

Analysis of the Technological Maturity Level of Industrial Engineering Students

Daniela del Carmen Bacre-Guzmán, María de los Ángeles Martínez-Mercado, Azucena Minerva García-León and Nury Margarita Leal-Rendón

Professor

School of Chemical Science

Universidad Autónoma de Nuevo León

San Nicolás de los Garza, Nuevo León, México

carmen.bacregzm@uanl.edu.mx, mariadla.martinezmrc@uanl.edu.mx,

azucena.garcialn@uanl.edu.mx, nury.lealrnd@uanl.edu.mx

Abstract

The recent health crisis had various effects on society in general, with education being the sector where there were severe transformations in the teaching-learning method. The degree/level of technological maturity of the students of the Bachelor of Industrial Engineering Administration of the Autonomous University of Nuevo León was studied. A survey was built with 15 items, where they were questioned about their degree of familiarity and specialization in the use of electronic devices, tools, and digital applications. The results obtained showed that 46% of the students used the cell phone for 5 hours or more and another 46% for 3 to 4 hours. While for educational or work purposes, 70% used it between 1 and 3 hours and 25% used it for more than 3 hours. Regarding knowledge about digital tools, 44% were considered at an intermediate level and 33% at an advanced intermediate level. At the beginning of the pandemic, 70% of the students found it difficult to adapt to the new digital tools, despite the fact that 90% had the necessary equipment and means to use them. 47% of those surveyed had between 3 to 4 electronic devices at their disposal, while 39% had 1 to 2 devices. Therefore, 51% of the students considered themselves at an intermediate level of technological maturity, while 32% at an advanced intermediate level and only 14% at an advanced level. Finally, the level of technological maturity related to the adoption and use of new technologies, students are classified as techno-optimists.

Keywords

Technological maturity, Techno-optimist, Digital technologies.

Biographies

Daniela Bacre-Guzmán is a full-time Professor and Head of the Academic Department of the Metrology Laboratory in the Department of Industrial Engineering and Management the Universidad Autónoma de Nuevo León, San Nicolas de los Garza, Nuevo León, México. She is an Industrial Engineer from the Instituto Tecnológico de Ciudad Madero, Mexico. She earned a Master's Degree in Manufacturing Systems from the Instituto Tecnológico y de Estudios Superiores de Monterrey, México. She is currently a doctoral student in the Strategic Management program at the Warden Institute, Mexico. She has published journal and conference papers. Quality and productivity of the human factor in the fourth industrial revolution and Training of skills in Industrial Engineering 4.0.

María de los Ángeles Martínez-Mercado works a full-time Professor and Leader of the Academic Body UANL-420 Operational Excellence 4.0 in the Department of Industrial Engineering and Management and as Head of Educational Innovation at Chemical Science College at the Universidad Autónoma de Nuevo León, Mexico. She is an Industrial Engineering with minor in Management at Universidad Autónoma de Nuevo León, Mexico. She obtained a Master's Degree in Industrial Engineering with an emphasis in Manufacturing at Universidad Autónoma de Nuevo León, Mexico and a Ph.D. in Educational Sciences at Universidad Autónoma de Coahuila, Mexico. She has published articles in magazines and conferences about: Quality and productivity of the human factor in the fourth industrial revolution, Efficiency of machinery, equipment and processes lean 4.0 and Training of skills in Industrial Engineering 4.0. She has participated as Coordinator of the Work Study Academy. She participated as Co-Responsible for 20

School-Company Linkage Projects. She worked for 18 years in various companies in the Private Industry as an Industrial Engineer and Industrial and Commercial Sales Administrator.

Azucena Minerva García-León is a full-time Professor at the School of Chemical Sciences of the *Universidad Autónoma de Nuevo León* (UANL). She is a member of the undergraduate and graduate in Industrial Engineering, teaching advanced courses on statistical process control, probability, statistics and experimental design, six sigma, total quality management. She holds a Ph.D. degree in Applied Economic from the *Université Grenoble Alpes*. She earned a M.S. degree in Industrial Engineering from *Grenoble INP Génie Industriel*. She received her M.S. and B.S. degrees in Industrial Engineering from the *Universidad de la Américas-Puebla*. She chaired the program of Master of Industrial Engineering at UANL. She has published journal and conference papers. She has participated as speaker in several conferences in Mexico, USA and France. She provides instruction to industrial sector on Lean Sigma for certifications in Green Belt and Black Belt. She has been working as researcher in the field of risk analysis, lean manufacturing, six sigma, analysis and experimental design, production processes reliability and optimization.

Nury Margarita Leal-Rendón is a Full-Time Professor and is also Head of the Department of Human Resources, at the School of Chemical Sciences of the *Universidad Autónoma de Nuevo León* (UANL), San Nicolás de los Garza, Nuevo León, Mexico. He is a Systems Administrator Engineer from UANL, Mexico. He obtained a Master of Science in Administration with a specialty in Labor Relations from UANL, Mexico. He is currently a doctoral student in the Strategic Management program at the Warden Institute, Mexico. He has more than 20 years of work experience in the Human Resources area and 18 years in university teaching, he participates as a member of the academic body, collaborating in different publications and conferences on quality and productivity of the human factor in the fourth industrial revolution and training of skills in Industrial Engineering 4.0.