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MODIFICIRANO PLATNO POSLOVNOGA MODELA KAO INSTRUMENT SAMOPROCJENE SPREMNOSTI MALIH I SREDNJIH PODUZEĆA ZA DIGITALNU TRANSFORMACIJU

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Varaždin, 2026.

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MODIFIED BUSINESS MODEL CANVAS AS AN INSTRUMENT FOR READINESS SELF-ASSESSMENT OF SMALL AND MEDIUM-SIZED ENTERPRISES FOR DIGITAL TRANSFORMATION

DOCTORAL DISSERTATION

Supervisor:

Assoc. Prof. Igor Pihir, Ph.D.

Varaždin, 2026

SAŽETAK

Predmet ovog doktorskog istraživanja je razvoj i evaluacija modificiranog platna poslovnoga modela kao instrumenta za samoprocjenu spremnosti malih i srednjih poduzeća (MSP) za digitalnu transformaciju. Istraživanje je utemeljeno na metodologiji znanosti o dizajniranju (engl. *Design Science Research Methodology*), kojom je, kroz iterativni proces, oblikovan istraživački artefakt – modificirano, trorazinsko platno poslovnoga modela, prilagođeno odrednicama digitalne transformacije. Artefakt se temelji na izvornom platnu poslovnoga modela (engl. *Business Model Canvas,* BMC), koje služi kao teorijska osnova i okvir za dizajn rješenja. U disertaciji se ističu dva istraživačka cilja: i) kreirati modificirano platno poslovnoga modela koje je usklađeno sa zahtjevima i odrednicama digitalne transformacije te prilagođeno za mala i srednja poduzeća; ii) razviti instrument za samoprocjenu spremnosti malih i srednjih poduzeća za digitalnu transformaciju na temelju modificiranog platna poslovnoga modela. Empirijski dio istraživanja temelji se na primjeni kvalitativne analize sadržaja, intervjua, procjene eksperata te studije slučaja, kao središnjih istraživačkih metoda. U istraživanju su testirane dvije hipoteze koje se odnose na ograničenja postojećih verzija platna poslovnoga modela u kontekstu digitalne transformacije te percepciju korisnosti i upotrebljivosti razvijenog instrumenta od strane malih i srednjih poduzeća. Razvijeni artefakt, finalno rješenje, sastoji se od tri razine. Prva razina, uz 11 elemenata platna, omogućuje uočavanje utjecaja pojedine odrednice digitalne transformacije na specifične elemente platna. Druga razina ističe relevantna pitanja unutar elemenata, dok treća razina prikazuje čestice, odnosno izjave na kojima se bazira instrument za samoprocjenu spremnosti malih i srednjih poduzeća za digitalnu transformaciju, kategorizirane prema odrednicama digitalne transformacije (79 izjava, raspoređenih u 5 odrednica). Na temelju izjava, poduzeća mogu izvršiti samoprocjenu vlastite spremnosti te, u suradnji s autoricom disertacije, kreirati personalizirane preporuke za digitalnu transformaciju. Znanstveni doprinos rada sagledava se u modifikaciji i nadogradnji platna poslovnoga modela u skladu s zahtjevima digitalne transformacije, razvoju korisnog i upotrebljivog instrumenta za samoprocjenu spremnosti malih i srednjih poduzeća za digitalnu transformaciju i formuliranju preporuka za digitalnu transformaciju temeljenih na empirijskim nalazima. Društveni doprinos očituje se u podršci koju instrument pruža MSP-ovima pri planiranju digitalne transformacije.

Ključne riječi: *modificirano platno poslovnoga modela; instrument samoprocjene spremnosti za digitalnu transformaciju; mala i srednja poduzeća (MSP); digitalna transformacija; metodologija znanosti o dizajniranju (DSRM).*

EXTENDED ABSTRACT

This doctoral dissertation focuses on examining the impact of digital transformation on the business models of small and medium-sized enterprises (SME), with a particular emphasis on the development of a research artifact – a Modified Business Model Canvas aligned with the key determinants of digital transformation. The purpose of the artifact is to support SMEs in conducting a self-assessment of their readiness for digital transformation. The Business Model Canvas (BMC) was selected as the theoretical foundation and framework upon which the development of the core research artifact is based.

The first chapter of the dissertation provides a concise overview of the research domain relevant to the defined problem, with particular attention given to explaining the motivation for conducting the research. Within the chapter, it is highlighted that three research questions were formulated, two research objectives defined, and two hypotheses established to guide the research process. Furthermore, a summary of the methodological foundation is presented, based on the six steps of the Design Science Research Methodology (DSRM). The chapter concludes with an outline of the expected scientific and societal contributions of the research.

The second chapter of the doctoral dissertation is dedicated to the theoretical elaboration of key concepts that enable a deeper understanding of the research problem. The first part of the chapter explains the concept of digital transformation and its impact on the contemporary business environment. Five initial determinants of digital transformation are presented, which serve as the foundation for the subsequent modification of the Business Model Canvas. Furthermore, the theoretical framework describing the effects of digital transformation on the operations of small and medium-sized enterprises is examined. The second part of the chapter elaborates on the theoretical foundations of the business model, with particular emphasis on the concept of the Business Model Canvas, which represents the core research artifact of this dissertation. Relevant scientific studies addressing the reinterpretation and extension of the original canvas structure are presented, with the aim of adapting it to complex and evolving market conditions. In this context, an overview of 19 identified Business Model Canvas reconfigurations is provided, offering proposals for upgrading the traditional model in accordance with the demands of a dynamic business environment.

The third chapter of the dissertation presents the research methodological framework applied in the doctoral study. The chapter is structured into two main parts. The first part provides a rationale for the chosen research methodology, including a discussion of the scientific research paradigm and the corresponding methodological approach. Particular emphasis is placed on the constructivist research paradigm, which shapes the ontological and epistemological assumptions underpinning the study. In addition to the theoretical foundation of the approach, a concise overview and justification of the selected research methods is provided, indicating that the study primarily employed qualitative methods, with quantitative methods used to a lesser extent. The second part of the chapter focuses on presenting the methodological steps in accordance with the phases of the research process, within the selected research design. The core methodological framework is based on the Design Science Research Methodology, which structures the research process through six clearly defined phases, from problem identification and research motivation to evaluation and communication of results. This part of the chapter offers a detailed methodological description of each phase of the DSRM, establishing a clear connection between the selected research methods and the defined research questions, objectives, hypotheses, and the expected scientific and societal contributions of the dissertation.

The fourth chapter of the dissertation presents the research findings through a series of interconnected activities aligned with the DSRM. The results are structured according to five phases of the methodological framework, with each phase presented in a dedicated subchapter. The first phase and subchapter, *Problem Identification and Motivation*, includes an analysis of relevant scientific literature using the qualitative content analysis method. The analysis of 74 scientific papers revealed the need to adjust certain digital transformation determinants to ensure that their labels more accurately reflect their actual content. In addition, this subchapter presents the mapping results of the elements from 19 identified Business Model Canvas reconfigurations (discussed in second chapter), as well as the original BMC elements, to the five key digital transformation determinants. These findings confirmed Hypothesis 1 (*H1*). The second phase, *Definition of Solution Requirements*, is based on qualitative content analysis of 106 scientific papers and on the results of semi-structured interviews conducted with representatives from seven small and medium-sized enterprises (SME 1 – SME 7). The aim of this phase was to identify the requirements for the creation of the research artifact, the Modified Business Model Canvas. As a result, 75 requirements (statements) were identified and subsequently categorized according to the five digital transformation determinants established during the problem identification phase. The third phase, *Design and Development of the*

Artifact, presents the development of the research artifact in the form of a three-layered Modified Business Model Canvas. The first layer includes 11 core elements: digital strategy and leadership, key partners, key activities, key resources, value proposition, customer relationships, channels, customer segments, change commitment and innovation culture, cost structure, and revenue streams. This layer enables SMEs to identify the influence of individual digital transformation determinants on specific elements of the business model, thereby supporting the planning of future transformation activities. The second layer focuses on the content of each canvas element, specifically on the set of questions associated with each element. These questions are designed to encourage deeper understanding, visualization, and communication within the elements of the business model. The original BMC questions were retained, with additional questions introduced to reflect the influence of digital transformation. The third layer consists of a set of 75 statements that serve as the basis for a self-assessment instrument intended to evaluate SME readiness for digital transformation. Following the evaluation of the initial canvas version by 12 experts, four additional statements were included, bringing the total number of items to 79. The fourth phase, *Demonstration of the Artifact*, includes testing the clarity of the statements in the third layer and conducting a self-assessment of digital transformation readiness within a sample of three SMEs (SME 8 – SME 10). Based on the results, individualized recommendations were developed for each company, which were subsequently evaluated by nine experts in terms of their usefulness and usability. The fifth phase and final subchapter, *Evaluation of the Artifact*, presents the application of both the original Business Model Canvas and all three layers of the Modified Canvas, which constitutes the core research artifact, across six case studies involving SMEs from different industries (SME 11 – SME 16). During the case studies, representatives from six SMEs evaluated the usefulness and usability of the developed artifact. The results confirmed its practical applicability, thereby supporting the acceptance of Hypothesis 2 (*H2*).

The fifth chapter of the doctoral dissertation is focused on the discussion, interpretation, and critical reflection on the research findings in relation to the defined research questions, objectives, and hypotheses. Within this chapter, answers to the research questions are formulated, and the results are analyzed in the context of the theoretical framework and empirical findings, accompanied by a discussion of their relevance to the stated hypotheses and research objectives.

The sixth chapter provides a summary of the key research conclusions derived from the conducted study. In addition, the chapter outlines the scientific and societal contributions resulting from the various phases of the research process.

The seventh chapter presents the limitations of the conducted research, which should be taken into consideration when formulating conclusions.

Keywords: *Modified Business Model Canvas; Self-Assessment Instrument for Digital Transformation Readiness; Small and Medium-Sized Enterprises (SMEs); Digital Transformation; Design Science Research Methodology (DSRM).*