a tool to increase their readiness for disruption. However, this project is limited to the bounds of my academic and professional experiences supplemented by the inspiration and research used to inform this undertaking. I have a Bachelor of Commerce in Human Resource Management, a Diploma in User Experience Design, and six years of professional experience in human resources, business transformation, organizational change management, customer service, and experience design in primarily the financial services and government sectors. Although I have had some exposure to learning experience design, I have never created a game, let alone a serious game. Furthermore, I was introduced to the domain of strategic foresight during my current Master of Design studies and, as of date, have limited experience in applying it in the workplace. As such, I welcome scholars and other subject matter experts in the fields of innovation management, strategic foresight, and game design/psychology to review and contribute further to the undertakings of this work.

4.5.2 Solution Scope

The development of the prototype and its underlying research surfaced numerous areas of consideration pertaining to what the game would include and what would be needed to support its implementation. However, not everything could be feasibly included within this project's scope. The following key areas were deemed out of scope but could be pursued in further research:

- As alluded to in Chapter 2, *Disrupted!* does not set out to have players scan the environment for signals and drivers of change, as this component of the foresight process has already been sufficiently addressed in the foresight literature.
- Chapter 2 also highlighted that the foresight literature lacked focus on institutionalizing foresight at the employee level. Therefore, *Disrupted!* was created specifically for individual contributors and lower-level managers. Although the game may potentially be enjoyed by upper-level managers and executives, its design did not account for any specific needs they may have.
- Section 4.4 brought to attention the need for management buy-in to empower employees to play *Disrupted!* and practice foresight. Given that the circumstances behind management support levels are unique between firms and teams, this project does not offer change management guidance for obtaining buy-in. However, as the intended audience of this report, managers and executives are encouraged to leverage the information supplied in Chapters 1 and 2 to build a business case for strategic foresight in their organization.
- Given that the literature in Chapter 2 suggests that organizations are becoming interested in strategic foresight, this project took on the assumption that this growing interest is shared at the employee level or that, at the very least, employees would agree to play the game. In line with the previous point, this project does not offer change management advice for firms to build employee interest in foresight where it is absent.

- Although *Disrupted!* invites players to think about what signals, trends and drivers of change will mean for their business, it does not offer guidance on how to socialize insights taken from the game with their organization. It also does not provide a roadmap or framework for firms to devise strategies to mitigate the threat or capitalize on opportunities for disruption, as this domain of knowledge has already been extensively covered by management experts and consulting firms.
- While *Disrupted!* was informed by a Foresight Competency Dictionary (Section 3.2) to identify behaviours the game should target, it neither provides a human resources framework to measure learning nor sets maturity targets firms should aim to achieve when playing the game. Such a framework should be tailored to each firm based on its learning needs, organizational objectives, and current-state capability levels.

4.5.3 Research Methods

The product development process is complex and typically requires multiple iterations of design and testing. Although the intent was not to position *Disrupted!* as a commercial product, its market readiness is relevant when considering the impact of this project and opportunities for further research. Given the time and resource constraints of this work, only one round of iteration and testing could be included in the scope of the proof of concept. While this research identified opportunities to adjust the prototype, those adjustments would have to be tested before they can be validated, and further testing could signal even more areas of improvement, and so forth. Another reason to conduct additional testing is that the allocated time for the research allowed for only three rounds of gameplay, meaning that most of the Disruptor Cards could not be evaluated during this project. Therefore, questions about the depth and breadth of the disruptors, as called out in Chapter 3, could not be answered in this research. In another line of thought, although the user testers recruited for the study were characteristic of the target user for *Disrupted!*, they were from different organizations; therefore, they did not play the game in its intended context (i.e., in a single workplace). Thus, not only would *Disrupted!* require further iterations and user tests before it could be deemed market-ready, but testing should also be conducted with groups of individuals working in the same team or organization to evaluate how the game performs in its intended setting.

Furthermore, the user testing process was subject to additional limitations, which may have hindered the gameplay experience and, by extension, skewed the research findings. As a human factor, the quality of facilitation is a variable that can only be controlled to an extent. During the user test, participants encountered moments of unclarity caused by errors in facilitation that could not be attributed to the game itself. Although this observation supports the case to conduct additional rounds of testing to offset the variability of facilitation, it also reinforces the need to eventually provide written game instructions (an intended component for the final product) to control that variable better. Furthermore, the testing environment may have also factored into the gameplay experience. As explained in Chapter 3, the proof of concept was originally designed to be played in an in-person, tabletop format, but given the circumstances of the COVID-19 pandemic at the time of testing, the game was adapted to be facilitated online. Due to personal skill and resource constraints, Miro was the most viable and feasible tool to meet the game's requirements. However, Miro is not designed to run board games, and workarounds were needed to simulate mechanisms like rolling the dice and

flipping a Disruptor Card. Although participants successfully navigated the game in this format, there is an opportunity to develop it into a web application so that all its intended features and mechanisms can be faithfully built into the experience.

Chapter 5: Conclusion

The COVID-19 pandemic has overwhelmingly interrupted global business and economic activities and exposed the dangers of path dependency. However, historical patterns have shown that it is during periods of profound uncertainty, like the pandemic, that conditions for innovation are most optimal. If this pattern holds, then businesses may soon encounter the rise of new enterprises and innovations that can disrupt their competitive position. In response to the threat of disruption, firms are increasingly turning towards strategic foresight as a tool to anticipate the future and break away from path dependency. However, the current literature suggests that organizations are ill-equipped to cultivate foresight capabilities within their employees at the individual and team levels. It also offers insufficient guidance on how firms can evaluate and capitalize on drivers of change. Thus, this project proposed that, through play, individuals and teams can engage with the strategic foresight process in a tangible way that enables them to practice foresightful thinking in their everyday work.

This project sought to offer an initial exploration into possible solutions to introduce individuals and teams to strategic foresight. To this end, a combination of primary and secondary research methods informed the design of a proof of concept for *Disrupted!*, a board game in which the object is to imagine how various signals, trends and drivers of change might disrupt well-known brands. The prototype was tested with a small group of business professionals to evaluate its performance against the research objectives and identify opportunities for improvement. Results from testing suggested that there is value for individual contributors and lower-level managers to think about the future and disruption, and a concept like *Disrupted!* could potentially introduce them to this way of thinking. Directions for further research include designing and testing additional iterations of the game and developing tools or frameworks to help alleviate barriers to institutionalization.

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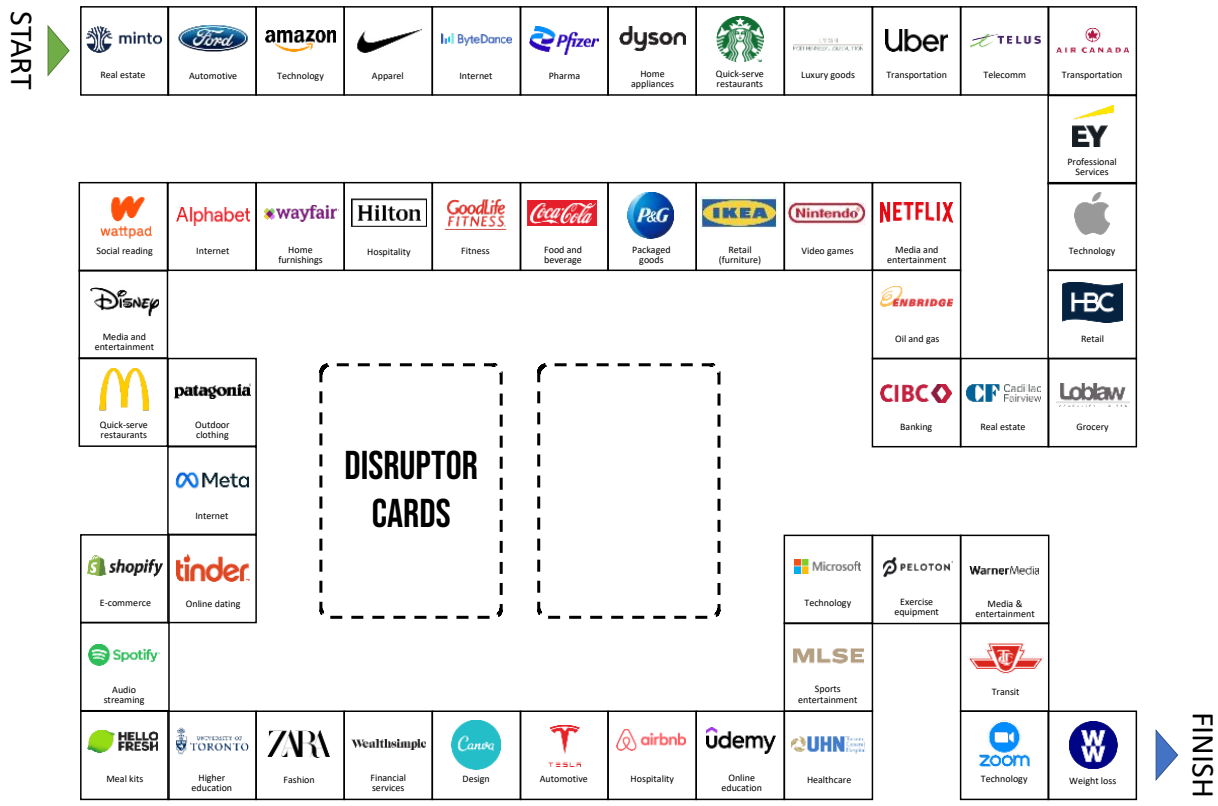
Appendix

Appendix A: Game Board for *Disrupted!* (First Iteration)



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Brands represented in the Game Board (in linear order from the "Start" to "Finish" lines):
Minto Group; Ford Motor Company; Amazon.com, Inc.; Nike, Inc.; ByteDance Ltd.; Pfizer Inc.; Dyson Ltd.; Starbucks Corporation; LVMH Moët Hennessy Louis Vuitton; Uber Technologies Inc.; Telus Communications Inc.; Air Canada; Ernst & Young Global Ltd.; Apple Inc.; Hudson's Bay Company; Loblaw Companies Ltd.; The Cadillac Fairview Corporation Ltd.; Canadian Imperial Bank of Commerce; Enbridge Inc.; Netflix, Inc.; Nintendo Co., Ltd.; IKEA; The Procter & Gamble Company; The Coca-Cola Company; GoodLife Fitness Centres Inc.; Hilton Worldwide Holdings Inc.; Wayfair Inc.; Alphabet Inc.;

Wattpad; The Walt Disney Company; McDonald's Corporation; Patagonia, Inc.; Meta Platforms, Inc.; Tinder, Inc.; Shopify Inc.; Spotify; HelloFresh SE; University of Toronto; Zara SA; Wealthsimple Inc.; Canva Pty. Ltd.; Tesla, Inc.; Airbnb, Inc.; Udemy, Inc.; University Health Network; Maple Leaf Sports & Entertainment Ltd.; Microsoft Corporation; Peloton Interactive, Inc.; Warner Media, LLC; Toronto Transit Commission; Zoom Video Communications, Inc.; WW International, Inc.

Appendix B: Disruptor Cards for *Disrupted!* (First Iteration)

DECENTRALIZED FINANCE

The COVID-19 pandemic triggered record-breaking increases in cryptocurrency values and saw many digital currencies enter the market.

Enabled by cryptocurrency and the blockchain, many enthusiasts are now trading non-fungible tokens—public proofs of ownership of digital art and media—online for high profits.

SOCIAL JUSTICE & INCLUSIVE DESIGN

The recent acceleration of the movement for racial equality has heightened society's expectations towards brands to take a stance for justice.

Brands at the forefront of the movement are recognizing their biases and redesigning products and services to be more inclusive of the audiences they have always targeted.

EXTENDED REALITY

Extended reality applications, including virtual (VR) and augmented reality (AR), are paving the way for new channels in which people can interact and do business.

For example, many companies are currently investing in the metaverse for its perceived potential to engage and transact with consumers in new ways.

THE CREATOR ECONOMY

Social platforms like YouTube, Instagram and TikTok have become channels by which creatives can grow an audience and monetize their own brand.

These channels have driven a desire for authentic content over traditional advertising, so much that companies are now engaging creators to help promote their products.

THE SUBSCRIPTION ECONOMY

Brands are seeking to boost stalling product sales by introducing subscription-based services to generate recurring revenue streams.

COVID-19 has driven consumer demand for more flexible and scalable options for accessing products and services, making subscription-based offerings particularly attractive.

THE EXPERIENCE ECONOMY

In a market saturated with products and services, consumers have come to value experiences over materiality, seeking more digitally immersive ways to be entertained.

Social media has also pressured brands to differentiate themselves by offering unique, memorable experiences worthy of social-sharing.

HYPER-PERSONALIZATION

An increasing desire to be acknowledged and treated as individuals has heightened consumers' expectations for hyper-personalized products and services.

Accordingly, brands are now competing to leverage consumer data at the most granular levels to deliver hyper-targeted marketing programs and customer experiences.

"GREEN" CONVENIENCE

Climate change concerns are heightening consumer demand for more sustainable products and services, and brands' environmental actions are being scrutinized now more than ever.

However, consumers do not want sustainability to mean giving up the conveniences they gained during the pandemic, like online shopping, despite the environmental costs of doing so.

ONLINE COMMUNITIES

Growing usage of the Internet has satisfied, for many, the human need for belonging as online communities have formed around causes and common interests.

The COVID-19 pandemic saw a spike in the use of platforms like Facebook Groups and TikTok, as people sought new ways to stay connected with the world while stuck at home.

GAMIFICATION

From loyalty programs to employee training, to fitness applications, brands are applying game dynamics and incentives to engage their audiences with competition and rewards.

Not only is gamification expected to become more prevalent in marketing, sales and HR activities, but brands are also embedding games directly within their products and services.

COMBINATION

In an increasingly crowded market, brands are differentiating themselves by combining seemingly unrelated products, services and business models to create new categories, concepts and experiences.

From cannabis-infused cosmetics to tea-based energy drinks, brands are transcending industrial boundaries to reach new customer segments.

URBAN EXODUS

The mass shift to remote work brought about by the COVID-19 pandemic has resulted in many workers moving away from their urban centres in favour of more spacious, affordable homes.

The potential permanence of this shift is prompting brands to relocate and/or reoptimize their customer experiences to meet suburban and rural dwellers where they are.

INTERNET OF THINGS (IoT)

The rising value of information, combined with technological developments, has given birth to Internet-enabled household objects, industrial equipment and city infrastructures.

By connecting the physical and digital worlds together, brands are tapping into new datasets to optimize their internal operations and deliver novel customer experiences.

THE (NEW) ROARING 20s

COVID lockdowns, vaccine debates and variant concerns have placed a toll on society. With a light seemingly at the end of the tunnel, people are ready to make up for lost time and live their lives to the fullest.

Brands have an opportunity to offer timely experiences to "welcome people back" to normalcy and satisfy their longing for freedom and fun.

ON-DEMAND ENTREPRENEURSHIP

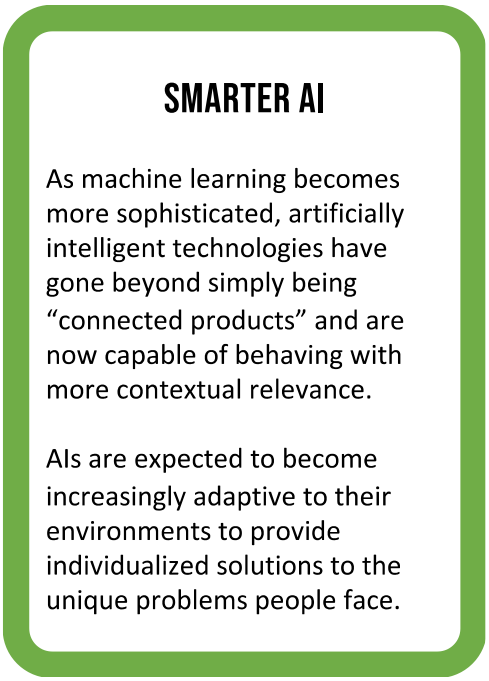
After COVID lockdowns forced them out of a job, many people took the opportunity to pursue the entrepreneurial route when they could not find work.

Amplifying their reach with social media, these groups have been able to utilize new services to instantly conceptualize, fund, launch and promote their ideas with little upfront investment.

DISINTERMEDIATION

The COVID-driven uptake in digital channels saw many brands that traditionally sell their products through distributors adopt direct-to-consumer models to maintain or deepen their customer relationships.

This uptake also correlated with an increased consumer propensity try procuring products and services via self-serve channels.



Blank Disruptor Cards for players to create their own