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The SWOT-TOWS analysis as a tool of the PDCA cycle in improving the quality of the postal service

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Summary: The purpose of the study is the practical application of the SWOT-TOWS analysis as a PDCA cycle in improving the quality of postal services. The first part of the article contains a review of the literature on the issues of service quality in relation to postal services and the characteristics of the selected tool - the PDCA cycle. Then, the results of the research have been presented, i.e. the SWOT-TOWS analysis of the chosen postal operator and its importance in the PDCA cycle to improve the quality of postal services. The analysis has showed that the chosen operator should adopt a conservative operating strategy which means the need to minimize threats by using strengths. In view of these data, actions should be taken to improve the quality of services with particular emphasis on digital postal services.

Key words: PDCA cycle, postal service, service quality

ANALIZA SWOT-TOWS JAKO NARZĘDZIE CYKLU PDCA W DOSKONALENIU JAKOŚCI USŁUG POCZTOWYCH

Streszczenie: Celem opracowania jest praktyczne zastosowanie analizy SWOT-TOWS jako narzędzia cyklu PDCA w doskonaleniu jakości usług pocztowych. Pierwsza część artykułu zawiera teorię z zakresu jakości usług w odniesieniu do usług pocztowych oraz charakterystykę analizy SWOT i cyklu PDCA. Następnie zaprezentowane zostały wyniki przeprowadzonych badań, czyli analizy SWOT-TOWS wybranego operatora pocztowego oraz jej znaczenie w cyklu PDCA doskonalenia jakości usług pocztowych. Analiza wykazała, iż wybrany operator powinien przyjąć konserwatywną strategię działania, co oznacza konieczność minimalizacji zagrożeń poprzez wykorzystanie mocnych stron. Wobec tych danych należy podjąć działania w zakresie poprawy jakości usług ze szczególnym uwzględnieniem cyfrowych usług pocztowych.

Słowa kluczowe: cykl PDCA, jakość usług, usługa pocztowa

1. INTRODUCTION

The postal services market has been constantly changing in recent years. These changes concerns both the popularity of particular services and the functioning of postal operators. Worlds trends indicate a regular decrease in the number of letters with the simultaneous increase in the number of parcels [6].

Moreover, the needs and expectations of customers in this area are changing, in accordance with research results. One example is preferring courier items which means that the determinants of postal services quality are different that some time ago. The modern customer chooses a service with a higher price but with shorter delivery times and the additional options (e.g. posting from home, parcels machines, applications with various functions) [7,8].

The extension of the postal offer that can be used electronically is also significant.

This is caused by progressing digitalization which has been evident in the postal services market in several years. Digitalization, defined as the increase in the use of digital technologies, results from their gradual and continuous development, which is related to the approach that the Internet is not a revolution in services but the result of their revolution [9].

Digital postal services have been available in Poland since 2010, however, the increase in their popularity is a matter of the last few years. Currently, digital postal services include posting and paying for a letter (traditional and electronic) or parcels, and a number of additional services: shipment tracking, electronic acknowledgment of receipt, purchasing items necessary for the realization of service etc. [10].

After a period of stagnation, the value of the Polish postal market has been growing since 2017. New operators that provide courier services are emerging and those already in existence are developing activities which forces the use of new competitive struggle tools [11]. One of them is providing postal services characterized by a high quality. Though, in literature there is still lack of one universal description of this issue, the most common characteristics are grouped into five sets. Product-based approach determines it as an amount of attributes possessed by the service. Process-based approach points that the service quality depends

on its compliance with the standard. Demand-approach, the most popular one because of its customer orientation, defines it as the identification and fulfillment of customers' needs and expectations. Value-based characteristic analyzes the benefits and cost of service's acquiring. The last one is philosophical approach that perceives service quality as the manifestation of its perfection [12].

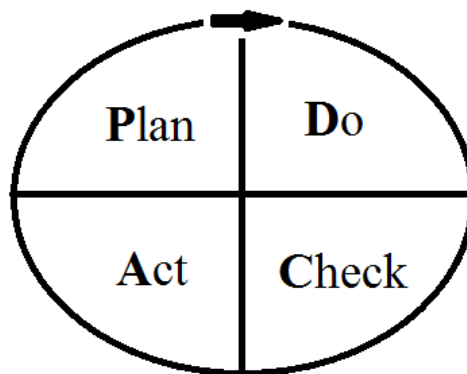
2. THE SWOT-TOWS ANALYSIS AS A TOOL OF THE PDCA CYCLE-THEORETICAL APPROACH

The theoretical framework indicates important issues related to the topic: a changing, competitive postal services market, progressive digitization, and meaning of postal service quality. The first tool derived from the need for continuous quality improvement is the PDCA cycle.

The PDCA cycle, in literature also known as the Deming cycle, is an four-step method of continual improvement of products, services or processes [13].

The stages of the PDCA cycle are interpreted as follows [14]:

Fig. 1. The PDCA cycle



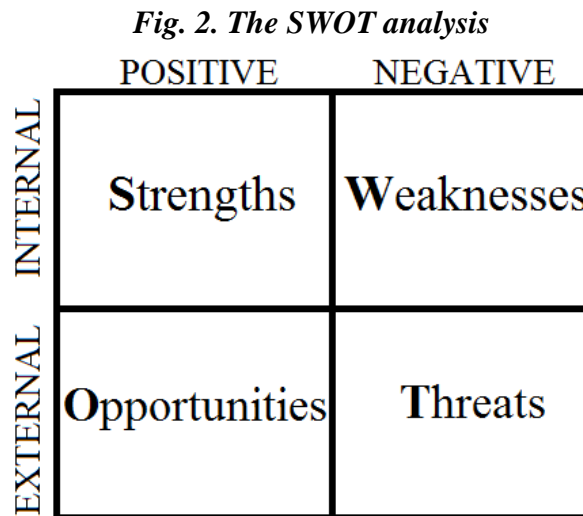
- Plan- objective with methods as tools of achieving it should be determined;
- Do- what has been planned, should be implemented according to intentions; very important it to remember about collecting data that may be useful for further steps;
- Check- the effects should be controlled if the expectations were accomplished; achieve results should be examined;
- Act- new standards for the organization should be enacted as the adoption of successful methods.

The key point about the PDCA cycle is that the circle goes round and round as the continuous improvement are the basis of the Deming wheel. Scientific sources emphasize the importance of choosing the right methods, techniques, and tools for each stage so that the cycle may be conducted fairly [15].

The first stage of service quality improvement based on the PDCA cycle is planning. Objective setting must be preceded by a thorough analysis. The basic tool that allows to study internal and external organization's environment is the SWOT analysis.

The SWOT analysis is perceived as one of the most prevalent method used in management to create strategy. Its name is an acronym of strengths, weaknesses, opportunities and threats. Internal factors are likely to be controlled by the organization.

External ones have huge influence on organization so they also should be constantly monitored [16] (fig.2).



At the beginning this analysis forces the need to accurately describe the factors currently affecting the functioning of the organization. Then, by identifying the presence of interaction between particular factors, it ultimately contributes to choose the preferred strategy in the current situation, which allows to set an adequate objective that can be achieved in these conditions but also indicates what character this objective should take [17].

3. THE PRACTICAL APPLICATION OF THE SWOT-TOWS ANALYSIS IN THE PDCA CYCLE TO IMPROVE THE QUALITY OF POSTAL SERVICE

First of all, SWOT factors have been identified. Analysis of information on the subject of research using Internet resources contributed to the selection of five factors in each of the group [data from the Internet sources]. The most important internal factors- strengths are: national operator status, brand and tradition, good condition, extensive infrastructure and dominant share in some markets.

The national postal operator is a company that undertakes to provide universal postal services. It is a solution introduced by the postal directives of the European Parliament and the Council, so that the state can fulfill its obligation to the citizens regarding the availability of universal postal services. This solution is to reconcile the liberalization of the postal market with the availability of basic good standard services for citizens, rendered at an affordable price throughout the country and abroad. The subject of research currently has the status of national operator until 2025.

Brand and tradition- the history of this postal operator dates back to the 16th century. Over the years the company has been formalized and has been functioning under the current name for almost thirty years.

The concept of good condition is understood in many dimensions. It refers to the current legal form, whose main shareholder is state treasury, as well as financial turnover, and technical and organizational conditions. For example, it is the largest employer in Poland, employing approximately 80,000 people.

The subject of the research is a key postal logistics operator with a full supply chain. Moreover, it has fourteen expedition and distribution facilities and about 7,500 branches throughout the country.

Leadership in some areas of the market refers to the letters. Within the ever-growing CEP market it takes second place.

The most important internal factors- weaknesses are perception, image; poorly developed research and development base; complex organizational structure, underdeveloped marketing and service quality.

This operator is perceived as an 'archaic', non-developing company, whose main group of customers are elderly people, with low service quality by a lot of people.

In the aspect of second factor, the research subject cooperates with specialists in the field of electro-mobility and the development of digital services but the information on this issue is very limited.

Referring to the previous sentence, the company underestimates the meaning of marketing. The operator's advertisements are not in the media and the advertising spot from last year has been criticized so far. It can be seen especially in the aspect of digital services on which the author has been conducting research.

The complex organizational structure results from the number of employees but it raises management problems.

The quality of services is assessed as low in most current surveys. In this study it has crucial meaning.

The external factors- opportunities are: extension, change of offer; access to new technologies, opportunity for development and cooperation on the international market, emergence of new customer groups, availability of specialists on the market.

As it has been written, the postal market has been constantly changing. The biggest change occurs in the area of digitalization of postal services which translates into both opportunities and threats to operators. The opportunity for the subject of research is to adapt the offer to the new market and customer requirements. Technologies are still developing and access to them mainly large companies in good condition. In addition, this kind of company has the biggest chance to develop and operate on foreign markets. There are many specialists on the market in fields important for postal services. New customer groups may appear as the digital offer expands.

Threats are also awaiting postal operators. These are: changes in market trends, e-substitution, development of competitors, the possibility of a new competitor's appearing, and change of legal regulation. As expected, market development will progress towards digital services but not all changes are known due to the rapid development of technology. Some companies may also not keep up with e-substitution. Some segments of the postal market, like parcels currently, may become more attractive for new competitors.

SWOT factors with their validity are presented in table 1.

Tab. 1. SWOT factors and their validity

The internal factors	Weight	The internal factors	Weight
Strengths	1	Weaknesses	1
national operator status (S1)	0,2	perception, image (W1)	0,2
brand and tradition (S2)	0,3	poorly developed research and development base (W2)	0,3
good condition (S3)	0,2	complex organizational structure (W3)	0,15
extensive infrastructure (S4)	0,15	underdeveloped marketing (W4)	0,15
dominant share in some markets (S5)	0,15	service quality (W5)	0,2
The external factors	Weight	The external factors	Weight
Opportunities	1	Threats	1
extension, change of offer (O1)	0,2	changes in market trends (T1)	0,25
access to new technologies (O2)	0,25	e-substitution (T2)	0,3
opportunity for development and cooperation on the international market (O3)	0,2	development of competitors (T3)	0,25
emergence of new customer groups (O4)	0,25	the possibility of a new competition's appearing (T4)	0,1
availability of specialists on the market (O5)	0,1	change of legal regulation (T5)	0,1

Afterwards, the relationships between four groups of factors have been analyzed: whether the particular strong points allow using the given change and can reduce the danger and whether the particular weaknesses limit the ability to use these change or strengthen the threats. Tables 2 to 5 contain the linkages between factors.

Tab. 2. Whether a particular strong point allows using the given chance?

Opportunities/ Strengths	O1	O2	O3	O4	O5	Weights	Number of interaction	Product weight and interaction	Rank
S1	0	0	1	1	0	<u>0,2</u>	2	0,4	5
S2	0	0	1	1	0	<u>0,3</u>	2	0,6	2
S3	1	1	1	1	1	<u>0,2</u>	5	1	1
S4	1	1	1	1	0	<u>0,15</u>	4	0,6	2
S5	1	1	1	1	0	<u>0,15</u>	4	0,6	2
Weights	<u>0,2</u>	<u>0,25</u>	<u>0,2</u>	<u>0,25</u>	<u>0,1</u>				
Number of interaction	3	3	5	5	1		34		
Product weight and interaction	0,6	0,75	1	1,25	0,1			6,9	
Rank	4	3	2	1	5				

Between strengths and opportunities there are 34 interactions and their total weight is 6.9. The most important is the third strong point (good condition) that allows using each given chance. It should also be mentioned that the other three out of five may use four of them. The opportunities that give the most prospects are chance for development and cooperation on the international market and emergence of new customer groups.

Tab. 3. Whether a particular strong point can reduce the threat?

Threats / Strengths	T1	T2	T3	T4	T5	Weights	Number of interaction	Product weight and interaction	Rank
S1	0	1	1	1	0	<u>0,2</u>	3	0,6	2
S2	1	0	1	1	0	<u>0,3</u>	3	0,9	1
S3	0	1	1	1	0	<u>0,2</u>	3	0,6	2
S4	0	0	1	1	0	<u>0,15</u>	2	0,3	4
S5	0	0	1	1	0	<u>0,15</u>	2	0,3	4
Weights	<u>0,25</u>	<u>0,3</u>	<u>0,25</u>	<u>0,1</u>	<u>0,1</u>				
Number of interaction	1	2	5	5	0		26		
Product weight and interaction	0,25	0,6	1,25	0,5	0			5,3	
Rank	4	2	1	3	5				

In this linkage number of interaction is lower- 26 of them have been identified. Product weight is also not as high as previous one (5.3). The strong points that can reduce three of the threats are national operator status, brand and tradition, and good condition.

Tab. 4. Whether a particular weakness limits the ability to use the chance?

Opportunities / Weaknesses	O1	O2	O3	O4	O5	Weights	Number of interaction	Product weight and interaction	Rank
W1	1	0	0	1	1	<u>0,2</u>	3	0,6	2
W2	1	1	1	0	1	<u>0,3</u>	3	0,9	1
W3	0	0	0	1	1	<u>0,15</u>	2	0,3	5
W4	1	0	1	1	1	<u>0,15</u>	4	0,6	2
W5	1	0	1	1	0	<u>0,2</u>	3	0,6	2
Weights	<u>0,2</u>	<u>0,25</u>	<u>0,2</u>	<u>0,25</u>	<u>0,1</u>				
Number of interaction	4	1	3	4	4		31		
Product weight and interaction	0,8	0,25	0,6	1	0,4			6,05	
Rank	2	5	3	1	4				

Number of interaction between weaknesses and opportunities in this study is 31 (weight: 6.05). It means that some of identified weaknesses limits the ability to use some of the chances. Weakness that most strongly affects the opportunities in the external environment is poorly developed research and development base. Additionally, worth noticing is that underdeveloped marketing influence on four of changes.

Tab. 5. Whether a particular weakness strenghtens the threat?

Threats / Weaknesses	T1	T2	T3	T4	T5	Weights	Number of interaction	Product weight and interaction	Rank
W1	1	0	1	1	1	<u>0,2</u>	4	0,8	3
W2	0	1	1	1	0	<u>0,3</u>	3	0,9	2
W3	0	0	0	0	0	<u>0,15</u>	0	0	5
W4	1	1	1	1	0	<u>0,15</u>	4	0,6	4
W5	1	1	1	1	1	<u>0,2</u>	5	1	1
Weights	<u>0,25</u>	<u>0,3</u>	<u>0,25</u>	<u>0,1</u>	<u>0,1</u>				
Number of interaction	3	3	4	4	2		32		
Product weight and interaction	0,75	0,9	1	0,4	0,2			6,55	
Rank	3	2	1	4	5				

Values for the table showing interactions between weaknesses and threats are similar. The number is 32 and is characterized by weight 6.55 for this group of factors. Service quality should be perceived as the most important weakness that strengthens the threats because it influences on all of them.

TOWS analysis is the next part of this study. It may important relationships that couldn't have been presented in SWOT part. TOWS analysis has been presented in tables 6 to 9.

Tab. 6. Whether a particular opportunity increases the strong point?

Opportunities / Strengths	S1	S2	S3	S4	S5	Weights	Number of interaction	Product weight and interaction	Rank
O1	0	0	1	1	1	<u>0,2</u>	3	0,6	4
O2	1	1	1	1	1	<u>0,25</u>	5	1,25	1
O3	1	1	1	1	1	<u>0,2</u>	5	1	2
O4	0	1	1	1	1	<u>0,25</u>	4	1	2
O5	0	1	1	0	1	<u>0,1</u>	3	0,3	5
Weights	<u>0,2</u>	<u>0,3</u>	<u>0,2</u>	<u>0,15</u>	<u>0,15</u>				
Number of interaction	1	4	5	1	5		36		
Product weight and interaction	0,2	1,2	1	0,15	0,75			7,45	
Rank	4	1	2	5	3				

Opportunities selected for the needs of the study increase the strengths in 36 interactions with 7.45 of weight. The calculated value is the highest so far. Two of the chances: access to new technologies and opportunity for development and cooperation on the international market may influence on all of them. An interesting conclusion is also that the lowest number of interaction between these factors is three.

Tab. 7. Whether a particular threat limits the strength?

Threats / Strengths	S1	S2	S3	S4	S5	Weights	Number of interaction	Product weight and interaction	Rank
T1	1	1	1	1	1	<u>0,25</u>	5	1,25	2
T2	1	1	1	1	1	<u>0,3</u>	5	1,5	1
T3	1	1	1	1	1	<u>0,25</u>	5	1,25	2
T4	1	1	1	1	1	<u>0,1</u>	5	0,5	4
T5	1	0	1	1	1	<u>0,1</u>	4	0,4	5
Weights	<u>0,2</u>	<u>0,3</u>	<u>0,2</u>	<u>0,15</u>	<u>0,15</u>				
Number of interaction	5	4	5	5	5		48		
Product weight and interaction	1	1,2	1	0,75	0,75			9,6	
Rank	2	1	2	4	4				

The presented table contains the highest values in this study. The calculated number of interaction between threats and strengths is 48 while its weight is 9.6. It means that for subject of this study threats identified in external environment limits is strengths. In this table, no interaction is indicated only in one place, which emphasizes the importance of this analysis.

Tab. 8. Whether a particular chance can reduce the weakness?

Opportunities / Weaknesses	W1	W2	W3	W4	W5	Weights	Number of interaction	Product weight and interaction	Rank
O1	1	0	0	0	1	<u>0,2</u>	2	0,4	4
O2	1	1	1	1	1	<u>0,25</u>	5	1,25	1
O3	1	1	0	1	1	<u>0,2</u>	4	0,8	2
O4	1	1	0	1	0	<u>0,25</u>	3	0,75	3
O5	1	1	0	1	1	<u>0,1</u>	4	0,4	4
Weights	<u>0,2</u>	<u>0,3</u>	<u>0,15</u>	<u>0,15</u>	<u>0,2</u>				
Number of interaction	5	4	1	4	4		36		
Product weight and interaction	1	1,2	0,15	0,6	0,8			7,35	
Rank	2	1	5	4	3				

Some of the particular chances may reduce the weaknesses. 36 of interactions with 7.35 of weight have been identified. Worth the special attention is access to new technologies that can reduce all of the chosen operator's weaknesses.

Tab. 9. Whether a particular threat strengthens the weakness?

Threats / Weaknesses	W1	W2	W3	W4	W5	Weights	Number of interaction	Product weight and interaction	Rank
T1	1	1	0	1	1	<u>0,25</u>	4	1	2
T2	1	1	0	1	1	<u>0,3</u>	4	1,2	1
T3	1	1	0	0	1	<u>0,25</u>	3	0,75	3
T4	1	1	0	0	1	<u>0,1</u>	3	0,3	4
T5	0	0	0	0	0	<u>0,1</u>	0	0	5
Weights	<u>0,2</u>	<u>0,3</u>	<u>0,15</u>	<u>0,15</u>	<u>0,2</u>				
Number of interaction	4	4	0	2	4		28		
Product weight and interaction	0,8	1,2	0,15	0,3	0,8			6,5	
Rank	2	1	5	4	2				

The last table presents threat's influence on the weaknesses. According to the data, number of interaction between them is 28 while weight is 6.5. None of the threats affects all weaknesses which is the positive news in the analysis. The most important threat for these weak point is e-substitution that confirms the cited literature.

Table 10 summarizes the SWOT-TOWS analysis and relates the results to the strategy of operation.

Tab. 10. Results of SWOT and TOWS analysis

	Opportunities	Threats
Strengths	<i>Agressive strategy</i>	<i>Conservative strategy</i>
	The number of interactions 70	The number of interactions 74
	Weighted average number of interactions 14,35	Weighted average number of interactions 14,9
Weaknesses	<i>Competitive strategy</i>	<i>Defensive strategy</i>
	The number of interactions 67	The number of interactions 60
	Weighted average number of interactions 13,4	Weighted average number of interactions 12,55

The highest number of interactions (74) and the highest weighted number of interactions (14.9) in the analyzed case occur between strengths and threats. This means that the postal operator should adopt a conservative strategy. The mini-maxi strategy indicates the need to use strengths to reduce threats. It is characteristic for enterprises operating on declining markets. The greatest threats (associated with digitization) contribute to predictions about problems with the traditional postal market in favor of electronic solutions. Due to the fact that this company is a leader on the domestic market, it has the advantages of allowing to take action that will help him adapt to changing environmental conditions and maintain his current position (e.g. good financial condition enables the implementation of new technologies that are a response to the needs of digital customers).

SUMMARY

To summarize, the PDCA cycle is a useful, basic tool in improving the quality of services. The SWOT analysis may be part of the planning stage. Its results should be treated as the foundation for further actions and research.

The presented case-study uses an extensive SWOT-TOWS analysis. The obtained result is the highest weighted value of the interaction between strengths and threats which means recommending adopting a conservative strategy of minimizing threats by using strengths for this postal operator.

The analysis may be the basis for further scientific work. In relation to the presented PDCA cycle, the next step is to finalize the planning stage e.g. by setting an objective using the SMART method. Then, subsequent stages of the cycle can be implemented using methods and tools to enable the achievement of this objective.

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