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ACTUARIAL RELEVANCE THROUGH INNOVATION

BY ALBERT MOORE

I OFTEN USE A PARTICULAR UNNAMED COMPANY as an object lesson for the need to accurately assess opportunities and threats. A leader in its industry, in 1988, it employed more than 145,000. In 2012, less than 14,000 were employed. That company failed to take seriously an emerging technology: cell phones. I do not think that company anticipated how cell phones could impact their “unrelated” business. Actuaries must not fall into the same trap.

There are opportunities and threats facing our profession, and the opportunities far exceed the threats. Every year, an actuarial career is ranked as one of the top professions. Actuaries must embrace and foster innovation to meet the growing need for professionals with our unique skills and expertise.

Innovation is needed to answer the following questions facing the actuarial profession:

- What additional disciplines, industries and markets can benefit from actuarial skills and expertise?

- Which additional skills and knowledge must we develop within our members?
- What are the emerging challenges or problems for which we can apply our technical, analytical and management understanding?
- Are there new approaches that actuaries can employ to solve current and future challenges?
- Which products, processes and services are needed to meet current and emerging market needs?
- Are there additional applications of actuarial risk classification?

We must expand our understanding and application of innovative thought processes to answer these questions and take advantage of the opportunities for increased relevance.

There are many schools of thought surrounding the topic of innovation. “Disruptive innovation” is one school of thought that can assist us to embrace our role as innovators and aid in identifying emerging opportunities for our profession.

Disruptive innovation is a phrase coined by Clayton Christensen, the Kim B. Clark professor of business administration at the Harvard Business School. He defines disruptive innovation as a process or innovation that fosters new products or markets that disrupt or overturn the traditional business practices, methods or models and that “takes root initially in simple applications at the bottom of a market and then relentlessly moves up market, eventually displacing established competitors.”¹

Christensen takes great pains to narrow disruptive innovation to include ideas or concepts that are not breakthrough or sustaining innovations (improvements to already functioning processes). Disruptive ideas are often not refined, may have limited applicability, have no apparent market and may take many years before growth in market share threatens the status quo. For these reasons, the disruptive innovators require discipline, patience and great (albeit relentless) vision.

Christensen gives several examples that will aid in our understanding of disruptive innovation.



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- Cell phones did not make an initial splash but today there are a growing number of households that no longer have land lines. “The number of households with cell phones increased from 36 percent to 71 percent between 1998 and 2005, according to new data released by the U.S. Census Bureau. This corresponded with a decrease in households with telephone landlines, particularly households headed by young adults.”²
- Personal computers slowly became a fixture on every desk.
- Discount retailers threatened the stand-alone department stores, and both are being threatened by online shopping.

I can think of several examples of disruptive innovation that have impacted actuaries.

The first example that comes to mind is the introduction of the Chartered Enterprise Risk Analyst (CERA) designation to meet the growing need for enterprise risk management (ERM). The CERA designation did not have an immediate demand. However, after the fall of Enron, the introduction of Sarbanes-Oxley Act of 2002 and other regulatory measures, various professions sought to claim the expertise in ERM.

In November 2005, the Society of Actuaries board took measures to position members to explore ERM opportunities and differentiate the CERA designation from “traditional” designations. The CERA name was formally approved in 2007. Those

involved foresaw that the CERA designation could extend actuarial risk expertise to banking and the broader financial industry.

The second example of a disruptive innovation is the application of predictive analytics to actuarial and industry problems. Slowly, actuaries are using predictive techniques in creative ways. At the 2014 Life & Annuity Symposium, there were sessions highlighting several uses of predictive models:

- Creation of a mortality score based upon the credit database

This helps me to rationalize why the universal life plan, invented in 1962, took so long to be adopted.

- Generation of client profiles to create quality sales leads and matching to advisers
- Application of models for underwriting decisions and savings
- Utilization of models in the assumption review process
- Refinement of experience studies
- Detection of fraud and suspicious transactions.

The final example that I will provide of the innovative process is a historical object lesson in the concepts and promise of disruptive innovation. The introduction of universal life insurance provides a hindsight view of the innovative process at work—the collaborative nature of ultimate adoption, the resistance from the status quo and the ultimate vindication of the visionary.

In 1962, George R. Dinney, FCIA, and an actuary at the Great-West Life Assurance Co., defined his universal life plan.

The concept was far ahead of the thinking of his day. In 1971, Dinney addressed the Canadian Institute of Actuaries and once again made the case for his universal life plan and outlined the growing challenges facing the insurance industry. By the 1980s, universal life products began to gain traction. In 1982, Dinney demonstrated his innovation further by appealing to actuaries to adopt

the underlying concepts rather than just the mechanism of the universal plan. By 1985, universal life sales had threatened the viability of traditional products.

Disruptive ideas require vision but also time:

This helps me to rationalize why the universal life plan, invented in 1962, took so long to be adopted. Adoption had to await a new generation of flat-earth people, within the life insurance business, who perceived the technology to be an answer to a difficult environmental condition, specifically inflation.³

Christensen advances one school of thought of how to promote innovation that

resonates with me. He and his co-authors hypothesize there are techniques that advance innovative thinking.⁴ They present five essential methods:

- Associating
- Questioning
- Observing
- Networking
- Experimenting.

Associative thinking would require actuaries to think deeply as to how our skills can be applied to nontraditional disciplines. We should consider how other industries are solving or approaching problems that could have applicability to our work.

As an example, much of the ground in predictive analytics has been broken in the property casualty world. By associating how other industries employ predictive techniques to various problems, similar approaches can be adapted in life and health insurance.

The technique of questioning should be natural for actuaries. Ask a question in a room of actuaries and you are almost guaranteed that even after all have gone separate ways, many will be pondering the query.

Some questions are solved by pure superior brain power and genius. But I would surmise that many challenges are solved by observation, testing and putting pieces together. I do not understand why the insurance industry underutilizes focus groups and surveying of clients.

With the technology of the day, collaboration and networking to share ideas, and posing and answering questions

should accelerate innovation within our industry.

Finally, actuaries need to understand the concept of experimentation. I get the sense that most actuaries undervalue the lessons learned by exploration.

Experimentation can be a challenge for very smart people. Experimentation requires the willingness to make mistakes, to look and sound foolish, and to invest time in endeavors that may pay zero tangible return. Experimentation requires someone who understands the value of gaining insight. Another impediment to actuarial experimentation is, in most situations, our mistakes have tangible monetary implications!

In summary, I encourage actuaries to begin to think innovatively in all that we do. Recognize that some of the best ideas and successes require a relentless vision of the possibilities of a proposed solution. Developing simple concepts, slowly introduced, often leads to innovations that have the potential to disrupt the conventional wisdom. Our profession can continue to expand and meet the public needs by fostering an environment where the techniques of innovation are developed throughout our profession. **A**

Actuarial Research Clearing House (ARCH), vol. 1982.1 (1982): 215–80.

⁴ Jeff Dyer, Hal Gregersen and Clayton M. Christensen, *The Innovator's DNA: Mastering the Five Skills of Disruptive Innovators* (Boston: Harvard Business Press, 2011).

Albert J. Moore, ASA, MAAA, is second vice president, Actuarial Systems at Ohio National Financial Services in Cincinnati, Ohio. He can be reached at albert_moore@ohionational.com.

END NOTES

¹ "Disruptive Innovation," Clayton Christensen's website, accessed Dec. 12, 2014, www.claytonchristensen.com/key-concepts/#sthash.nYS1qJye.dpuf.

² U.S. Census Bureau, "Homes with Cell Phones Nearly Double in First Half of Decade," news release, Nov. 19, 2009, www.census.gov/newsroom/releases/archives/income_wealth/cb09-174.html.

³ George R. Dinney, "Life Insurance as a Game,"