Empirically-Based Recommendations for Competence Profiles for Industrial Engineering and Management Students in Austria: Theoretical Framework and Preliminary Empirical Findings

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Abstract

A multitude of European strategic development papers and policies highlight the importance of equipping people with 21st-century skills (e.g., the paper "Towards a sustainable Europe by 2030", the European Pillar of Social Rights Action Plan, the industrial strategy for Europe and the small and medium enterprise (SME) strategy, the Commission Recommendation on Effective Active Support to Employment (EASE), and the European Education Area). The main goal is to enhance skills and competences mainly in the areas of circular economy and digitalization. Therefore, to foster further economic development and competitiveness in Austria, adaptations in higher education towards green and digital transition are needed. Furthermore, given the important role that industrial engineering and management (IEM) graduates play in the economic, societal, and environmental development of society, through innovations and technology applications, a special focus should be placed on the up-to-date education of IEM students. In this paper, the requirements for future IEM graduates were surveyed within the framework of the Austrian IEM study. The job profile study is conducted by the Austrian Association of Industrial Engineering and Management (WING) every four years to identify trends and developments in the IEM discipline. Thus, a transparent insight into the educational content and training opportunities and the possible occupational fields and functions should be ensured. The results can be used as a starting point for potential professionalization efforts. For the methodological approach in this study, both secondary data research and primary data from a questionnaire survey were combined to be able to incorporate literature-based findings and empirically collected data into a future competence profile. As part of the secondary data analysis, all Austrian higher education

institutions – universities and universities of applied science - were surveyed with a special emphasis on the specific content of the current IEM studies, including parameters like structure, process, focus, etc. The survey used online questionnaires by focusing on the respective target groups of students, alumni, and personnel managers in companies. Furthermore, the authors analysed the required knowledge, skills, and competences of IEMs in operations management (OM) for the main application areas of purchasing, production, and sales. Based on theoretical and empirical analyses, this paper provides preliminary empirical-based recommendations for competence profiles for Industrial Engineering and Management students in Austria.

Keywords
Higher Education Landscape, Competence Profile, Industrial Engineering and Management, Study Programmes, Engineering Education.

Biographies

Amila Omazicis a research and teaching assistant at the Institute of Business Economics and Industrial Sociology at Graz University of Technology (TU Graz). Before starting her academic career, she studied business economics at the University of Graz. Ms. Omazic teaches several bachelor and master courses in business economics for industrial engineering and management (IEM) students at TU Graz, e. g. accounting and balancing, financial management, business economics, business and financial statement analysis. Additionally, she has been teaching investment analysis at the Institute for Economic Promotion of the Austrian Economic Chambers. Additionally, she is supporting the European Professors of Industrial Engineering and Management(EPIEM) network, concerning organizing of the scientific events and proceedings. She is doing her Ph.D. in the field of sustainability management at higher education institutions at TU Graz, focusing on development and implementation of sustainability strategy, sustainability education, fostering the development of sustainability competence, sustainability assessment and reporting. She was also involved in the internal project at TU Graz concerning the development and implementation of the sustainability strategy and is actively involved in the sustainability reporting of the TU Graz, since 2019. Furthermore, she acted as alternate member of the sustainability board of TU Graz and a member of a Working Group Sustainability Strategy in the Alliance of Sustainable Universities in Austria. As a part of an in-house training programme for teaching "The Teaching Academy" at the TU Graz Ms. Omazic is finishing the Teaching Expert Module.

Corina Pacheris an Education Project Manager at the Life Long Learning Department at Graz University of Technology. She is mainly responsible for the project management of European projects, support in the development and expansion of CVET offers, and development of didactic concepts. She studied pedagogical and educational science at the University of Klagenfurt (Austria) with a specialization on social and inclusive education (master's degree) and on professional education (master's degree). Currently, Ms. Pacher is conducting her PhD in the field of profiling competence profiles for European Industrial Engineering and Management (IEM) curricula. During and after her studies, she gained work experience, e.g., as Head of educational programs and in different social public service enterprises as a social education worker. Currently, she is mainly focusing on raising the awareness for engineering education 4.0 by connecting research, education, and society.

Bernd M. Zunkis in his role as an Associate Professor the Deputy Head of the Institute of Business Economics and Industrial Sociology as well as the Head of the Industrial Marketing, Purchasing and Supply Management working group at Graz University of Technology (TU Graz). Furthermore, he is the Dean of Studies of the Faculty of Mechanical Engineering and Economic Sciences at TU Graz and in this function, he is responsible for the Mechanical Engineering and Business Economics Master and PhD programmes. His current research interests are in the field of "Attractiveness, Trust and Power in Industrial Relationships", "Industrial Customer Preference", "Personality and Motivation of Purchasing Professionals", "Sustainable Supply Chains" as well as "Lower Tier Supplier Risk Management". Besides, he is chairing the European Professors of Industrial Engineering and Management (EPIEM) network and the author of various textbooks as well as numerous scientific papers in international journals.

Manuel Woschank received a Ph.D. in Management Sciences with summa cum laude from the University of Latvia and the Habilitation in Industrial Management from the Montanuniversitaet Leoben. He is currently Deputy Head of the Chair of Industrial Logistics at the Montanuniversitaet Leoben and an Adjunct Associate Professor at the Faculty

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