

Behavioral Patterns of Adopting Digitalized Services (E-Sport versus Sports Spectating) Using Agent-Based Modeling

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Abstract : The growing importance of digitalized services in the so-called new economy, including the e-sports industry, can be observed recently. Various demographic or technological changes lead consumers to modify their needs, not regarding the services themselves but the method of their application (attracting customers, forms of payment, new content, etc.). In the case of leisure-related to competitive spectating activities, there is a growing need to participate in events whose content is not sports competitions but computer games challenge - e-sport. The literature in this area so far focuses on determining the number of e-sport fans with elements of a simple statistical description (mainly concerning demographic characteristics such as age, gender, place of residence). Meanwhile, the development of the industry is influenced by a combination of many different, intertwined demographic, personality and psychosocial characteristics of customers, as well as the characteristics of their environment. Therefore, there is a need for a deeper recognition of the determinants of the behavioral patterns upon selecting digitalized services by customers, which, in the absence of available large data sets, can be achieved by using econometric simulations - multi-agent modeling. The cognitive aim of the study is to reveal internal and external determinants of behavioral patterns of customers taking into account various variants of economic development (the pace of digitization and technological development, socio-demographic changes, etc.). In the paper, an agent-based model with heterogeneous agents (characteristics of customers themselves and their environment) was developed, which allowed identifying a three-stage development scenario: i) initial interest, ii) standardization, and iii) full professionalization. The probabilities regarding the transition process were estimated using the Method of Simulated Moments. The estimation of the agent-based model parameters and sensitivity analysis reveals crucial factors that have driven a rising trend in e-sport spectating and, in a wider perspective, the development of digitalized services. Among the psychosocial characteristics of customers, they are the level of familiarization with the rules of games as well as sports disciplines, active and passive participation history and individual perception of challenging activities. Environmental factors include general reception of games, number and level of recognition of community builders and the level of technological development of streaming as well as community building platforms. However, the crucial factor underlying the good predictive power of the model is the level of professionalization. While in the initial interest phase, the entry barriers for new customers are high. They decrease during the phase of standardization and increase again in the phase of full professionalization when new customers perceive participation history inaccessible. In this case, they are prone to switch to new methods of service application - in the case of e-sport vs. sports to new content and more modern methods of its delivery. In a wider context, the findings in the paper support the idea of a life cycle of services regarding methods of their application from "traditional" to digitalized.

Keywords : agent-based modeling, digitalized services, e-sport, spectators motives

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