Mitigating The Risk of Losing Critical Knowledge in Businesses/Organizations: Lessons from COVID-19

Murray E. Jennex
West Texas A&M University

This is a short paper submission

Businesses and organizations have critical knowledge that they use to guide operations and decision making. This critical knowledge is created, used, and shared by individuals in the business/organization so that they can use it in the performance of their jobs. Retention of this knowledge is critical to the business/organization who use knowledge management, KM, and knowledge systems as repositories for this critical knowledge. Unfortunately, not all critical knowledge is kept in computer or paper repositories. KM and knowledge systems also use the memories of people in the business/organization as a repository. These personal memory repositories work well as long as the person does not leave the business/organization. However, no stays in a business/organization forever and unless an attempt is made to capture this knowledge, it is lost when the person walks out the door. My previous research identified a model for predicting when someone was likely to leave the organization and strategies for capturing that knowledge (Jennex, 2014). This model was based on scenarios such as the examples presented below.

In October of 2021 NASA debuted its new rocket to replace the space shuttle and go back to the moon. Talk about going back to the moon began in the mid 1990s. Why couldn't we go back to the moon in the mid 1990s and why did it take so long to develop a vehicle to do it? The reason is simple, we forgot how to build Saturn 5 rockets, moon landers, and Apollo space craft. I learned all this when my eldest son and I visited the International Space Hall of Fame and Museum in Alamogordo, New Mexico. While there we talked to a retiree from the space program. During this conversation he made the comment that it was too bad we couldn't get back to the moon. I of course agreed and expressed the desire for our government to allocate funds for it. He surprised me by saying it wasn't money that was the issue. What really prevents us from getting back to the moon is that we don't remember how to build Saturn V rockets, Apollo capsules, and Lunar Modules. At the end of the Apollo program management ordered all the plans put on microfiche and all but two of the paper copies destroyed. However, when there was talk of going back to the moon and engineers went to retrieve the plans, the microfiche had decayed into unusable form, the two paper copies had been water damaged and were no longer readable, and everyone who knew how to build the rockets, capsules, and modules were either dead or retired. Additionally, when the younger engineers began to reverse engineer these components they were stymied because they didn't understand the technology from that time (the Apollo program used 1950s technology), technology had advanced so much that the engineers hadn't been taught the same fundamentals (Jennex, 2006). Ultimately, NASA could not easily or quickly build a rocket to the moon and it has taken till now for that to occur.

We forgot how to get to the moon due to the retirement and loss of experienced people to the organization and to technology changing. These two issues affect many industries including the

Information Technology industry where Moore's law has had technology changing generations every 18 months making technology obsolete in a few years and causing the knowledge being taught to change almost yearly. Already younger generations do not understand how to control computers using DOS commands and documents we created a few years ago in older formats we can't open (Jennex, 2013).

The same is happening in the commercial nuclear industry. Current nuclear plants were designed and built by engineers who are now retiring or dead (Kosilov et al., 2006). This is a wealth of operational and design knowledge on using analog control and instrument systems, older material specifications, and older corrosion control systems that is no longer being taught to new engineers. Newer approaches rely on digital controls and displays, and newer materials with different corrosion control needs. Additionally, we have computerized processes that used to require manual calculations. As a young nuclear propulsion officer in the United States Navy I was taught to manually do these calculations. Now, new students briefly go over them but then rely on the computer to do the calculations. This progress is good and is resulting in safer nuclear power plants, but I wonder what could happen if terrorists were able to successfully attack these new digital systems requiring operators to return to the old manual processes and analog systems. Would our operators know how it used to be done? Would we have the requisite knowledge and data to do it the old way? I wonder if this had an impact during the Fukushima nuclear disaster in 2011.

We are now living in one of the most turbulent times in our country's history due to the COVID-19 pandemic. To combat COVID-19 the United States and much of Europe, Australia, and Asia shut down most of their business centers. New processes and technologies were quickly implemented to facilitate communication and create remote methods for conducting work and everyday life. Businesses and organizations used hastily created and implemented business processes using tools such as Zoom and Teams to keep workers engaged from their homes in conducting business and organization operations. Workers used social media platforms such as Facebook, Instagram, and TikTok, to maintain their social relationships while forgoing in person interactions.

An important impact of the shutdown was the loss and/or transience of employees. Many businesses/organizations had to lay off employees when they couldn't continue operations. Then, when these businesses/organizations tried to comeback, they couldn't get their old workers back and they lost even more of their current employees. Finally, from April 2021 through the rest of 2021 we had the "Great Resignation" with over nineteen million workers leaving their jobs. This has two effects, the first is the loss of knowledge from departed employees. The second is that knowledge sharing among remaining employees is constrained by remote communications.

During the lockdowns, organizations and businesses managed making knowledge available to their employees the best they could. Some used knowledge and KM systems to manage the storage, retrieval, and application of business/organizational knowledge that had to be remotely accessed by employees. Others used informal communications between remote working workers. However, one observation is that most every business/organization lost critical knowledge and many are not performing any where near where they were performing.

My previously mentioned predictor model (Jennex, 2014) for identifying holders of critical knowledge who are likely to leave the business/organization did not predict the knowledge losses seen in COVID-19. Additionally, the knowledge capture strategies I proposed also would not have been totally successful. There are three lessons to be learned from the last couple of years that are summarized below.

The first major lesson learned is that how work is performed has fundamentally changed. Remote workers proved they could do their jobs well without having to be in the office and without being micromanaged. Some workers miss the social aspects of the office and may want to go back to the office, perhaps on a part time basis, but I anticipate that many will want to continue, if not totally remote, then in some kind of hybrid model of remote and office work. This applies to education also. While teachers see the need for getting kids into the classroom; professors have found that for many adult learners the remote classroom is fine. So how has work and education changed? Businesses/organizations need to redesign work to fit a model that allows for remote work and learning, the 9-5 day is over, workers need work designed to allow them to work the time schedule needed for balancing family and work. Flexible schedules have been discussed for years, now we know they work on a large scale. Also, work needs to be designed to be measured by production and not by the 40-hour work week (Luze, 2021; Singh, 2022; Weinberg, 2021).

The second major lesson learned is that businesses/organizations need to capture and make available critical knowledge. Knowledge can no longer be left in the heads of workers; knowledge needs to be captured in repositories that can be accessed by who need the knowledge. To do this businesses/organizations need to create a knowledge strategy that identifies what critical knowledge is needed, where it is located, how it can be captured, and how it can be shared. Appointing a Chief Knowledge Officer to bring attention and governance to critical knowledge is a good first step. Next will require creating a knowledge architecture consisting of networked repositories, a data/information/knowledge structure, an interface with good search functions, the processes for curating the captured knowledge, and the security needed for protecting the repositories and network (Jennex and Durcikova, 2013). I have learned how to modify my model. Considerations on work and engagement need to be included in rating the likelihood of employees leaving. Knowledge capture strategies need to add the new technologies that enabled remote work. However, the model will always be subject to new and unexpected issue. Still, I believe businesses/organizations can use knowledge loss risk predictor models to guide knowledge retention strategies and I think they will be successful in helping businesses/organizations be successful in identifying and capturing critical knowledge.

Another key lesson learned is that businesses/organizations and even schools/universities, need to be inclusive and above all, value those that do the work. Many workers were over-stressed during COVID-19 and felt underappreciated leading to under engagement. Businesses/Organizations (including universities) need to improve communication and appreciation with remote workers (and students). Keeping the business/organization operating is important but doing so without engaging your workers (and students) will hurt in the long term (Luze, 2021; Singh, 2022, Weinberg, 2021).

In conclusion, businesses/organizations will lose critical knowledge with the loss of employees, regardless if the employee loss is a traditional loss as discussed in my early examples, or if an extreme loss as illustrated by COVID-19. Massingham (2008) found that knowledge loss from losing an employee has three impacts: Loss of contribution to the organizational memory, Loss of relational knowledge with the internal and external social network (fellow employees and customers), and Loss of work performance resulting in decreased organizational productivity (there is a decrease in the organization's ability to perform the tasks it performed before the employee left). Using a critical knowledge retention strategy will mitigate the loss of knowledge and if done well, will ensure that the most critical knowledge is not lost. However, Parise, et al. (2006) found that at that time, only half of the surveyed organizations had identified a list of critical skills needed for future growth and more than one-quarter viewed defining critical skills as unimportant. Additionally, they found that the key problem with many retention approaches is that they capture only a small fragment of what made an individual successful and knowledgeable. History shows that the risk of losing critical knowledge is great especially if businesses/organizations rely on storing critical knowledge in the heads of employees.

This presentation will overview the Jennex (2014) process for identifying personnel likely to leave and actions that can be taken to capture their critical knowledge. It will then present changes to this model due to observations from COVID-19.

References

Jennex, M.E., (2006). Why We Can't Return to the Moon: The Need for Knowledge Management. International Journal of Knowledge Management, 2(1), pp. i-iv.

Jennex, M.E., (2013). "Knowledge Management: The Risk of Forgetting." iKNOW, the magazine for Knowledge Workers, 3(1), pp. 4-7.

Jennex, M.E., (2014). "A Proposed Method for Assessing Knowledge Loss Risk with Departing Personnel" VINE: The Journal of Information and Knowledge Management Systems, 44(2), pp. 185-209.

Jennex, M.E. and Durcikova, A. (2013). Assessing Knowledge Loss Risk. 46th Hawaii International Conference on System Sciences, HICSS46, IEEE Computer Society.

Kosilov, A., Mazour, T., and Yanev, Y., (2006). Risk Management of Knowledge Loss in Nuclear Industry Organizations. International Atomic Energy Agency.

Luze, S., (2021). What Employers can Learn from 'The Great Resignation.' Forbes, October 22, 2021. Retrieve on February 22, 2022 from https://www.forbes.com/sites/ellevate/2021/10/22/what-employers-can-learn-from-the-great-resignation/?sh=26a02c9d7826

Massingham, P., (2008). Measuring the Impact of Knowledge Loss: More Than Ripples on a Pond? Management Learning, 39(5), pp. 541–560

Parise, S., Cross, R., and Davenport, T.H., (2006). Strategies for Preventing a Knowledge-Loss Crisis. Sloan Management Review, 47(4), pp. 31-38.

Singh, V., (2022). Lessons We Have Learned from the Great Resignation. Getting People Right, February 16, 2022. Retrieved on February22, 2022, from https://gettingpeopleright.com/career/lessons-we-have-learned-from-the-great-resignation/

Weinberg, A., (2021). Three Lessons for Thriving During the Great Resignation. Forbes, December 21, retrieved on February 22, 2022 from

https://www.forbes.com/sites/andrewweinberg/2021/12/20/three-lessons-for-thriving-during-the-great-resignation/?sh=3c6994f919e4