Scenario Planning for a Post-Pandemic Workplace

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[**Abstract]** As the global business environment faces uncertain times, scenario planning can assist companies with developing strategies for sustainability. Scenario planning is a tool that can help managers with the post-pandemic future of work. Traditional management theory may not address the volatile changes in the work environment after the pandemic. For example, the telecommunications industry was impacted due to human resource issues and shifts in the demand for service. Using scenario planning, telecommunications companies can build scenarios to promote strategic planning and adapt to the new environment. Four scenarios were developed to address possible futures for Telco and assist in strategic planning.

[Keywords] scenario planning, post-pandemic future of work, strategic planning

Many managers were challenged by the pandemic and had to modify existing strategies for their organizations to remain viable. The pandemic's long-term effects on businesses are difficult to estimate, as many businesses were forced to close (Donthu & Gustafsson, 2020). The high levels of uncertainty and reduced revenues made businesses operate differently and display resilience to remain open (Verma & Gustafsson, 2020). The unpredictable future made choosing a strategy that aligned with the turbulent external environment and carving a path for sustainability a monumental task.

The purpose of this paper is to examine scenario planning as a tool to assist managers with the post-pandemic future of work and provide four scenario descriptions for a large telecommunications company in the United States. First, we examine the state of the business environment. Then we introduce the definition of scenario planning, describe the scenario planning process, cover the use of scenario planning, explain the theoretical foundations, explore the use of scenario planning, and provide possible outcomes. We conclude by exploring possible scenarios for a regional telecommunications operation and discuss limitations and future research.

State of the Business Environment

During the pandemic, businesses could not deliver their products and services through traditional channels because of required government shutdowns that resulted in employees being furloughed or terminated (Donthu & Gustafsson, 2020). Company leadership had not considered the possibility of a pandemic causing extreme disruption to daily business operations. In an April 2020 survey of 99 CFOs and financial leaders, Gartner, Inc. found that 42% of CFOs had not incorporated a second wave of outbreak into their financial scenarios, and 44% were not sure how employees would return to their normal office or facilities schedule (Gartner, 2020a). In a survey of 172 human resource leaders, Gartner, Inc. found that 52% of business operations surveyed were continuing at a reduced level to minimize costs (Gartner, 2020b). Organizational focus was on surviving, but businesses need to strategize for the future (Scoblic, 2020). Kopp, Chief of Research for Gartner, reported that businesses' most important priority was understanding the future of work (Gartner, 2020b).

Traditional management theory may not address the volatile change caused by a rare event such as a pandemic, which affects the future of work. As Scoblic (2020) described, it does not make sense to look back when the present does not resemble the past. The pandemic affected business operations, as many managers struggled to adopt policies and develop viable strategies in the new environment and post-

pandemic world. The problem is making robust strategies during times of uncertainty (Scoblic, 2020). Acronyms such as VUCA ("volatility, uncertainty, complexity, and ambiguity") and TUNA ("turbulent, uncertain, novel, and ambiguous") are used to describe the future (Scoblic, 2020, p. 39). To make an effective strategy during these times, companies need constant exploration and "institutionalization of imagination" (Scoblic, 2020, p. 40). Strategic foresight can help "imagine multiple futures in creative ways that heighten our ability to sense, shape, and adapt what happens in the years ahead" (Scoblic, 2020, p. 40). Scenario planning is a tool for strategic foresight that can assist managers with imagining possible futures.

Scenario Planning Background and Process

Scenarios are simply described as stories that portray possible futures. Herman Kahn, a founder of future studies, defined scenarios as hypothetical events set in the future to construct a possible chain of causal events (Kahn & Weirer, 1967). Kahn, a founder of future studies, used the word "scenario" to describe narratives of possible futures after the movie industry switched from scenario to "screenplay" (Chermack & Linham, 2002).

Definitions of scenario planning are found throughout academic literature. Scenario planning is "a description of a possible or probable future" (Bloom & Menefee, 1994, p. 223). It is also considered "a disciplined methodology for imagining possible futures in which organizational decisions may be played out" (Shoemaker, 1995, p. 25). Chermack and Linham (2002) proposed an integrative definition of scenario planning as "a process of positing several informed, plausible, and imagined alternative future environments in which decisions about the future may be played out for the purpose of changing current thinking, improving decision making, enhancing human and organization learning, and improving performance" (Chermack, & Linham, 2002, p. 376). For the purpose of this paper, we will use the integrated definition of scenario planning.

Scenario planning begins with a critical need or focal issue that could impact the organizational environment (Chermack & Linham, 2002; Scoblic, 2020). There can be a turbulent environment where there is a rise in uncertainty with increasingly unpredictable consequences (Emery & Trist, 1965). The main features of scenario planning are dialogue, conversation, and deep analysis of the external environment, which are shared among the participants (Chermack et al., 2015). It is essential to choose creative individuals with differing viewpoints and perspectives to develop possible scenarios (Chermack, 2011). It is vital to get the right people involved in scenario planning (Scoblic, 2020). The participants should come from various roles in the organization with different views and personal experiences (Chermack, 2011; Scoblic, 2020). The time frame for scenario planning varies based on the organization's needs: long-term scenarios being more useful. (Martelli, 2001). Chermack (2011) outlined the key steps for scenario planning, as shown below:

1. Identify a focal issue or decision with a central issue based on the external environment.
2. Identify and study key factors in the local environment that influence success or failure while examining internal dynamics that affect strategy.
3. Brainstorm the driving forces, such as political, economic, technological, environmental, and social forces.
4. Rank the key factors based on importance for success and the degree of uncertainty that surrounds the forces.
5. Develop and select general scenario logics.
6. Flesh out the scenarios.
7. Determine the implications of the scenarios asking what to do if the scenario becomes a reality.
8. Select indicators that signal actual events and the impact on the organization.

Scoblic (2020) offered the stages of scenario planning as applied to develop strategy. Those stages are to identify forces that shape future conditions; explore how drivers interact; imagine plausible futures; revise mental models of the present based on those futures; and use new models to devise strategies (Scoblic, 2020). Scenario planning should be considered an iterative process in which users move from the present to multiple possible futures, adjusting and updating strategies (Scoblic, 2020). It is a participative approach

to strategy that requires diverse thinking and conversation (Chermack, 2011).

Scenario planning can be viewed as a management tool in times of high uncertainty to assist managers with developing strategy (Bloom & Menefee, 1994; De Geus, 1997; Ringland, 2002; Schwartz, 1991; Wilson, 2000). A tool can be a framework, concept, model, or method (Jarzabkowski & Kaplan, 2015). Jarzabkowski and Kaplan (2015) developed a framework for understanding strategy tools as a recursive process that included affordance of tools, agency of actors, selection, application, and outcomes. By selecting and applying scenario planning as a management tool with a recursive approach, managers can develop strategies that align with uncertain conditions and consider possibilities for the future of work.

Courtney (2003) explained how many companies had abandoned scenario planning by 2003 because of the time consumption and managers' perceptions of usefulness. However, Oliver and Parrett (2018) explained the importance of scenario planning to develop strategy and posited that there was a resurgence in use for uncertain market conditions. The business environment is faced with more volatility due to the pandemic than ever before. Based on the current business environment and potential benefits of scenario planning described in this paper, we propose that scenario planning is appropriate to examine the future of work in the post-pandemic environment.

Managers can use scenario planning to expand their thinking and see a broader range of possibilities with new opportunities (Schoemaker, 1995). It can be performance-based and used to change thinking and improve decision-making (Chermack, 2011). Scenario planning also involves learning by interpreting a situation, applying the new perception to formulating policy, and implementing policy (Chermack, 2011).

Scenario planning methods differ, with some being more of an art that takes an iterative approach and others having a mechanical, technical approach (Frith & Tapinos, 2020). Shoemaker (1991) explained a heuristic approach to scenario planning and claimed that scenario planning works better than traditional planning techniques in times of uncertainty and complexity. The purpose of heuristic scenario planning is to bound the range of possible uncertainties to challenge management thinking (Shoemaker, 1991). Multiple scenarios (two, three, or four) should be constructed depending on the issues examined and reflect various viewpoints to cover a broad range of possibilities (Shoemaker, 1991). Scenario planning is not predictions nor forecasts (Shoemaker, 1991). However, forecasts can be developed after examining possible futures.

When high levels of uncertainty exist, scenario planning is an important management tool (Courtney, 2003). Courtney (2003) proposed four degrees of uncertainty based on the level of uncertainty present when conducting vision-driven scenario planning. Vision-driven scenario planning emphasizes economic and global drivers of change that are typically a longer-term (5+ years) and differs from decision-driven scenario planning, which is shorter-term (Courtney, 2003). With vision-driven scenario planning, divergent thinking can be used to generate new strategic ideas from a shared sense of possible futures (Courtney, 2003). Decision-driven scenario planning is used to evaluate payoffs by examining data and testing options (Courtney, 2003).

The pandemic contributed to a high level of uncertainty and true ambiguity based on the social discontinuities. It could be classified as a Level 4 based on Courtney's (2003) framework with higher levels (3 and 4) indicating greater uncertainty. With higher degrees of uncertainty, managers must work backward in scenario planning from potential strategic options to define what they believe may occur (Courtney, 2003). For example, a United Airlines security manager may need first to identify the assumptions about future terrorist threats, then develop scenarios for those assumptions (Courtney, 2003). However, the level of uncertainty may degrade over time (Courtney, 2003). As the uncertainty level degrades, managers can better understand the future environment of work and revise scenarios developed with the new knowledge following a recursive approach.

One problem of strategic planning is assumptions about the environment. Strategic planning is vital but often assumes that the future environment will be identical to today's environment (Bloom & Menefee, 1994). Scenario planning can help leaders cope with change in uncertain and complex environments (Chermack et al., 2007). Scenario planning is appropriate and relevant when "the practical utility of theory has not yet been emphasized" (Chermack, 2011, Foreward, para. 3) and considered a strategic conversation. When decision-makers have worked through a wide range of possible futures, they can adapt more quickly to turbulent environments and are more prepared (Chermack et al., 2015).

Theoretical Foundations of Scenario Planning

The theoretical foundation for scenario thinking is the theory of practice. Benner (cited in Dougherty, p. 426) defined the theory of practice as "rich socially embedded clinical know-how that encompasses perceptual skills, transitional understandings across time, and understanding of the particular in relation to the general." The practices are simply what people do. With scenario thinking, an ontological dimension addresses human actions and practices in context, an epistemological dimension addresses the understanding of the past and future in the current presence, and a praxiological dimension addresses coping with uncertainties (Sarpong & Maclean, 2011).

According to Chermack (2004), another aspect of the theoretical foundation is to apply Durban's (1978) quantitative theory-building methodology to scenario planning. If a traditional definition of theory, such as "explains what a phenomenon is and how it works" (Torraco, 1997, p. 115), is applied, scenario planning is not a theoretical approach. However, Chermack (2004) debated that scenario planning is a theoretical model by applying two components of Durbin's theory-building: theoretical model and empirical research. Using Durbin's eight steps for theory-building research methodology, Chermack developed a theoretical model of scenario planning (Chermack, 2004). The theoretical model units for scenario planning are scenarios, learning, mental models, decisions, and performance (Chermack, 2004). Chermack's model showed that scenarios linked to learning, learning linked to mental models, mental models linked to decisions, and decisions linked to performance, which was supported by academic publications (Chermack, 2004). The links in the model addressed the sequential laws for Durbin's theory-building.

Use of Scenario Planning

According to Scoblic (2020), scenario planning is widespread among governments and businesses for predicting the future and determining ways to think about the future. Unfortunately, many companies may only conduct one exercise in planning and then not utilize their findings in any meaningful way. In the case of uncertainty, organizations must set up an ongoing or continuous process of scenario planning to connect the present and future. Institutionalization of imagination and scenario foresight is necessary to move beyond short-term thinking that is often pervasive in organizations. Blau et al. (2020) ask the resilient organizational leader to reflect on describing the world that the organization should be preparing for and consider scenarios that the organization is ignoring but should not be to develop capabilities, partnerships, and workforce strategies.

Strategic foresight got its start after World War II when the U.S. Air Force set up the RAND Corporation think tank for military planning in the 1950s (Mietzner & Reger, 2005; Scoblic, 2020). The use of scenario planning by business originated at Royal Dutch/Shell in the late 1960s and early 1970s (Wack, 1985). Forecasts, which are often accurate, are based on the premise that the future business environment will be consistent with today's environment (Cornelius et al., 2005; Wack, 1985). If the business environment becomes turbulent, then the forecast can fail (Shoemaker, 1991; Wack, 1985). Managers must accept the uncertainty and understand it to make it part of reasoning (Wack, 1985). Shell included upper and middle managers in the process that began with constructing first-generation scenarios to gain understanding without acting (Wack, 1985). The scenarios served four purposes: to present a background for the design and selection of strategies, to present managers with possible future environments, to identify what might happen and how the organization might react, and to combine qualitative and quantitative input (Cornelius et al., 2005). Since the development and refinement of scenario planning, Shell created scenarios for oil supply disruption and pricing, constrained growth, energy demand, speculation about the former Soviet Union's longevity, and globalization (Cornelius et al., 2005).

Rolls-Royce avoided most of the 2008 financial crash consequences due to its strong demand and substantial aftermarket service business (Ramírez et al., 2017). In early 2014, the company ran into a decline in demand for wide-body airliner orders, a slowing in the Chinese economy's growth rate, and the end of the commodities boom, each of which impacted the corporate jet business to some extent (Ramírez et al., 2017). Oil price declines also impacted both the marine and energy markets (Ramírez et al., 2017). The company's civil nuclear power business suffered in the wake of the accident at a nuclear power plant in

Fukushima, Japan, in 2011(Ramírez et al., 2017). Even though these events were mostly unrelated, they affected every aspect of Rolls-Royce's business. During 2014 and 2015, management issued five profit warnings, and the share price fell more than 50% (Ramírez et al., 2017). A new CEO was brought on in July 2015, which intensified the company's search for ways to improve its prospects (Ramírez et al., 2017). That summer, several dozens of the company's top managers participated in an executive education course at Oxford University that included sessions focused on scenario planning (Ramírez et al., 2017).

Ramírez et al. (2017) offered that predicting the future may not be the best approach to scenario planning, but developing competencies to deal with uncertainty is the best framework. The approach that the top managers at Rolls-Royce learned was the Oxford approach to scenario planning. Some scenario planning takes a probabilistic stance that makes predictions in percentage terms or as best-case/worst-case scenarios or a normative stance that includes envisioning the future. The Oxford scenario planning approach is based on plausibility (Ramírez et al., 2017). By recognizing the part of uncertainty that is unpredictable and actively exploring the turbulence and uncertainty sources, the goal is to iteratively and interactively generate new knowledge and insights to help organizations reperceive their circumstances.

Ramírez et al. (2017) found that after the training, Rolls-Royce management utilized the scenarios as a new foundation for the 2016 strategic planning process. They then communicated these results with the company stakeholders, including senior management (Ramírez et al., 2017). In practice, any investment proposal had to address the connection and impact on the scenarios to reduce risk and build on opportunities (Ramírez et al., 2017). When investments did not meet these qualifications, they were rejected (Ramírez et al., 2017). Scenarios became a determining factor in the selection of the investment initiatives that emerged from the 2016 strategy process (Ramírez et al., 2017).

Scenario Planning Outcomes

Scenario planning comes with a high cost due to the human capital that must be invested to develop creative alternatives (Chermack & Linham, 2002). The organization must dedicate individuals and outside consultants who can offer creative suggestions on what future outcomes could look like based on the focal issue. The practice of scenario planning may not result in performance improvements as a human resource development tool but may enhance human learning in the organization (Chermack & Linham, 2002).

One of the most important outcomes is organizational learning. Scenario planning is important because building learning organizations that can learn faster than the competition is a competitive advantage (Senge,1990). As a society, we have not experienced the uncertainty of post-pandemic work. The best way to handle uncertainty is to include it in the planning process and explore "what-ifs" (Chermack et al., 2006). A learning organization creates continuous learning opportunities, promotes conversation and inquiry, encourages collaboration and team learning, creates systems to share learning, empowers people, connects the organization to the environment, and provides strategic leadership for learning (Chermack et al., 2006). Chermack et al. (2006) found the effects of scenario planning increased individual perceptions of the organizations' ability to learn and adapt for six of seven constructs of organizational learning. A limitation of the study was the small sample size. Scenarios also promote learning by highlighting the reasons underlying a forecast with attention to uncertainty (Shoemaker, 1991). As a thinking tool and communication device, scenarios promote understanding of deeper forces and are more than high-low projections (Shoemaker, 1991). Learning can also occur by examining how competitors or other stakeholders behave in each scenario (Shoemaker, 1991). Organizations must be flexible, innovative, and adapt quickly to gain competitive advantage and remain sustainable (Senge, 1990).

Another outcome is that scenario planning shifts perceptions to include uncertainty in the planning process that can improve decision making (Chermack, 2011). When using scenario planning, the expectations for tomorrow will be fundamentally different with a variety of outcomes. The outcomes of scenario planning are to promote strategic thinking or to provide closure to decision making (van der Heijden, 2004). Cognitive biases occur more frequently when decision makers experience high environmental uncertainty (Hodgkinson et al., 1999). Meissner and Wulf (2013) examined the cognitive benefits of full application scenario planning with 252 graduate management students and found that scenario planning reduced framing bias and had a more positive effect on decision quality than other tools

used in strategic planning.

Scenario planning can also be used to change organizational culture by adapting to changes in the environment (Korte & Chermack, 2007). Organizational culture can be described as a shared mental model. Scenario planning makes explicit mental models that support organizational reasoning and action (Korte & Chermack, 2007). Individuals act as members of their organizations, basing actions on their understanding of the organization's norms, beliefs, and values (Korte & Chermack, 2007). The models can be challenged, resulting in new alternatives (Korte & Chermack, 2007).

Scenario thinking can lead to increased organizational creativity and innovation. Using the social theory of practice, Sarpong and Maclean (2011) examined three software companies that applied scenario thinking to four projects, which resulted in creative emergence with opportunities for innovation. Chermack et al. (2015) performed a quasi-experiment using a pretest-posttest design with 48 participants in the intervention group and 44 in the comparison group. They found that six dimensions of a creative climate – increase in freedom, trust, idea-time, play/humor, conflicts, and risk – showed a significant increase for the group using scenario planning (Chermack et al., 2015).

Scenario Planning for Telco

We applied scenario planning to the operations of a telecommunications company in the United States to develop four first-generation exploratory scenario descriptions for the post-pandemic future of work. The telecommunications company noted as Telco (to protect company identity) employs high and low skilled employees and contractors to design, build, and provide residential and commercial customer services. The services include basic telephone, cellular, data, and video, including all electronic equipment and some original video content.

One problem Telco faces is the need for high- and low-skilled employees to design, build, install, and maintain the infrastructure and to determine work locations for the employees. Telco employs workers throughout the region. Pre-pandemic workers reported to assigned locations to minimize drive time to job sites throughout the region. Work center locations were optimized to provide service to rural, suburban, and urban areas based on the density of the existing lines, demand for service, and expected growth rates. The pandemic shifted service demands as many businesses had employees working from home. With more employees working from home, data demands and traffic on the existing networks shifted resulting in some residential area networks being overloaded. The data traffic in business areas decreased as more employees worked from home. Business customers began to question their capacity needs for data services at commercial locations and examined whether they should reduce data needs. With both residential and commercial shifts, Telco does not have employees aligned with network demands and requirements, which created a problem.

To better understand the situation that Telco faces, we used Google public data (Google, 2021) that tracks visits to places such as grocery stores and pharmacies, parks, transit stations, retail and recreation, residential, and workplaces. For Telco, the residential and workplace mobility data is important because information can be analyzed to determine if individuals have returned to the workplace or continue to work from home. The Google data is aggregated and anonymized depending on the user settings, connectivity, and privacy threshold (Google, 2021). Data is collected from users who have opted-in to "Location History" in their Google account (Google, 2021). Based on the user settings, the data from the Google public data set represents a sample of users. The baseline for comparison in the Google data is calculated by obtaining the median for the corresponding day of the week during the five-week period from January 3 to February 6, 2020 before lockdown measures impacted the time spent at workplaces and residences (work-from-home) (Google, 2021). Figure 1 shows the information for work and residential mobility. The percent change from the baseline is plotted by date from February 10, 2020 until February 9, 2021. As shown in the graph, participants spent increased time in residential locations beginning in March 2020 until February 2021 (positive percentage compared to baseline). Participants spent less time in work locations (negative percentage compared to baseline). The graph in Figure 1 shows that the need for communication and data services shifted to residential locations because of the pandemic.

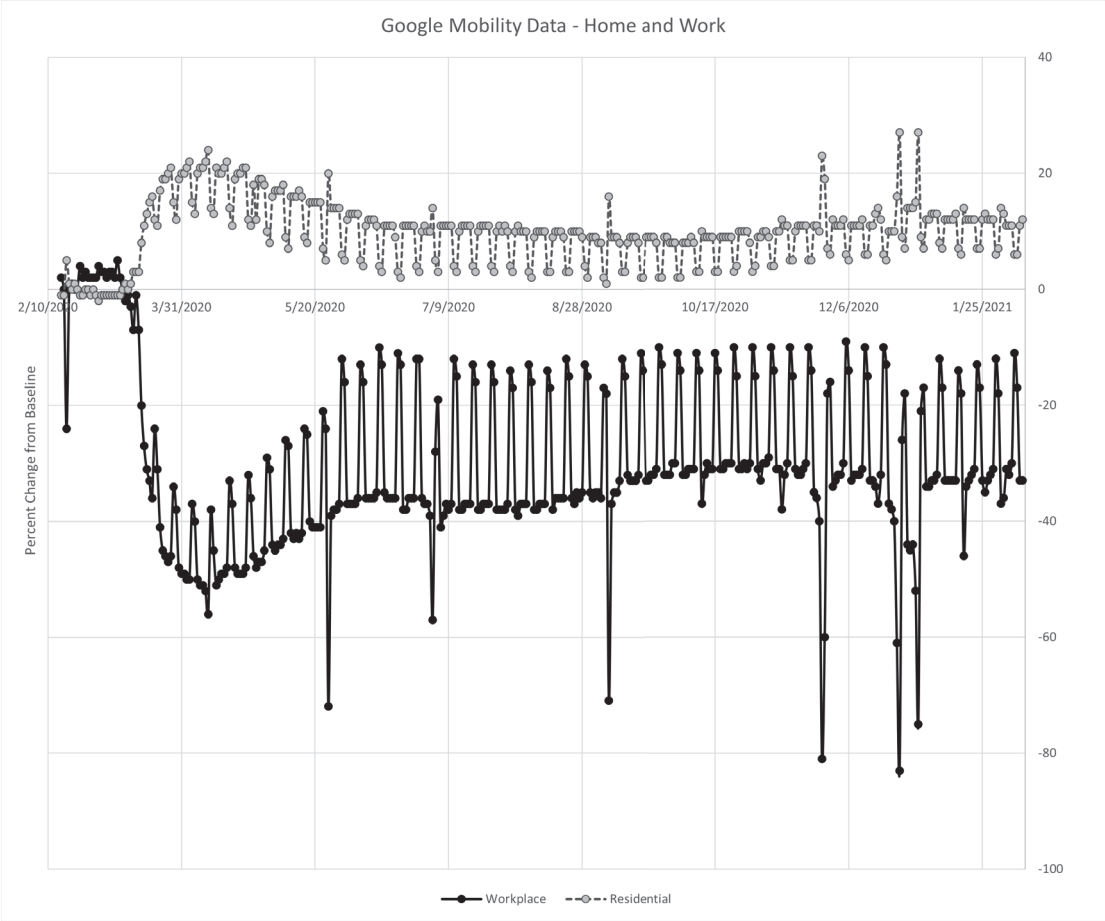


Figure 1. Google Mobility Data (Publicly Available)

*Note: This graph was prepared by the authors in graphics software using publicly available Google data obtained from https://www.google.com/covid19/mobility/

From the Telco perspective, some of their work centers are leased while others are owned by Telco. The workforce consists of union and non-union employees. During the pandemic, many of the work centers were at 25% or less occupancy. Telco began to examine their need for the work centers and considered not renewing leases in some locations and continuing to allow employees to work from home. In other locations, Telco examined whether buildings that do not house switching equipment should be sold. Next, we determined the outlook time frame, key issues, trends, and key uncertainties, as shown in Table 1.

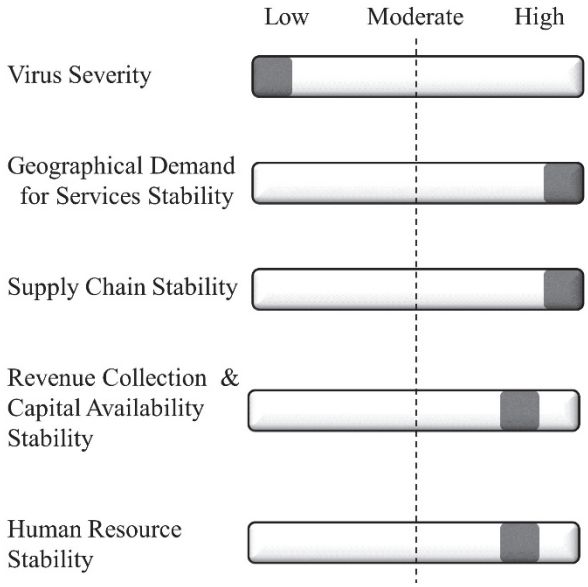
Table 1
Key Issues, Trends, and Uncertainties

Component	Description
Key Issues	1. Capital is needed to reinforce the existing network by adding fiber optic cable for 5G capabilities and increased data/video services to subscribers. 2. Some businesses are behind in payments to Telco for services due to the pandemic affecting revenue. 3. The geographical demand for services has shifted because of the pandemic. Demand in residential areas has increased, taxing the current infrastructure. Demand in office locations has decreased due to work from home

	initiatives. Demand based on geographical areas is uncertain and highly volatile. Traditional forecasting models do not meet the needs of the new work environment. 4. Highly skilled and lower skilled employees are needed to build and maintain the network. (Securing and retaining personnel.) 5. The union workforce is not geographically aligned with the current demand for additional infrastructure. Aligning the union workforce is difficult because of the uncertainty of future demand. Redistributing the workforce is complicated due to the union contracts. 6. Contact tracing can render some geographical locations inoperable due to the quarantine process. In some work centers, all employees are quarantined due to exposure. 7. Some field employees are restricted from sharing vehicles due to social distancing requirements. The procedures resulted in a shortage of specialized trucks to build and maintain infrastructure.
Trends	1. Government regulations and shutdowns have impacted employees commuting to office locations for Telco employees and Telco customers. 2. Supply chains were impacted during the pandemic making it more difficult to secure some cable types and electronic equipment. 3. Stimulus checks and extended unemployment benefits have decreased lower-skilled workers applying to Telco for temporary and contract positions. 4. High labor cost drives up the cost of building infrastructure. 5. Some government funding may be available to provide high-speed internet to disadvantaged populations and first responder networks. 6. Increased competition for Telco makes it more challenging to secure bandwidth, increase cellular customer base, and stream video services.
Key Uncertainties	1. Geographical location of demand for Telco services. 2. Ability to secure capital, fiber cable, and electronics to develop the infrastructure. 3. Bandwidth availability to deliver 5G and other data/video services. 4. Securing trained labor forces in geographical areas with high demand. 5. Acquiring and redistributing workforce and contractors to align with demand. 6. Continuance of social distancing and contact tracing.

We developed four scenario descriptions for Telco operations. The key uncertainties are virus severity, geographical demand stability, supply chain stability, revenue collection and capital availability, and human resource stability. Lower stabilities indicate higher levels of uncertainty and more fluctuation. The outlook for Telco in the scenarios described below is five years post-pandemic. The first scenario "Gone but not Forgotten" in Figure 2 depicts a return to the "old normal." The second "A New Normal" scenario for Telco is shown in Figure 3 in which the pandemic continues to affect Telco. Figure 4 describes the "Tougher Times" scenario for Telco where the pandemic continues to be severe, affecting human resource, supply chain, and geographical demand stability. Figure 5 describes the most devastating scenario: "Dark Times" for Telco that results in major instability in revenue, human resources, supply chain, and geographical demand. Countries have closed all borders and continue to operate in isolation.

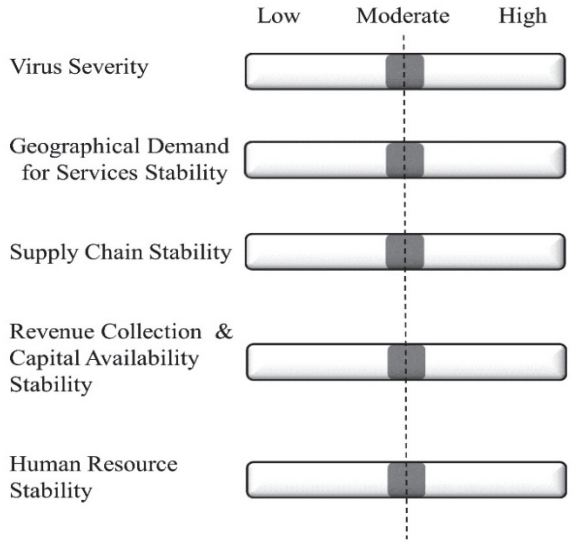
Scenario 1
Gone but not Forgotten



Description
After a devastating blow to the workforce and economy, the post-pandemic society has returned to the "old normal" as before the pandemic. Businesses are open with few government restrictions. Health care facilities are back to standard operations. Social distancing and contact tracing are no longer required. Telco's international supply chain is functioning again with few disruptions. The geographical demand for services better aligns with existing infrastructure with the majority of networks having adequate capacity. High and low skilled employees and contractors are available for growth and maintenance of networks.

Telco's Focus
- Build new infrastructure to meet growing demands
- Secure additional bandwidth for 5G and new technological advances
- Employee development and training
- Build reserve fund to prepare for next crisis

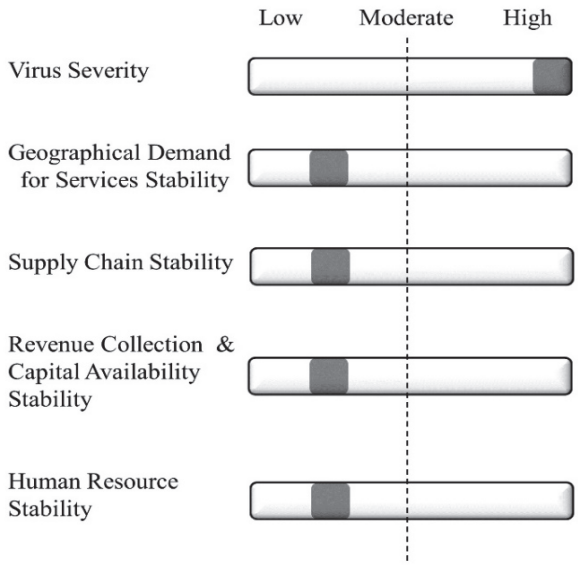
Scenario 2
A New Normal



Description
The pandemic continues to affect Telco. Even though health care initiatives are in place, the burden of social distancing and contact tracing still weighs heavily on Telco management. Some economic recovery has occurred. However, smaller businesses impacted by the pandemic are behind in payments to Telco. Some of Telco's business customers still have employees working from home which continues to create network overloads in some geographical locations. Some companies have reduced Telco services due to employees working from home. Business revenue is lower as a result. Telco employees cannot share vehicles due to social distancing requirements. Telco must purchase additional trucks and specialized vehicles so employees can be productive or increase contract work to stabilize network demand.

Telco's Focus
- Align employees and contractors with geographical demand
- Reduce operations expenses because of reduced revenue
- Develop innovative logistics practices for a more portable workforce
- Develop and improve telecommunicating products
- Improve online security for Telco employees working from home
- Examine lease renewals (Terminate leases where office space is not needed for employees working from home)

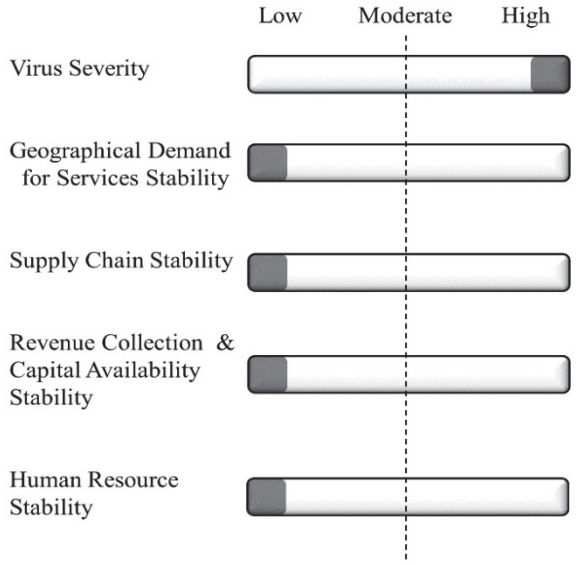
Scenario 3
Tougher Times



Description
The pandemic continues to be severe with government mandated closures and business restrictions. China and East Asian countries are able to provide their products which is a positive factor for some components of Telco's supply chain. However, there are major disruptions from other countries. Business closures results in cancellation of Telco services. Unemployment has risen but government bail out and stimulus money make some unwilling to work minimum wage jobs. Telco's revenue collection is lower than pre-pandemic. Employees cannot share vehicles due to distancing requirements because of the pandemic. Employee productivity is reduced.

Telco's Focus
- Develop better working practices to comply with social distancing, contact tracing, and quarantine of entire work crews
- Increase motor vehicle pools for single employee use
- Shift employees' work locations to meet geographical demand changes – Consider furloughs
- Reduce operating expenses
- Examine new sources of core business items such as pre-spliced fiber optic cable and electronic equipment
- Outsource work in geographical areas where demand cannot be met with Telco employees by forging new relationships with contractors

Scenario 4
Dark Times



Description
The pandemic continues with social distancing and contact tracing being a way of life. Telco managers are taxed with increased governmental regulations. Business shutdowns continue when heath care facilities exceed capacity. A decline in individual freedoms and more strict government monitoring and penalties occur. The economy continues to suffer. The stock market continues to plunge in some industries. Government debt is at a record high. Businesses and consumers are defaulting on their payments to Telco for services. Isolationism is a global practice as countries close borders to contain the virus. Major supply chain disruptions occur. Lower paid employees are not working because of increased unemployment benefits and stimulus payments. Telco cannot hire and retain field employees that align with the geographical demand of the work.

Telco's Focus
- Develop better working practices to comply with social distancing, contact tracing, and quarantine of entire work crews
- Reinstate supply chains through contracts with new providers
- Explore vertical integration
- Outsource work using short-term contracts to firms with employees in needed locations
- Reduce operating expenses
- Develop innovative logistics practices for a more portable workforce
- Examine lease renewals (Terminate leases where office space is not needed for employees working from home)

To gain full benefit from the scenarios, Telco's managers should examine Chermack's steps for scenario planning explained previously and focus on the brainstorming process for further development as a recursive process. Scenario planning is limited by the creativity of those developing the scenarios, so the right people should be invited to participate (Scoblic, 2020). By including additional internal employees in the process, the scenarios can include new perspectives for exploration. Telco management should also isolate strategies that are useful for multiple futures. Looking for commonalities, singling them out, and developing plans for those futures all improve strategic planning for the future.

Limitations and Future Research

There is a need for additional research addressing new operating models to meet changing demand patterns and remain productive (Verma & Gustafsson, 2020). This research contributes to the body of knowledge by examining scenario planning as a tool that can assist managers with multiple plausible futures for strategy development and applies scenario planning to a large telecommunications company in the United States. We addressed scenario planning as a foundational process to start strategic development conversations. Our scenario descriptions were developed from an intuitive logistics methodological approach using shared knowledge of Telco's operations and are not comprehensive but limited to the authors' combined knowledge of operations. To examine the current state of Telco's operations, we used Google mobility data, which is a sample of the population of users who opted into "Location History," and may not be representative of the entire population.

Additional research is needed to further develop scenario planning methodology. Chermack (2004) explained that the theoretical model should be translated into testable hypotheses about how the theory works in practice and empirical research conducted to test the hypotheses. As the global business environment faces uncertain times, scenario planning can assist companies with developing strategies for sustainability.

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