Disaster Recovery Strategies in Historical Disaster Events

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Abstract

In this article there will be an analysis of two major natural disasters, Coronavirus disease 19 (COVID-19) and Hurricane Katrina, and how the victims, Higher education institutions and New Orleans, responded to the disaster. Both disasters will be briefly described following sections identifying the losses each victim faced, whether the victim was prepared, and how each victim responded to the respective disaster. In the conclusion there will be a brief discussion on what each victim could have done to further mitigate the impact of the respective disaster as well as what actions each victim took to prevent reoccurrence. An important takeaway in this article is the importance of not just the initial, short term response during a disaster event, but also the continuous, long-term response. Disaster recovery planning (DRP) can be abstract and is often overlooked in the executive planning process, but these two disasters should motivate stakeholders to develop and implement a disaster recovery plan (DR plan).

Literature Review

Planning for a disaster is difficult considering the colossal number of possible disaster categories to which each disaster may contain additional unique properties that require specific reactionary strategies. Moreover, the overall disaster response is a continuous process to which an estimated timeline may be difficult to calculate. However, an organization remains competitive based on its ability to adapt to its environment; therefore, for organizations to be successful there must be an ability to adapt to any given stimulus, including a disaster. In this article two main theories are utilized: the first is *Business Model Dynamics* – which provides a conceptual framework for how an organization's Business Model (BM) changes over time; the second theory addresses crisis management and evaluating its performance. The two disasters

discussed in this article utilize these theories and apply them to real-world examples to demonstrate practical implementations of the abstract frameworks.

COVID-19 on Higher Education

Coronavirus disease 19 (COVID-19) is still an ongoing global fight that has infected over 180 million people worldwide with nearly 4 million deaths reported (WHO, 2021). Because the pandemic has forced organizations to adapt to their new environment, higher educational institutions are integrating technology with the learning environment to provide students the ability to continue learning using various resources (Gandhi & Flowerns, 2021). As both a student and staff member of two different higher education institutions, I have experienced this development first-hand as both a consumer and service provider. Various tools such as Microsoft Teams, Zoom, and Google Classroom allow students to connect with professors and other students while learning management systems (LMS) such as Moodle and Brightspace (formally Desire2Learn) provide students with a classroom structure that allows for assignment submissions, examinations, discussions, and content delivery (p. 6, Moore et al., 2021).

While not initially prepared for such a devastating disaster, educational institutions adapted to the environment to provide various avenues of interaction for students (Peñarroya-Farell & Miralles, 2021). Despite the lack of preparedness by institutions to COVID-19, new technology like cloud computing have enabled institutions of all sizes to react in a fashion that maintains marketability (Firmansyah et al., 2021). The result of which highlights that while all organizations should be prepared for a disaster, advancing technologies have enabled affected firms to adapt and recover in an efficient, cost effective manner (Gandhi & Flowerns, 2021).

Hurricane Katrina

Hurricane Katrina was a natural disaster in which devastated the state of Louisiana with over 1,500 deaths (Frailing & Harper, 2015) and damages totaled around $200 billion dollars (Rao et al., 2021). While the initial impact was fatal, the long-term disaster recovery performed by the state provides an example of inadequate long term disaster recovery. There are arguments on both sides that are critical of the immediate government response; and while some argue that the initial response was a result of either incompetency or corruption (Voigt & Thornton, 2015), evidence shows that the initial response was adequate and competent (Penta, 2020). However, the long-term disaster recovery strategy performed by the state was either non-existent or incompetent because most displaced families were never able to move back home (Fussell, 2015). This result highlights the importance of a complete disaster recovery plan that addresses both immediate and long-term issues created by the event.

Discussion

Organizational Loss

Because COVID-19 is still ongoing and the overall losses on higher educational institutions have yet to be fully realized, it is hard to identify concrete losses inflicted upon institutions. However, it is possible to identify the potential losses an institution might face as well as expected losses resulting from the pandemic. Assuming a higher educational institution's main business functions are to enroll prospective students into the institution and to assist current students in successfully completing their enrolled program, there are several possible areas in which an organization might experience loss due to lack of preparation. First, to ensure an organization's success, it must evolve and adapt its business functions to effectively fulfill consumer demands (Peñarroya-Farell & Miralles, 2021). As of the time this article was written,

there are still many schools that have not yet returned to campus (Harris, 2020). Moreover, if the on-campus environment is restricted or eliminated, larger schools such as the University of Georgia that market campus-life lose a competitive edge in the market (Robertson & Institute for College Access and Success, 2020). Additionally, should schools continue to function in a remote environment, there is a question of whether similar tuition expenses are justified if the learning environment is purely online (Friga, 2021). These two examples highlight the potential losses should an organization lack a plan to safely get students back on-campus; additionally, there is also the potential loss of student population due to poor product delivery.

In higher education, the product in question is the educational resources provided to the student to assist in the completion of the enrolled program (Council for Higher Education Accreditation (CHEA) & International Quality Group (CIQG), 2019). This can be the educational material itself (books, lectures, labs, etc.) or the resources that aid in delivering the education material (LMS, computers, internet, email, etc.) (Gandhi & Flowerns, 2021). Should either of these elements not fulfill a student's needs, the result can lead to frustration, lower grades, and increased stress (Firmansyah et al., 2021); these issues with students are indicators that, if not resolved quickly, can lead to a decrease in student retention (Robertson & Institute for College Access and Success, 2020). Student retention is one performance metric that is critical in the accreditation process (Council for Higher Education Accreditation (CHEA) & International Quality Group (CIQG), 2019); therefore, stakeholders must ensure that all members of the organization are able to adapt to any changes in business processes to prevent these potential losses (Firmansyah et al., 2021). Like Hurricane Katrina, the effect of COVID-19 in higher education must be researched further to identify what losses higher education institutions faced.

There were many losses that occurred throughout the disaster recovery process of Hurricane Katrina. Moreover, those affected encountered different types of loss as well including loss of income (Dolfman et al., 2007), loss of residency (Fussell, 2015), loss of access to healthcare (Voigt & Thornton, 2015), and even loss of life (Voigt & Thornton, 2015). According to a study performed by Dolfman et al., "the loss in wages during the first 10 months following Katrina was approximately $2.9 billion, with 76 percent of it, or $2.2 billion, associated with the private sector" (2007). The study highlights that the three sectors that experienced the highest job losses with comparison to the percentage of their job bases were retail trade, accommodation and food services, and health care and social assistance with the number of jobs lost as 12,140 (62.8%), 21,133 (59.3%), and 14,330 (56.4%) respectively (Dolfman et al., 2007). Though these figures identify immediate losses, long-term recovery studies identify additional losses.

According to the U.S. Department of Homeland Security, about 72% of the houses in New Orleans were damaged from the hurricane with about 56% of those houses receiving severe/major damage (Fussell, 2015). Unfortunately, the initial damages were only the first stage of the impact Katrina had on housing. During the stages of disaster recovery, there were noticeable differences in the recovery process between homeowners and renters (Fussell, 2015). The disproportionate recovery process between homeowners and renters highlighted the trend that socioeconomically disadvantaged groups (racial minorities and low-income households) experienced longer wait times to return to housing than socioeconomically advantaged groups (non-Hispanic whites and older adults) (Fussell, 2015). Because of this, many lower income homeowners received longer wait times for disaster relief and often received less money than higher income homeowners (Fussell, 2015). Moreover, renters had trouble finding affordable housing upon return due to the damages inflicted on public housing (Fussell, 2015). This trend

(the disproportionate treatment against disadvantaged groups) is highlighted again when analyzing the effect Katrina had regarding access to health care.

While access to health care services in poor and uninsured populations were already limited before Katrina, the impact of Katrina on health care services limited this access even further (Fussell, 2015). As discussed in the previous paragraph there were more than 14,000 jobs lost in the health care and social assistance industry 10 months after Katrina (Dolfman et al., 2007). Additionally, many hospitals, such as Charity Hospital, had to shutter due to the severe infrastructure damage caused by the hurricane (Voigt & Thornton, 2015). These two resource restrictions increase the disparity of available health care services between socioeconomically disadvantaged groups and socioeconomically advantaged groups (Voigt & Thornton, 2015). It is evident that while the initial losses from Hurricane Katrina were devastating, there were additional losses that occurred throughout the entire recovery process.

Organizational Preparedness

Many higher education institutions in the United States as well as across the globe were ill prepared to respond immediately to COVID-19 (Moore et al., 2021). The pandemic prevented institutions from performing their critical business operations in the traditional environment of face-to-face interaction (Firmansyah et al., 2021); therefore, stakeholders were forced to innovate to remain competitive in the new market (Peñarroya-Farell & Miralles, 2021). These innovations sought to implement a full-fledged online learning environment for students that maintained the same academic structure as the traditional setting. Due to the abrupt switch to the instructional methodology with such a short notice, faculty were required to learn and use new information systems while also being responsible for content creation and content delivery (Firmansyah et al., 2021). This overwhelming responsibility on educators can hinder an instructor’s ability to

effectively teach his/her class which directly affects the students' ability (or inability) to effectively learn the subjects being taught (Firmansyah et al., 2021). The described scenario leads to student frustration and possible drops in academic performance; these results can affect the institution's retention rate leading to revenue loss and potential accreditation punishments (Robertson & Institute for College Access and Success, 2020; Council for Higher Education Accreditation (CHEA) & International Quality Group (CIQG), 2019).

Despite the assumptions that the devastating effects of Hurricane Katrina was a result of poor planning and failed government, an in-depth analysis provided by Boin et al. indicates that these assumptions are unfounded (2019). In early 2005, the newly appointed director of the Federal Emergency Management Agency (FEMA), Michael Brown, stated that "New Orleans was the number one disaster [FEMA] were talking about. We were obsessed with New Orleans because of the risk" (p. 59, Boin et al., 2019). This obsession resulted from a fictitious disaster scenario in which a Category 3 storm, Hurricane Pam, was used to assess the state of preparedness of New Orleans in the event of a disaster (p. 59, Boin et al., 2019). Because the disaster scenario predicted around 175,000 injured, 200,000 sick, and 60,000 killed, officials knew that changes had to be made to develop a more effective plan regarding hurricane preparedness (p. 61, Boin et al., 2019). Because the disaster scenario was performed in 2004, there was little time to develop and implement a plan that addressed all the lessons learned from the scenario, yet the scenario clearly played a major role in mitigating Katrina's impact. For this reason, the preparedness of federal, state, and local officials saved thousands of lives.

Organizational Response

Several response strategies in higher educational institutions have been identified to combat the effects of the COVID-19 pandemic. One response in small and medium-sized private

schools was an approach to decrease tuition costs and increasing discounts due to enrollment numbers declining (Friga, 2021). The Federal response to the pandemic, the Cares Act which passed in March 2021, has benefited federally funded schools with $14 billion dollars-half of which is for student aid (Friga, 2021). Unfortunately, some institutions had to cut costs quickly, leading to hiring freezes, furloughs, decreased benefits, and other employee perks (Friga, 2021). These short-term responses may increase available cash, but strategies such as the ones mentioned will not provide long-term financial sustainability. As a result, many institutions are scrambling to make changes to their Business Models (BM) to remain competitive (Peñarroya-Farell & Miralles, 2021).

Several institutions have already developed programs that utilize modern technology to engage students in an effective learning environment. One example is Georgia Tech's online graduate program for Computer Science (Robertson & Institute for College Access and Success, 2020). With the lower tuition costs and remote learning, a new consumer market has been identified including out-of-state students, students employed with full-time jobs, parents looking to advance their education, etc. (Robertson & Institute for College Access and Success, 2020). Georgia Tech is an example of an organization that successfully implemented Business Model Innovation to capitalize on a business opportunity by engaging in an untapped consumer market (Peñarroya-Farell & Miralles, 2021). Despite some institutional success, there are still major concerns regarding the efficacy of online learning in the entire sector (Robertson & Institute for College Access and Success, 2020). Therefore, the swift response in organizations going remote and continuing learning online must be identified as a success, but online learning must be vigorously researched to ensure effective instructional methods are being utilized before shifting

to any permanent remote learning structure (Robertson & Institute for College Access and Success, 2020.

As indicated earlier, the immediate response from federal, state, and local officials in the time right before Hurricane Katrina made landfall saved lives (Boin et al., 2019). One of the important successes during the pre-landfall response was the evacuation of New Orleans residents (Boin et al., 2019). The governor at the time, Kathleen Blanco, "estimated that 1.2 million people, 92% of the affected population, left the area prior to landfall" (p.43, Boin et al., 2019). This was done by a contraflow plan, a plan that reversed the flow of traffic on the highway to reduce traffic, that was developed after Hurricane Georges (1998) caused standstill traffic during evacuation (pp. 43-44, Boin et al., 2019). This in combination of the herculean effort performed by various groups that performed search and rescue along with medical assistance greatly reduced the casualty toll (Boin et al., 2019). Despite these enormous successes performed in the immediate aftermath of Katrina, the lack of long-term disaster recovery strategies inhibited the rebuilding stages of New Orleans leading to long-term economic troubles of New Orleans residents (Dolfman et al., 2007). Additional factors including corrupt public officials laundering relief funds, corrupt law-enforcement officials involved in drug-trafficking schemes, and slow government relief provided to New Orleans residents all contributed the lack of economic recovery after Hurricane Katrina (Voigt & Thornton, 2015).

Conclusion

Hurricane Katrina was a historical success in terms of initial, short term response; however, the lack of a long-term plan resulted in New Orleans residents experiencing Katrina's effects years later. Because there were already reports on how ill-prepared New Orleans was for a hurricane as early as 2000 (Boin et al., 2019), FEMA and other public officials should have

already created disaster scenarios to further strengthen New Orleans's response plan. Moreover, the contrasting communication delivered to the public by news outlets, public officials, and word of mouth not only hindered evacuation strategies, but also prevented residents from being admitted to other states based due to the sensationalized reports of crime in New Orleans during Katrina (Boin et al., 2019). Therefore, to further mitigate the impact Katrina had on residents, a unified communication strategy would provide the public with a constant message that was delivered on all available mediums. This would have reduced residents' confusion about critical information like evacuation plans, and it would further inform other states of the ongoing process to prevent the spread of sensationalized news.

COVID-19 highlighted that while some higher educational institutions were prepared for the pandemic, many lacked the planning to handle such a response; therefore, those institutions that were ill-prepared are currently having to adjust on the fly (Harris, 2020). As a result, any errors in the initial response may further harm the institution; thus, leading to lower academic performance as well as lower student retention which can lead to loss of federal funding and even loss of accreditation from accreditation bodies (Firmansyah et al., 2021; Robertson & Institute for College Access and Success, 2020; Council for Higher Education Accreditation (CHEA) & International Quality Group (CIQG), 2019). For this reason, institutional leadership should have already developed a strategy to integrate modern technology into the BM. To prevent a similar scenario, many institutions have had executive meetings to identify and create a response plan to incorporate online-learning to continue operations during a disaster event (Friga, 2021; Robertson & Institute for College Access and Success, 2020).

It is evident that being prepared for a disaster can prove to be a competitive advantage in some scenarios, but it can also be the difference between life and death in others. Moreover,

when disaster recovery planning, an organization must identify not just the short-term response strategies, but also the long-term response strategies that focus on returning to normal business operations. Both events described in this article are disasters of extreme scale, but it provides real world examples why an organization should work to create and implement a disaster recovery plan (DRP).

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