

## A scenario planning approach for modelling hybrid demand (e-commerce “+” traditional) evolution<sup>\*</sup>

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### *Abstract*

This work presents a methodological approach for modelling the evolution of the hybrid demand order flow pattern over long time horizons. The hybrid demand is the result of the mutual interaction between the e-commerce and the traditional demand. Thus, its modelling requires a complex analysis at various aggregation levels. More specifically, it is necessary to establish the quantitative modelling and prediction of the e-commerce demand, both at the market (e-sales turnover) and at the operational (order flow) level. Then, it has to be specified how the demand stemming from the traditional sales channels is modified by the e-commerce introduction. The concurrent presence of dynamic processes and several uncertainty sources, such as the neither instantaneous nor linear e-commerce diffusion process, and the necessity to assess the impact of e-commerce induced demand modifications over a long time horizon, suggest to rely upon a demand scenario planning approach. In fact, various scenarios, covering the potential outcomes of e-sales introduction over long time horizons, have to be considered by the decision makers in order to reliably assess the impact on company performances of the e-commerce induced modifications. The analysis of these scenarios allows to establish a suitable strategy according to these new challenges.

*Key words:* Scenario Planning, E-commerce, Cannibalisation, Diffusion Of Innovation

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### **1 Introduction**

Hybrid demand modelling and scenario generation requires a structured approach going from the identification of the e-commerce success factors (e-CSF) and of the characteristics of suitable e-sales channels to the mathematical characterisation of the hybrid demand evolution over a given time horizon. The overall approach, shown in figure 1, is treated in [5], while some specific aspects are extensively discussed in [3, 4]. First of all, the e-commerce market demand evolution has to be modelled. In a first step, a qualitative model of e-sales evolution is obtained applying a rule-based Decision Support System (DSS), which links the e-commerce degree of success to the qualitative value taken by the e-CSF. The identified e-CSF are related to product features, customer characteristics, brand perception and e-commerce induced process modifications. The DSS output, chosen for describing the degree of success of e-commerce adoption, are Saturation and Speed of adoption. These output variables have been chosen because they can be easily associated to the quantitative parameters of Diffusion Of

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