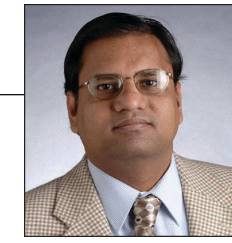
Editorial



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TAPPI Journal Editorial Board

The next phase of research in academia and industry

The pulp, paper, and textile sectors have contributed to lifestyle improvements for people with the development and commercialization of products like toilet tissue, facial wipes, diapers, and feminine hygiene products, to name a few. Research and development (R&D) efforts in these sectors are critical now more than ever due to the need for healthcare and lifesaving products, as became evident with the COVID-19 pandemic. Additionally, the need to meet net-zero carbon goals and the necessity to revive manufacturing in developed economies clearly emphasize the requirement to examine the R&D landscape. Academia, industry, and governments have respective roles to play in this field.

"21st century universities must be entrepreneurial," is the opening statement of a booklet titled, "INNOVATE," published by Texas Tech University's Office of Research Commercialization. While the basic mission for higher education institutes is education, they are rightly emphasizing the need to engage in more research and creative activities. Education is closely aligned with knowledge creation, and incorporating new information in curricula not only helps to move a field forward, but it enables students to get involved in research and be informed of cutting-edge developments in their field of interest.

Research and development efforts have direct benefits to the economy. This is evident from Silicon Valley and Boston in the United States to Bengaluru in India, where R&D has positive economic effects for society. Such R&D efforts translate into growth opportunities in all sectors, such as education, high tech, healthcare, transportation, and infrastructure.

Research landscape

The research landscape can be divided into four phases: 1) basic, 2) applied, 3) translational, and 4) entrepreneurial. During the early-to-mid part of the 20th century, internationally recognized universities started focusing on research to satisfy intellectual curiosity and to obtain greater knowledge on specific subjects, which is commonly referred to as basic research. The need to find practical solutions to problems and to develop products for national defense and healthcare resulted in the applied phase of research. Such activities were early on fueled by government spending from the United States Department of Defense and other agencies. In the textiles arena, such support resulted in the development of meltblown nonwoven technology, which played an important role in saving lives. Meltblown and wetlaid fibrous substrates have become important components of face masks and personal protective equipment.

Translational and entrepreneurial culture

The electronics industry has been the forerunner in entrepreneurial culture with the emergence of companies such as Hewlett Packard in the San Francisco Bay area. Since the 1990s when the IT revolution began, research efforts in universities went into high gear to transform results from the laboratory to reality — the translational phase of the research landscape.

Patents were gaining recognition as contributions towards tenure and promotion wherever applicable. Such recognition has become an important incentive for researchers to dedicate their research efforts towards commercialization. Commercialization activities at universities provide financial benefits to all parties involved. Academics receive a portion of royalty returns from commercialization based on established policies at universities.

Leading universities in the field of pulp and paper science, nonwovens, and textiles have been active in translational activities that have been recognized in the form of fellowships and senior memberships in the National Academy of Inventors, creation of startups, awards, and more. For example, nonwoven decontamination wipe technology, "FiberTect," became one of the first set of inventions to be commercialized at Texas Tech University.

The fourth phase of R&D is entrepreneurial culture, which has a direct impact on the economy, as it helps with

job growth and creation. Pulp, paper, and advanced textiles sectors are well placed in this landscape, as they are ideal providers of raw materials for converters, small- and medium-scale enterprises, and startups.

Large-scale industries in these sectors can engage with subject matter experts (SMEs), academia, and research laboratories to undertake research in a cost-effective way to develop products that are needed by consumers. Such strategic partnerships in R&D can reduce the cost and time taken to develop consumer-oriented products at acceptable prices.

Industry and academia should recognize all forms of new knowledge creation, which should not be limited to publications and the patents. A 360-degree approach should be considered in the R&D landscape, involving ideation, translation, dissemination, commercialization, and marketing.

Professional associations like the Technical Association of the Pulp and Paper Industry (TAPPI), American Association of Textile Chemists and Colorists (AATCC), Textile Association (India), and others all have a role to play in boosting research and commercialization of research in their fields. Additionally, trade associations such as INDA and Advanced Textiles Association (ATA) should lend support by engaging with stakeholders such as policymakers, industry, and academia to craft policies that will boost R&D expenditures and support the growth of their industry.

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