Chapter 2
Development of a Simulation Model for Optimization of Business Process:
Parameter Estimation and Practical Applications

ABSTRACT

Optimization of business process assists in efficient organization of business process. For the success of optimization of business process, a simulation model based on gap processes for the analysis of buyers' burstiness in business process has been proposed. However, the model has to be validated. The aim of the research is to implement a validation approach to the simulation model based on gap processes for the optimization of business process underpinning elaboration of a new research question on the model validity. The meaning of the key concepts of "validation," "model validation," and "model validation approach" is studied. The results of the present research show that the application of real system measurements validates the simulation model for the optimization of business process. The novel contribution of the manuscript is revealed in the newly created research question on the proposed model validity. Directions of future research are proposed.

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INTRODUCTION

Optimization of business process assists in efficient organization of business process. Optimization of business process implies choices about quantity of goods to be delivered, number of the staff to be employed as highlighted by Ahrens, Purvinis, Zaščerinska and Andreeva (2015), goods' pricing, goods discounts, computer software to be installed, networking between a business company and its customers to be established, queue management, etc. Additionally, such a result of business process as purchase and/or sale of a good or service indicates the output of this process. For the success of optimization of business process, a simulation model based on gap processes for the analysis of buyers' burstiness in business process has been proposed (Ahrens & Zaščerinska, 2016). It should be noted that existing models do not take into account the context of business process.

Business process proceeds under certain conditions. One of the conditions is bursty processes that are quite common in our daily live. Already at the beginning in 1960 Gilbert presented the first model in telecommunications which emphasized that bit errors occurred in bundles or, in other words, bursts (Gilbert, 1960; Elliott, 1963). Since then, the issues of a general procedure to evaluate a basic set of parameters or, in other words, criteria, are still relevant today. For the parameter estimation of the simulation model based on gap processes for the optimization of business processes, the synergy between business and telecommunications is promoted as the phenomenon of customers/buyers in the business process as well as bit-errors in data transmission appear to be of a similar nature, namely, the bursty nature. By buyer, one who made a purchase is meant. In turn, by shop visitor any customer who seeks and examines a product without buying it is understood. It should be noted that the present research is not limited to only two scientific disciplines, namely business and telecommunication, but is based on a number of scientific disciplines such as business, social media, logistics, literature, etc.

In business, burstiness of workload is traditionally analyzed (Heinrich, 2014). However, the paradigm has changed from an input based business process or, in other words, burstiness of workload to an output based process or, in other words, burstiness of buyers (Ahrens, Purvinis, Zaščerinska, & Andreeva, 2015). The shift from analysis of burstiness of workload to evaluation of burstiness of buyers allows increasing the efficiency of business process and, consequently, business profit.