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QUANTITATIVE SWOT-TOWS ANALYSIS BASED ON THE ENTREPRENEURS SELF EVALUATION

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OBJECTIVE

This research presents a comprehensive examination of the SWOT (Strengths, Weaknesses, Opportunities, Threats) and quantified TOWS (Threats, Opportunities, Weaknesses, Strengths) frameworks, aiming to elucidate their significance in strategic planning in the SME sector. The emphasis will be given to the SWOT analysis application that was developed to collect and analyse the responses of entrepreneurs and SMEs owners during self-evaluation of their businesses. The primary objective is to explore the potential of this tool to facilitate strategic decision-making and enhance organizational performance in SMEs. The research also seeks to uncover practical applications and limitations through empirical evidence and case studies in education.

METHODOLOGY

To achieve this objective, a mixed-method approach was adopted. Initially, an extensive literature review was conducted to understand the theoretical underpinnings of SWOT and TOWS analysis applications in the SMEs sector. In parallel with literature research, a special application was created to collect and evaluate the opinions of entrepreneurship professionals (Mihajlovic et al., 2022). Subsequently, the online forms were administered to professionals across various SMEs sector to gauge the prevalence and effectiveness of these frameworks in practice. Additionally, a qualitative AHP analysis was conducted using case studies to illustrate the real-world application of SWOT and TOWS analysis.

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RESULTS AND DISCUSSION

The SWOT analysis tool, described in this paper, was developed to enable decision makers, e.g., managers or SME owners, to directly insert their selection of SWOT parameters considering their businesses (Mihajlovic, 2022). The initial database used in this research was developed based on collected responses from the survey, organized in our previous research (Nikolić et al., 2020). Part of the questionnaire included the SWOT analysis of investigated enterprises.

The initial GUI front page is presented in Figure 1. Through the application interface, decision-makers are enabled to administer the Google Form SWOT questionnaire to their employees. All collected responses are stored in a joint database and can be directly assessed by the decision-maker. Pilot testing of the app was facilitated during the research on the project described in (Mihajlovic et al., 2022). Different organizational factors, including strengths, weaknesses, opportunities and threats, were proposed and rated by 635 entrepreneurs from Serbia, Bulgaria and all four Visegrad group countries. Part of the demographics of the investigated sample is given in the Table 1.

Considering that, during the time of app utilization, the number of collected responses for each of the SWOT elements has increased, the application is enabling the decision maker to refine the responses and to select the most appropriate ones for his or her business. Subsequently, the interface enables the ratings of the final list of refined SWOT elements on a scale from 1 to 10. At the end, the decision-maker receives a report on his or her ratings and comparisons with the average values of other respondents' ratings, which are stored in the central database. The obtained final results of SWOT element quantification are used to propose TOWS strategic directions, which are subsequently evaluated and prioritized by adequate quantification, based on the AHP method. Obtained results can serve as valuable tools for identifying internal strengths and weaknesses and external opportunities and threats for SMEs. However, the study also revealed several limitations associated with these frameworks. Many organizations struggle with the subjective nature of SWOT analysis, often leading to biased assessments. This is the reason why, in the tool described in this paper, the decision-makers are also offered to compare their evaluations with the evaluations of other respondents collected during the previous surveys.

Figure 1: The overview of the SWOT application GUI

The screenshot displays the 'SWOT parameters' application interface. At the top, it shows the title 'SWOT parameters' and a 'Help' button. Below the title, there are four main sections: STRENGTHS, WEAKNESSES, OPPORTUNITIES, and THREATS. Each section contains five input fields for user input. Below each section, there are three buttons: 'Direct input to the DataBase_SWOT_[Section]', 'Get [Section] from the Google form', and 'Filter [Section]'. Additionally, there are buttons for 'Open_SWOT_Google_Form' and 'Rate_SWOT_Parameters' at the bottom.

Table 1: Profiles of analyzed entrepreneurs' sample

Characteristics		Percent
Respondents' Age	<30	23,9
	31-45	36,2
	46-60	32,1
	>61	7,7
Respondents' Gender	M	61,9
	F	37,2
	Other	0,9
Respondents' Country	Czech Republic	14,0
	Hungary	17,3
	Slovakia	15,7
	Poland	15,9
	Serbia	21,1
	Bulgaria	15,9

CONCLUSION

As strongly innovative and heterogeneous organizations, SMEs should aim to mitigate bias and subjectivity in SWOT analysis by involving diverse approaches and seeking external perspectives (Montiel-Campos, 2022). TOWS analysis, based on the application developed in this research, offers a more systematic approach to strategy development and is particularly beneficial for SMEs looking to balance their strengths and weaknesses effectively.

Upgrading the SWOT tool with the quantified TOWS-AHP method enables decision-makers to materialize their selection of SWOT elements in practical strategic directions.

Besides being a potentially practical tool for SMEs owners and entrepreneurs, the application described is also used for educational purposes, on the master-level course, as part of the case studies in strategic decision-making.

Keywords: SWOT, TOWS, AHP, Strategic Planning, SMEs

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