IT Investment Decisions in Industry 4.0: Evidences from SMEs



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Abstract Organizational processes, production, business strategy, value creation and value delivery are undergoing significant change as a result of emerging new technologies in industry 4.0 context. This has drawn attention across many countries and not only organizations, but also stakeholders and policy makers as the fourth industrial revolution. While Industry 4.0 has been widely investigated in large enterprises, yet to date, little is known about how SMEs with limited financial resources make strategic decisions in particular about IT investment on diverse emerging technologies. To close this gap, this paper focused on the propensity of SMEs in IT investment in an industry 4.0 context. We analyze the responses of 1889 Italian SMEs to Government policies designed to facilitate SMEs in adopting technologies for Industry 4.0. This study aims to contribute to alignment literature by highlighting the importance of IT investment as a strategic decision in Industry 4.0. Moreover, the paper offers a set of practical implications.

Keywords Industry 4.0 · IT alignment · IT investment · SMEs

1 Introduction

Organizational processes, production, strategy, value creation and value delivery are undergoing significant change as result of emerging technologies. The deep impact of these technologies on business processes [12, 41] highlight the integration of IT strategy with business strategy [9, 16]. Considering the fast-changing and diverse emerging technologies, recent research emphasizes that IT alignment is a continuous process [49]. Organizations need to consecutively align their IT strategy with business strategy through investment and development their organizational IT resources and

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While main stream of literature has focused on benefits of industry 4.0 [12–22, 41], in this study we argue that the lack of investment on cybersecurity and adequate knowledge of impact on technologies limit associated benefits of new technologies and may lead to negative consequences.

To align IT investments with business strategy, possess IT skills and access to external knowledge play an important role for SMEs. Thus, in the following year, significant effort was dedicated by the Italian Government to operationalize digital innovation hubs and competence centers to further support SMEs in innovation investments through raising awareness and facilitating access to external knowledge such as universities and other actors. This will allow SMEs to not only explore and exploit new technologies, but at the same time be aware of security challenges, and consequently wisely invest on IT technologies in industry 4.0 context.

The paths in technology adoption by SMEs are different from large organizations [19]. While the concept of Industry 4.0 has been widely investigated in large enterprises [3], this study on Italian SMEs provides a useful insight into the actual investments on digital technologies. The findings illustrate the propensity of SMEs in embedding advanced technologies for Industry 4.0 across different industrial sectors and regions.

While the incentive by Italian government to some extent remove the financial barriers for SMEs in investing and acquiring new technologies, this study aims to contribute to alignment literature by highlighting the importance of IT investments as strategic decisions in Industry 4.0. Moreover, the implications of this paper for practice are twofold. First, the results can help policy makers understand how SMEs are likely to embed new technologies in an industry 4.0 context. Second for practitioners, the results highlight the importance of integration of IT investment in new emerging technologies with business strategy.

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