Chapter 2
A Soft Skills Experiment in an Industrial Engineering and Management Academic Course: A Demonstration of How to Develop Soft Skills

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ABSTRACT

Industrial firms increasingly concentrate on their core competences and outsource non-core activities, affecting the personal (soft) skills requirements of purchasing and supply chain management (PSM) personnel in their boundary-spanning roles. In parallel, machines take over processes but cannot replicate humans' soft skills such as creativity and strategic thinking. The literature shows that learning objectives in PSM courses in higher education are evaluated for not covering soft skills. Moreover, there is evidence that soft skills development is challenging. It is questionable which soft skills can be developed and which didactics are applicable. This study presents an educational soft skills experiment with IEM graduates, and it provides evidence that soft skills learning can effectively be introduced in existing courses. The graduates self-rated their competence levels of 36 soft skills before and after the course that provided soft skills workshops and a case study. In the first survey, "strategic thinking" ranked low and could be improved the most in the second survey.

INTRODUCTION

Preface

In this chapter, the role of higher education lecturers in preparing the next generation of industrial engineering managers is addressed by presenting an active learning method for the training of (1) knowledge

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and theory, (2) professional and interpersonal skills, and (3) intrapersonal traits. It presents the results of an educational experiment in an academic master's course with students of Industrial Engineering and Management (IEM) and Business Administration (BA), more precisely, in the field of purchasing and supply chain management (PSM) which belongs to the domain of Operations Management.

The challenges of further digitalisation and the circular economy need to be addressed with technological advancement, which is the focus of this book. Technological advancement is a human effort and requires competent humans to combine hard skills ([technological] knowledge, theory and professional skills) and soft skills (interpersonal skills and intrapersonal traits or attitudes), as shown in this study.

The recommendation is to distinguish between (1) knowledge and theory, (2) professional and interpersonal skills, and (3) intrapersonal traits and to design for each of these three (I) intended learning outcomes, (II) didactical approaches and (III) assessment methods. This study distinguishes between hard and soft skills and found evidence in the literature that soft skills learning objectives are absent in academic (PSM) curricula. Therefore the following recommendation is to formalise soft skills learning objectives. Educators need to understand that soft skills cannot be assessed the same way as knowledge. For instance, to test the progress in soft skills, the students were evaluated with two surveys before and after a cognitive and soft skills training course in which they worked on a real-life case study in an experimental educational design.

The Lack of Soft Skills in Higher Education

The experiment in this chapter is performed in a PSM course. The importance of the PSM function in organisations increased in the past decades. Although make-or-buy decision-making leading to outsourcing has a long tradition in organisations and academic writings (Ammer, 1983; Gross, 1966; Jauch & Wilson, 1979), from the 1990s, organisations increasingly started outsourcing non-core activities, meaning that those were not produced within the organisation but purchased from suppliers (Cousins, Lamming, Lawson, & Squire, 2008; Luzzini & Ronchi, 2016).

The significant increase of outsourcing by organisations is affected by political-economic, technological and demographic developments. From the 1980s, the political-economic systems have been affected by the trade tariffs elimination efforts of the GATT and WTO (Narlikar, 2003), which stimulated globalisation and led to increased global sourcing activities accelerated by the Chinese economic reform from the late 1970s (Logan, 2011). Organisations increasingly concentrated on their core competences, as underlined by Prahalad and Hamel (1990), and outsourced non-core activities. The outsourcing of non-core activities led to increased supplier management, supply chain management and strategic PSM decision-making, and the scope of PSM objectives (Luzzini & Ronchi, 2016; Schoenherr, 2010).

As a result, PSM has shifted from an operational, transactional, and highly strategic function (e.g. Bals, Schulze, Kelly, & Stek, 2019; Tassabehji & Moorhouse, 2008). Bals et al. (2019) confirm the PSM function's strategic focus and point at the effects of the Internet-of-Things or the 4th Industrial Revolution and "moving towards a circular economy and circular supply chains" (Bals et al., 2019, p. 10). In the 4th Industrial Revolution affects PSM, or "Procurement 4.0," machine-to-machine communication will take over operational tasks (Bals et al., 2019) and is "influencing the digitisation of procurement and supply chains" (Bienhaus & Haddud, 2018, p. 965). Moreover, it has led to another palette of required competences. i.e. a balanced mix of hard and soft skills, especially intrapersonal traits, like 'strategic thinking' (e.g. Bals et al., 2019) and 'creativity' (e.g. Kiratli, Rozemeijer, Hilken, de Ruyter, & de Jong, 2016).