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Leadership in Diverse Workforces in the Covid Era: Case Studies Demonstrating Best Practices of Effective and Creative Leadership

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ABSTRACT

This text uses Case Studies to explore best practices of leadership and change management in response to the Covid-19 pandemic. Design Thinking and Creative Leadership are discussed as key elements of innovative approaches to meet the challenge of the global response to the Covid-19 pandemic.

Keywords: *Covid-19, Design Thinking, Creative Leadership, Change Management, Communication.*

1. Introduction

The recent Covid-19 pandemic has generated rapid changes throughout business communities and government agencies, necessitating effective and creative leadership able to navigate the chaos through a culture of inclusion, innovation and creativity. Practitioners in the business environment call for practical knowledge demonstrating application of best practices, including the implementation of creativity and innovation. This demand reflects the success of organizations that use leadership to actively support an inclusive, diverse culture, leading to innovation that improves the bottom line of organizations, as well as allowing them to react to rapid change [1, 2]. Innovation includes new ways of doing things and creative solutions, as well as new products and processes. The Covid-19 pandemic has pushed leadership to implement innovative strategies in a difficult, chaotic environment, building effective, diverse teams able to create and share organizational knowledge.

Much of the past literature on leadership reflects a more stable environment than the 21st century global business model demands. Technology and ever-increasingly fast-paced change demands new skill sets from workers and leaders alike, as we move into future industrial revolutions based on technology, data, and the ability to respond quickly to rapidly changing situations. The ability to build diverse teams, collaborate and communicate effectively, and continue life-long learning processes are part of successful innovative organizational cultures [3 - 6]. Leadership is discovering new approaches to managing teams, hiring individuals, and creating an environment that supports a culture of innovation; responding to new challenges with fresh solutions [7].

According to Seijts and Milani [8] the Covid-19 crisis has focused attention on the character of leaders and its influence on their decision-making. Traits of leadership, inspiring confidence and calming followers during initial responses to the pandemic allowed the competencies of leaders to emerge. Sejits and Milani [8] state the Covid-19 pandemic is a test of judgement and character. Effective and creative leadership practices support a culture able to adapt to rapid changes with innovative solutions, managed in a safe environment of diversity and exploration.

Traditional management techniques, data gathering processes, and team exercises will no longer suffice in the tumultuous world of fast-paced innovation and technological advances, much less during the adaptation to a 'new normal' the Covid-19 crisis has generated [9]. Leaders able to establish a culture of innovation, collaboration, diversity, and creativity can better manage evolving best practices. According to Lang, Handley, and Jablokow [6] not only are corporations more focused on innovation and creativity to gain a competitive edge, an organization's effectiveness is at least partially dependent on the creation of an organizational culture supportive of

diversity, creativity, and innovation. This article reviews case studies looking for specific best practices by organizations demonstrating the ability to adapt to change, with cultures supportive of innovation and design thinking principles [10, 11].

2. Methodology

Rashid *et al.* state "Qualitative case study methodology enables researchers to conduct an in-depth exploration of intricate phenomena within some specific context" (p. 1) [12]. Further, according to Yazan [13] case studies are an integral research tool in the business world. Case studies allow the researcher to explore a phenomenon in real-time, as well as understanding the influences of the phenomenon's natural context. Accordingly, this case study explores the leadership and Covid 19 response in a business setting.

The three innovative companies in this case study, Dephy [14], Boston Engineering [15], and Samtec, Inc. [16], represent an upstart company, a mid-sized innovative support organization, and a larger manufacturing tech company. Representatives from each company were interviewed and documentation was reviewed to explore leadership practices and organizational culture, as well as concrete examples of organizational responses to the Covid-19 Pandemic challenges. Dedoose was used as a tool to discover similarities and themes as well as develop a rich context drawn from the interview data (Appendix A). Further, concrete examples demonstrating the implementation of Design Thinking concepts are explored through the lens of the conceptual framework (Figure 1).

2.1. Conceptual Framework

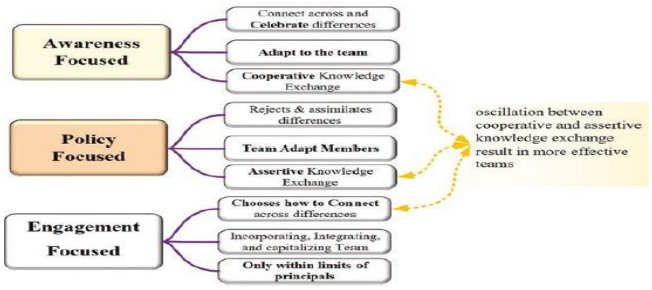

Figure 1. Diversity and Knowledge Exchange Process (modified from Hajro e*t al.* [5] and Taylor *et al.* [17]).

According to Hajro *et al.* [5] the effectiveness of diverse teams is influenced by the diversity culture of an organization, with the most effective teams thriving when diversity is acknowledged, with different knowledge and insight supporting alternate viewpoints. This point of effective knowledge exchange is reached in the engagement focused climate, with cooperative communication oscillating with assertive communication, to create true and effective sharing of knowledge.

3. Results and Discussion

The Covid-19 pandemic has presented unique challenges to businesses on a global scale.

Career pathways are changing as national culture and social beliefs respond to the on-going pandemic [18, 19]. According to Krishnamurthy [20] business will evolve, including hospital level hygiene in brick and mortar sites and improving tele-work opportunities. While the sudden drops in aggregate supply and demand as businesses and organizations shut down to control the spread of the virus continues to have a global effect on the economic health of industries, organizations have multiple problems to address. The uncertainty generated by lack of knowledge about the virus continues to affect the strategic plans of organizations, necessitating frequent revisions as the pandemic progresses, with some businesses struggling to survive and others looking for alternate strategies [19, 21]. Business and communities need to persist in the search for creative new solutions to meet unprecedented problems.

The ability of business to pivot quickly to a new reality during the pandemic developed as key to the survival of businesses [19, 21]. Businesses switched from manufacturing consumer luxuries to producing personal protection equipment, changed in-restaurant dining to pickup and delivery of meals, and flipped marketing of retail organizations to web-based business plans. Companies without a rapid, effective response shutdown, perhaps forever. Traditional, transactional processes failed as the need for innovative and risky solutions became the norm. Organizations looked for new processes to manage the change and discover solutions, rather than react ineffectively to the new unknowns [18, 19]. One process business has embraced to mitigate risk while managing change is Design Thinking.

3.1. Design Thinking and Covid-19 Responses

Design Thinking (DT) is a problem solving approach and process that supports breaking out of traditional, or "usual' ways of thinking, while minimizing unexpected consequences. It provides a framework for exploring innovation that also contributes to the development of real value. Micheli *et al.* [22] points out DT is solution focused, not problem focused. It is also action oriented and future focused. One description of the DT cycle includes discovering unmet needs, framing the scope of the innovation,

testing and refining solutions [23]. Cankurtaran and Beverland's description of DT includes: "…creativity and innovation, user-centeredness and involvement, problem solving, iteration and experimentation, interdisciplinary collaboration, ability to visualize, gestalt view, abductive reasoning, tolerance of ambiguity and failure, and blending analysis and intuition" (p. 256) [21]. Including the use of designer tools such as, ethnographics, and prototyping makes DT an especially useful tool in the time of Covid-19 [21].

Successful application of DT in organizations hinges on creative leadership, diverse collaboration to drive innovation, and communication strategies to build organizational knowledge. Vianna *et al.* [24] discusses the need for organizations to be proactive in their approach to innovation before they are forced to respond to the creativity of competitors. Further, Vianna *et al.* [24] advocates the use of DT as a holistic approach, searching for understanding of all stakeholders through immersion, each within their unique context, co-creating solutions and prototyping for better understanding among all the collaborators. DT follows a cycle based of ideation, immersion, and prototyping as ideas are developed and shaped through feedback (Figure 2).

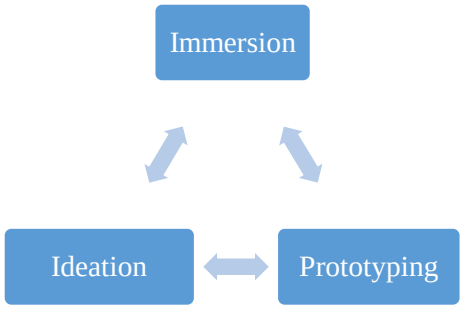

Figure 2. Design Thinking Cycle (modified from Vianna *et al.* [24]).

According to Brown design thinking is "a discipline that uses the designer's sensibility and methods to match people's needs with what is technologically feasible and what a viable business strategy can convert into customer value and market opportunity" (p. 86) [25]. Brown [25] is one of the most referenced resources on DT, in particular when applying to the business world [22], and sums up the general process of initial exploration, moving to ideation, concluding with implementation and testing cycling based on prototyping and iteration. Various studies indicate the need to accept ambiguity and embrace risk, understanding failure is an opportunity for learning the most often mentioned attributes of DT in literature are creativity and innovation [22, 25, 26]. The ability to move a creative idea to a concrete product or process gives relevant value to innovation. Organizations with a supportive culture of innovation, with leaders who nurture a diverse team in a safe environment that encourages taking risks, are better able to respond to rapid changes and manage change [3, 27].

Various models evolved to describe DT. In their recent review, Micheli *et al.* [22] listed the 3 most influential applied models of DT (Chart 1). All models use a problem discovery phase or immersion, ideation where no idea is off-limits, and implementation through a prototype and feedback loop. While many problems are explored through a number of cycles, some issues have no easy solutions. Further, these problems may not lend themselves to a series of cyclical attempts; rather there is one attempt to mitigate some of the harm caused by the problem. This type of problem is referred to as a 'wicked problem' [21].

3.2. Solving Wicked Problems

Design Thinking is associated with attempts to solve 'Wicked Problems', or problems without easy solutions. Wicked problems often do not have a single solution; rather they are problems of integrated or linked issues and consequences.

Chart 1. Most Influential Applied Models of Design Thinking. From reference by Micheli *et al.* [22].

Proponent	Main Stages of Design Thinking
IDEO	Inspiration, ideation, implementation
Stanford Design	Empathy, define, ideate, prototype and test
IBM	Understand, explore, prototype, evaluate

They are disruptive, and cause managers to break out of their established, or traditional, methods of thinking, driving creative problem solving and innovative solutions [21]. DT supports effective use of disruption, with careful disruptive thinking focused on understanding problems within their context to allow organizations to withstand change [21, 27]. The process of DT in the time of Covid-19 allows leaders to cope with the uncertainty inherent in the changing government information, disruption of employee availability, and product demand [21, 27]. Wicked Problems are often societal problems without 1

inherent solution, such as homelessness, or problems with changing data like climate change. According to Rittel and Webber [28] Wicked Problems do not have a single answer, or better or worse solutions. They are problems that need to be re-solved as new data emerges, or another unique piece of the problem emerges. DT has emerged as a process that supports innovative exploration of Wicked Problems. The time of Covid-19 has introduced more Wicked Problems into the business world, and new problems will continue to arise as consequences of actions taken in the time of Covid-19 continue to emerge.

3.3. Case Studies and Design Thinking

Immersion, or exploration to discover and define the problem is the first step of DT [21, 22, 27]. Open–ended questioning in a safe environment allows the exploration of multiple perspectives, to discover the problem and generate new alternatives. Engagement-focused communication is demonstrated in Samtec's open discovery sessions, an attempt to not only 'think outside the box, but move beyond boundaries, there is no box' [29]. Boston Engineering (BE) shared the same attitude, of 'moving beyond boundaries' [29]. Dephy approaches problems with the belief every problem is fresh, and novel solutions exist [29]. 'Throwing things against the wall and see what sticks' was another description both Samtec and BE used to relate the atmosphere of the initial meetings to explore possibilities in an environment accepting of differences and open to alternate viewpoints.

This practice is referred to as 'naïve questioning' by Cankurtan and Beverland [21]. Problem interrogation followed by contextual immersion are also part of the first steps of the DT process of Disrupt [21]. Dephy, Samtec and BE use multiple methods to continue looking at the problem, searching for more information, even as they explore ways to deliver a scalable product, moving between awareness focused and policy focused communications. The ability to combine both creates the engagement focus, where the diverse teams are most effective. Samtec uses a unique, web-based tool to funnel knowledge on a global scale, with all project data open to all engineers in the company. Fellow engineers are able to contribute to any current project in an asynchronous fashion. BE and Dephy use communication strategies that include multiple diverse teams in collaboration on various projects, building a funnel of organizational knowledge.

3.4. Dephy

During the Covid-19 pandemic, Dephy has survived through their culture of independence and running lean. As a start-up, the founders have not over expanded, despite promising results in past years. Their start-up mentality and small size drives internal communication through small diverse teams and on-going research. While Covid-19 has curtailed some demand, the need for the Dephy product, exoskeletons, has not substantially diminished. The Military and commercial companies demand for more sophisticated products continues to grow. Dephy's research in wearable robotics is ongoing, with job opportunities listed on their website [15].

3.5. Boston Engineering

BE has adjusted to assist their clients in adapting to producing products with demand driven by Covid-19 needs. BE has effectively used DT to establish new processes in a rapid fashion, with the creative leadership supporting the diversity and inclusion that allows innovation. Communication across teams and with clients has been key to rapid re-deployment of resources as BE pivots to solve new problems. BE lists several key clients they are supporting in the transition to providing in-demand Covid-19 supplies. One company, Smart Cup, has the unique ability to print flavors on a cup surface. Users simply add water, cutting shipping and storage costs. While BE has been assisting in ramping up production, they also work on accelerating product development. Further, they are exploring ways the printing technology can be used by other industries to reduce transportation challenges. BE has also assisted Smart Cup in adapting its production, while switching to producing hand sanitizer for local health care organizations [15].

Biobot selected BE to enhance its product capabilities and design for manufacturability. In 2019, BE enhanced Biobot product design and manufactured 12 prototypes. The Biobot product roadmap includes producing advanced prototypes and making additional enhancements for scalable manufacturing. Currently, Biobot is teaming up with researchers at MIT, Harvard, and Brigham Young Hospital, building on a previous Biobot prototype, to establish pro-bono wastewater analysis for community testing of sewer waters as part of tracing the spread of SARS-CoV-2, the virus causing Covid-19. The ability to adapt quickly while providing a valuable data will relieve the strain on the local community health organizations [15].

BE is also working with ReadyDock to provide engineering enhancements to the mobile disinfectant units product line that includes dual and multi-tray disinfection options for mobile devices, and a disinfection cabinet for PCs. The products are designed for use in high-traffic areas such as nurses' stations and Neonatal, Intensive Care Unit (NICU) wards. In addition to enhancing an existing product, ReadyDock selected BE to develop a smaller disinfection product,

the ReadyDock UNO for ergonomics and ease of use within a compact footprint [15].

3.6. Samtec, Inc

Samtec, Inc. responded to the Covid-19 epidemic on a global scale, with DT processes facilitating unique responses for individual sites. With a manufacturing presence in multiple countries, the challenge of protecting of team members while continuing to meet the supply chain needs of vital companies was met in unique protocols matched to the country and culture. Samtec's leadership structure, with all team members allowed free access to any member of the leadership team, including the company president, and the practice of nurturing local team members for management positions in each plant, supported transparent communications and the creation of appropriate protocols for each area. Organizational knowledge allowed sites to adapt appropriately while respecting unique cultures and requirements on a global scale. Adapting to the cancellation of trade shows and other marketing venues, Samtec increased their visibility via blogs and enhanced websites. The foresight to expand into the medical technology field earlier allowed Samtec to continue improving products, while emphasizing the vital medical field. The innovative design processes that are a part of Samtec' s normal functions allowed the company to respond to increased demands for product with agility while maintaining a high level of quality control and customer service [17].

3.7. Case Study Findings

The 3 companies in this study demonstrated communication and engagement strategies that enhanced the effectiveness of diverse teams. The companies oscillate between awareness focused diversity climate and a policy focused diversity climate, spending the most time in a diversity climate of engagement. According to Hajro *et al.* [5] awareness focused communication focuses on cooperative sharing while policy focused communication is more assertive and less cooperative sharing. An engagement diversity focused climate is the point that allows the most effective communication: "...; those climates that enable an oscillation between cooperative and assertive knowledge exchange result in more effective teams because they help develop healthy relationships, enable high task goal congruence and acceptance, and encourage shared effort and efficient completion of tasks." (p. 46) [5].

BE and Samtec take pride in providing tools for team success through the empowerment of teams. BE encourages interaction between teams through regular meetings, as well as cross-training on projects. Samtec's technical tools, allowing teams to collaborate virtually in real-time on engineering projects, promotes timely and truthful sharing across their global organization. All 3 companies encourage teams to interact and cooperate on all levels of the organization, with organizational knowledge shared in a feedback cycle. These tools and culture combine to form an effective communication and sharing of organizational knowledge, supporting creativity.

Individuals are encouraged to share in a collaborative fashion, while encouraging and enabling achievement, as discussed in Sloan [30]. Team members are supported in their individual career paths, supporting them in the search for a job that aligns with a passion [17]. The goal when hiring is to find 'right-fit' individuals, who match the culture of the organization. Both companies noted people who could not mesh with the organizational culture of exploration, risk taking, transparency, and embracing change would not be effective team members.

BE noted, "…the people here like moving and changing all the time…if you don't you won't survive" (p. 130) [17]. Likewise, Samtec noted, "Everyone is unique. Everyone is different…not everyone likes working in a flat organization, there's a lot of ambiguity" (p. 130) [17]. Dephy uses hack-a-thons to assess potential team members, observing potential employees collaborating under pressure [17]. All 3 companies stressed the need for developing a diverse workforce, able to collaborate.

Risk-taking was also noted as important in creating an environment that supports innovation. BE in particular noted the need for a system that mitigates risk, including Design Thinking, but noted that *fear* of failure limits creativity. With DT systems, BE and Samtec demonstrate the ability to produce prototypes, assess, and continue development based on the feedback loop. BE demonstrates multiple prototypes at each level of development. Samtec engages engineers on a global scale to work on prototypes from diverse views while also providing customers with an 'instant prototype' service, delivering a single prototype built to the customer's specifications. Samtec is also experimenting with online tools that allow customers to mockup a prototype for assessment, a step in their unique approach to [17]. These feedback loops allow continuous modification and exploration of innovative solutions. The cycle of immersion, IDEATION, and prototype is used to continually improve products and processes, building the organizational funnel of knowledge.

According to Taylor *et al.* [17] collective organizational knowledge and the methods used to communicate and innovate are the basis of the core values of an organization. Organizational knowledge

and individual knowledge are intangible assets to the organization. The ability of the organization to harness and communicate various knowledge funnels is necessary to continuously innovate and create new organizational knowledge funnels.

The ability of organizations to establish a safe organizational culture, where right-fit individuals collaborate without fear of taking a risk, has been a large part of their survival during the Covid-19 transition. Further, the effective collaboration of diverse teams is supported by a communication strategy that encourages the engagement diversity climate, with acceptance and effectiveness. Team effectiveness allowed organizations to manage the challenges created by the Covid-19 pandemic.

As supply chains contracted, Samtec managed their global presence, continuing to produce vital parts for medical and technological equipment. BE pivoted with clients to create a pathway to new products that are in demand. Dephy has adjusted to the new market, expanding their services with a variety of equipment marketed to research labs. All 3 companies are person-oriented, allowing them to assist their team members in coping with the Covid-19 crisis, allowing the companies to manage the crisis effectively.

4. Conclusion

This article brings to the fore efforts to alleviate Wicked Problems emerging in the time of the Covid-19 pandemic. The crisis offers new opportunities, for companies who can meet the challenge with innovative solutions, supported by diverse teams effective knowledge exchange processes. Business challenges include building goodwill by changing to the production of vital supplies like hand sanitizers or masks, and building a new technology infrastructure to meet the needs of the newly remote workers and students. Design Thinking is transformative, building organizational resiliency and competiveness. It also allows managers to balance relevance with consistency and open up new opportunities.

The introduction of effective knowledge exchange influences the effectiveness of diverse team, with effective teams allowing the application of Design Thinking to further the implementation of innovation, as knowledge and product creation shifts to topics relevant to the Covid-19 crisis. Companies will continue to struggle with balancing ways of the past against the changes forced upon worldwide communities.

The introduction of effective knowledge exchange influences the effectiveness of diverse teams. With effective teams, and the application of Design Thinking, the implementation of innovation is furthered. As knowledge and product creation shifts, topics relevant to the Covid-19 crisis are revealed. Companies will continue to struggle with balancing ways of the past against the changes forced upon worldwide communities.

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Appendix A. DeDoose results.

Company	Developing Diverse Workforce	Team Quality	Creative Leadership	Collaborative	Risk taking	DT	Person centered
Samtec	5	1	2	1	1	2	11
Dephy	3	2	3	2	5	4	2
Boston	5	7	7	4	7	6	10
TOTAL	13	10	12	7	13	12	23