European Research Studies Journal
Volume XXIV, Special Issue 5, 2021

pp. 122-139

OrgRes Diagnostic Tool for Organizational Resilience: The Case of a Polish Aviation Company during the Pandemic

Submitted 29/09/21, 1st revision 15/10/21, 2nd revision 04/11/21, accepted 10/12/21

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Abstract:

Purpose: *The purpose of the research paper was to redevelop the OrgRes Diagnostic tool in order to improve and make it more precise. It was originally developed in partnership with the Resilience Expert Advisory Group (REAG) in Australia and Resilient Organizations in New Zealand. The OrgRes Diagnostic tool allows to determine (measure) the only initial state of organizational resilience of individual organizations or particularly their departments.*
Design/Methodology/Approach: *A Methodology of the survey is based on a questionnaire with twenty six questions used for more effective and precise assessing the potential of resilience measures such as: leadership & culture, change ready and networks & relationships. The results of the analyses were subject of two in-depth interviews for better explanation of the findings. Due to the specific situation during the shutdown of the Polish aviation industry, the survey was directed at the personnel of a selected Polish commercial air transport operator in order to obtain statements describing the potential of resilience to the crisis caused by the outbreak of the COVID-19 pandemic.*
Findings: *Therefore, main finding of the survey proves that, the redevelopment of the OrgRes Diagnostic tool allows managers to assess the potential of resilience measures such as, leadership and culture, change ready and networks and relationships in more effective and precise way. Additionally, two sub-measures related to the key resilience capabilities of the organization were identified.*
Practical Implications: *The paper also presents values and benefits that companies can obtain by adopting the improved tool to combat COVID-19, mainly boosting the organizational resilience and minimizing the pandemic risk.*
Originality/Value: *The redeveloped tool is so versatile that it can also be used as measure of resilience potential in other organizations for comparison purposes. The key objective of the study was to identify particularly sensitive areas in the company that require immediate improvement. Their further neglect will result in the deterioration of the company's resilience potential.*

Keywords: *Organizational resilience, commercial air transport, crisis management, safety management.*

JEL classification: *M2, M29.*

Paper Type: *Research article.*

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1. Introduction

COVID-19 was first identified in China (peak incidence February 13, 2020), and next it spread to neighboring countries (South Korea - peak incidence February 29). Subsequently, the disease began to spread around the world and was recognized as a pandemic by the World Health Organization (WHO) on March 11, 2020. The raging pandemic and the subsequent governmental actions have mainly affected the industries vulnerable to this type of threat (Gössling, 2020). One of the most affected sectors in this crisis is the tourism industry, and the commercial air transport. Recent years in the aviation industry have been characterized by high volatility in demand for transport. It was caused by events of different nature and duration of impact.

When analyzing the crises known from the past, it can be concluded that they were mainly caused by one of the two main factors. The first is travelers' uncertainty and fear. An example of such a crisis was the SARS-CoV-1 virus epidemic. The second factor is bad economic situation in the world, an example of which is the financial crisis of 2008-2009. The current crisis combines both causes, creating a situation that aviation has not yet experienced in over 100 years of its history. The SARS-CoV-2 pandemic in China in the period until April 7, 2020, caused 15 times more disruption than the two-day airspace closure over the US during the terrorist attacks in September 2001. It is estimated that the global economic impact of the COVID-19 pandemic by the end of 2020 was more than 30 times greater than the crisis caused by the SARS-CoV-1 epidemic.

Compared to the world economic crisis of 2008-2009, economists forecast a threefold greater decline in the global economy (The Airline Passenger Experience Association, 2020). It should be noted that, according to EUROCONTROL data, the recovery of the European aviation market after the crisis related to the terrorist attack on the World Trade Center in 2001 lasted one and a half years. In Europe, there were 200,000 canceled flights. The global economic crisis resulted in a reduction of the number of air connections by 600,000. It took 8 years to restore the European market to the pre-crisis level. It is estimated that during the current crisis the number of cancelled flights will exceed 6 million (Eurocontrol, 2010).

So, how long may it take to restore it to the level from 2019. According to Haywood (2020), if there are no solutions for going back to having a high demand scenario like in the pre-COVID era, and all businesses that serve travelers understand that they have to adjust to the new norms, the business models will have to realign. Additionally, Rivera *et al.* (2016) state that the expansion of tourism and satisfaction are directly proportional; tourism activities should be resumed to bring back normalcy in society.

In Poland, the main air carriers include LOT Polish Airlines, Ryanair, Wizz Air and Enter Air. The stagnation on the Polish aviation market began in the first quarter of 2020 after the outbreak of the coronavirus pandemic in Europe and the closure of the US borders. Since then, carriers had to deal with severe transport restrictions first, then a lack of demand for air travel and less confidence of potential customers in flying. This directly translated into their results in passenger transport. The suspension of international passenger traffic in Poland due to the restrictions related to the pandemic resulted in a

decrease in the number of passengers by 64% in the first half of 2020 compared to the corresponding period of 2019 (a decrease of over 99% between the second quarters of 2020 and 2019). This result is 1.2 percentage points better than the result of airports associated with Airports Council International (ACI) Europe. In the first half of 2020, the number of operations decreased by 60% (https://ulc.gov.pl, 2021). In the face of such a dramatic situation, building organizational resilience among air carriers is one of the most important challenges and tasks for managers. Brown defines organizational resilience as "The ability to survive a crisis and thrive in a world of uncertainty" (Brown *et al.,* 2017).

2. Literature Review

The outbreak of the COVID-19 pandemic has undoubtedly caused a crisis in the aviation industry around the world. In that context, it is a very interesting issue to analyze how the branch is vulnerable to that kind of event or rather how resilient it is against a crisis. Defining organizational resiliency for aviation seems to be crucial for organizations to better understand requirements for efficient crisis management and answering the question how to be better prepared in case of this type of emergency. COVID-19 very quickly began to be compared to the phenomenon of the black swan, one which is theoretically impossible, however its course shows it has been an underappreciated phenomenon in terms of safety (Taleb, 2007). It was equally quickly noticed that many researchers have previously warned of a global virus, and therefore the current situation should not be assessed as impossible, but only previously underestimated.

On the other hand, securing oneself against many different threats is expensive and may prove ineffective for many organizations in the long run. Self-awareness of risk and the ability of an organization to manage their vulnerabilities, and be adaptive and innovative (Aldunce *et al.,* 2014) is a much better solution. We call this ability the organization's resilience. Resilience in the tourist industry also has other contexts, most often it is a systemic, economic, and environmental one (Bruneau and Andrei 2004). The article focuses mainly on the organizational context of a selected Polish commercial airline.

There are many definitions of organizational resilience. Organizational resilience considers physical properties as well as organizational structure and capacities (Cutter *et al.,* 2008, Barroso *et al.,* 2015). Brown *et al.* (2017) state that a resilient organization should detect unexpected events early and then must develop resilience capabilities to react to the negative consequences of unexpected events and to return quickly to its original state, the one before risk occurrence, or to move to a new best state after being affected by the risk and continue business operations as efficiently as possible. The root word of resilience comes from the Latin 'to bounce back'. The standard ISO 22316:2017 "Security and resilience – organizational resilience – principles and attributes" defines organizational resilience as, "ability of an organization to absorb and adapt in a changing environment". The adaptability makes an organization stronger against crises and works like a vaccination. Organizations need to integrate elements of resilience into their everyday business practices to improve response in the face of adversity (Sawalha, 2015). Organizational resilience in the literature is described inter alia through 3 interdependent attributes and 13 indicators of resilience (Brown *et al.,* 2017):

a) Leadership & Culture,
b) Change Ready,
c) Networks & Relationships.

These attributes and indicators are illustrated in Figure 1. Resilience perceived in this way is defined as "The ability to survive a crisis and thrive in a world of uncertainty" (Brown *et al.*, 2017). Leadership and Culture means the adaptive capacity of the organization created by its leadership and culture identified by the following indicators: Leadership (strong crisis leadership to provide good management and decision making during times of crisis, as well as continuous evaluation of strategies and work programs against organizational goals), Staff Engagement (the engagement and involvement of staff who understand the link between their own work, the organization's resilience and its long term success. Staff are empowered and use their skills to solve problems), Situation Awareness (staff are encouraged to be vigilant about the organization, its performance, and potential problems. Staff are rewarded for sharing good and bad news about the organization including early warning signals and these are quickly reported to organizational leaders), Decision Making (staff have the appropriate authority to make decisions related to their work and authority is clearly delegated to enable a crisis response.

Highly skilled staff are involved, or are able to make, decisions where their specific knowledge adds significant value, or where their involvement will aid implementation), Innovation and Creativity (staff are encouraged and rewarded for using their knowledge in novel ways to solve new and existing problems, and for utilizing innovative and creative approaches to developing solutions). Networks and Relationships can be defined as the internal and external relationships fostered and developed for the organization to leverage when needed. It is identified by the following indicators, Effective Partnerships (an understanding of the relationships and resources the organization might need to access from other organizations during a crisis, and planning and management to ensure this access), Leveraging Knowledge (critical information is stored in a number of formats and locations and staff have access to expert opinions when needed.

Roles are shared and staff are trained so that someone will always be able to fill key role), Breaking Silos (minimization of divisive social, cultural and behavioral barriers, which are most often manifested as communication barriers creating disjointed, disconnected and detrimental ways of working), Internal Resources (the management and mobilization of the organization's resources to ensure its ability to operate during business as usual, as well as being able to provide the extra capacity required during a crisis). Change Ready means the planning undertaken and direction established to enable the organization to be change ready. It is identified by the following indicators, Unity of Purpose (an organization’s wide awareness of what the organization's priorities would be following a crisis, clearly defined at the organization level, as well as an understanding of the organization's minimum operating requirements), Proactive Posture (a strategic and behavioral readiness to respond to early warning signals of change in the organization's internal and external environment before they escalate into crisis), Planning Strategies (the development and evaluation of plans and strategies to manage vulnerabilities in relation to the business environment and its stakeholders), Stress Testing Plans (the

participation of staff in simulations or scenarios designed to practice response arrangements and validate plans) (Brown *et al.*, 2017).

Figure 1. *Key attributes and indicators of resilience. Source: own elaboration based on https://www.resorgs.org.nz/*

Source: *Own study.*

On these assumptions, The OrgRes Diagnostic has been developed in partnership with the Resilience Expert Advisory Group (REAG) in Australia and Resilient Organisations in New Zealand. The REAG provides advice and expertise to the Australian Government on critical infrastructure resilience. Resilient Organizations is a social enterprise that works to improve the resilience of organizations around the world. The OrgRes Diagnostic is a free online tool which offers a quick assessment of an organization's resilience using 13 questions, each relating to one of the 13 indicators of organizational resilience mentioned earlier. All questions were rated on the eight-point-type scales (from "Significant weaknesses" (1 point) to "Significant strength" (7 points), there was also an option "Not sure" (0 points)). It will give a snapshot of an organization's current level of resiliency (https://orgrestool.resorgs.org.nz/, 2021).

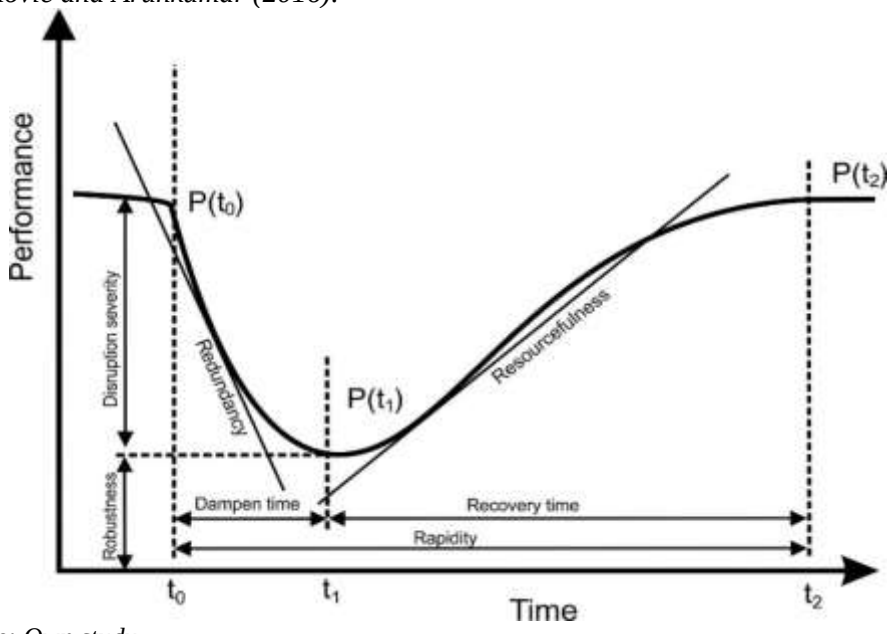
All the presented individual measures of resilience potential can be presented and analyzed also in percentage terms in relation to the maximum possible score of points. According to the authors of the tool, organizational resilience refers to the business' ability to adapt, evolve, and shape itself to effectively respond to challenges, present and future ones. Natural disasters, supply chain disruptions, and unexpected economic downturns are among the kinds of shocks organizations may face.

Schilari (2013) states that the concept of resilience has been applied in several fields, such as ecology, social and organizational science, psychology, computer science, etc. It is important that the meaning of resilience generally remains similar across applications.

However, the application of resilience engineering is usually dedicated to specified industries, but the survey is useful to explain some specific definitions and components of resilience indicators. That is the reason to determine the level of resilience based on the commonly used and applied in technical systems so-called resilience triangle. One of the first examples of the triangle use was described in a work by Bruneau and Andrei (2004). The resilience triangle presents a decrease in the functionality of the organization (system) due to the ongoing crisis and related damage. The triangle considering linear relationships is obviously a simplified model because we are dealing with curvilinear relationships.

In Figure 2 the curve depicts performance changing over time during a crisis. The y-axis refers to Performance – P and the x-axis refers to time – t from pre-event to resolution. The so-called resilience triangle is formed by vertices at [t_0, P (t_0)], [t1, P (t_1)] and [t_2, P (t_2)]. The area under the curve between time t_0 and t_2 symbolizes the organization's resilience to the crisis.

Figure 2. *Generic presentation of system resilience. Source: own elaboration based on Simonovic and Arunkumar (2016).*



Source: *Own study.*

Minimizing the loss of resilience, can be achieved in two ways: min $|P(t_0)-P(t_1)|$ – minimizing the effects of the disturbance or min $|t_2-t_1|$ – minimizing the time necessary to recover to the state before the disturbance. In the literature, reducing the area of the resilience triangle, while maintaining a constant recovery time $|t_2-t_1| \approx$ const. is known as static resilience, which is necessary to recover to the state before the disturbance. However, the reduction in the resilience triangle's area due to a decrease in time (with a constant value of the effects of interference $|P(t_0)-P(t_1)| \approx$ const.) is known as dynamic resilience (Rose, 2014).

3. Tools and Methods

The prepared survey was originally based on the OrgRes Diagnostic questionnaire (13 questions) made by the Resilience Expert Advisory Group (REAG) in Australia and Resilient Organizations in New Zealand (https://orgrestool.resorgs.org.nz/orgres-tool/) and then it was modified and redeveloped by authors of the paper in the following way:

a) Original 13 questions (items) of the OrgRes Diagnostic questionnaire were reformulated to be better understandable for respondents in a more descriptive manner (see shaded fields in Table 2).
b) One more question (item) was added to each of 13 indicators of organizational resilience mentioned earlier (see unshaded fields in Table 2), which creates set of two questions for each indicator to specify more precisely each of them. Eventually, a total number of questionnaire items amounted to 26.
c) Despite the measure of resilience, measure of resilience's potential was proposed. In the current crisis caused by the COVID-19 pandemic, since we are not able to clearly determine at which point, we are in this situation, it is currently not possible to measure the resilience (e.g., lack of t_2). There are only a few methods that specifically focus on how to measure resilience, or rather the potential for resilience, and there is a clear gap when it comes to assessing resilience using quantitative methods (Tew et al., 2008).
d) The scoring of individual response results was proposed on seven-point Likert-type scale as follows:
   1. I strongly disagree – 1 point,
   2. I disagree – 2 points,
   3. I rather disagree – 3 points,
   4. I have no opinion – 4 points,
   5. I rather agree – 5 points,
   6. I agree – 6 points,
   7. I strongly agree – 7 points.

   Not sure (NS) option from original version of the questionnaire has been removed. Support for this conclusion comes from research that explored the meaningfulness of the substantive responses provided by people who would have said ''don't know'' if that option had been offered. Their later responses mostly reflected meaningful opinions because they correlated moderately with one another and predicted the respondents' vote that occurred after the interview (Carson *et al.*, 1998). That is why a commonly known Likert scale is a better rating scale that quantitatively assesses opinions, attitudes, or behaviours. This tool tries to elaborate a quantitative assessment of the potential of organizational resilience according with these principles.
e) The questionnaire provides, like the previous one, three sub-measures connected with 3 interdependent attributes and 13 indicators of resilience: the measure of the potential of Leadership and Culture, the measure of the potential of Change Ready and the measure of the potential of Networks and Relationships, but they are better clarified by adding additional questions (see point 4b.). The specified sub-measures can be obtained from the measurement of the potential of total resilience (Table 3).
f) The questionnaire additionally provides two sub-measures: the measure of the static resilience potential and the measure of the dynamic resilience potential. The specified

sub-measures can be obtained from the measurement of the potential of total resilience (Table 3).

g) All the presented individual measures of resilience potential can be presented and analyzed also in percentage terms in relation to the maximum possible number of points.
h) An in-depth interview was an additional element of the survey conducted among the selected company's employees, extending the results of the questionnaire for a better interpretation of the survey results.

In this paper, the results of semi quantitative assessment would be considered using a questionnaire. A review of literature has shown that there are 3 interdependent attributes and 13 indicators of resilience, and there are many different definitions that are accepted by different authors. This article tries to elaborate a quantitative assessment of the potential of organizational resilience according with these principles.

The questionnaire consisted of 26 questions. The questions were allocated in a selective manner to six main dimensions. Measures defined in this way enable us to obtain the resulting data to estimate the total resilience potential, the measure of the static resilience potential, the measure of the dynamic resilience potential and the measure of the potential of Leadership and Culture, the measure of the potential of Change Ready and the measure of the potential of Networks and Relationships.

An in-depth interview was an additional element of the survey conducted among the company's employees, extending the results of the questionnaire. Two previously surveyed respondents were interviewed: one was representing the ground personnel and the other was speaking on behalf of the flying personnel. We selected two interviewees who had sufficient background knowledge or management-level work experience (more than 15 years of service and average age more than 40). We conducted and recorded open-ended interviews. The questions asked were aimed at broadening the knowledge about the attitude of each of the studied group to the company's resilience potential. The questions concerned the explanation of the difference obtained in the survey regarding the perception of the company's resilience potential by ground and flying personnel (the average difference was one point) and the explanation of the results obtained in the survey regarding the strongest and weakest elements of organizational resilience. Conclusions from the in-depth interview allowed for a better interpretation of the survey results and were discussed in the chapter Discussion.

Due to the specific situation during the shutdown of the Polish aviation industry, the survey was directed at the personnel of a selected Polish commercial air transport operator in order to obtain statements describing the potential of resilience to the crisis caused by the outbreak of the COVID-19 pandemic. The aim of the study was to measure the resilience potential in the aviation industry according to the redeveloped OrgRes Diagnostic tool on the example of the surveyed company. Before the questionnaire was sent out, two types of personnel were selected to be surveyed: flying personnel and ground personnel. The respondents had adequate knowledge to be able to consistently respond to the statements contained in the survey.

The data collection procedure was conducted in the period between October 30, 2020, and December 2, 2020. The questionnaire consisting of 26 questions each rated on seven-point Likert-type scale (Table 3) was sent to 5 representatives of flying personnel and to 5 representatives of ground personnel of the operator. They represented two main departments of the company. The questionnaire included a cover letter, explaining the purpose of the research. The survey was conducted online. Additionally, some questions connected with features of respondents were added to the questionnaire. The structure of the respondents is presented in Table 1.

Table 1. *Features of survey respondents*

		All	Flying personnel	Ground personnel
Respondents		10	5	5
Sex	Male	10	5	5
	Female	0	0	0
Average length of service	1-10	4	1	3
	11-20	4	2	2
	20+	2	2	0
Average age	18-30	4	1	3
	31-45	3	2	1
	46-60	3	2	1

Source: *Own study.*

The collected data has been coded and checked for correctness and randomness of the answers given. The STATISTICA 13 program was used in the data analysis. The statistical main methods used in this study included: descriptive statistics to compute summary statistics such as means or standard deviations, descriptive statistics by groups to calculate descriptive statistics and correlations for dependent variables in each of a number of groups defined by one or more grouping (independent) variables, reliability and item analysis to assess internal consistency of items and Cronbach's alpha coefficient.

4. Results

Table 2 presents statements describing strategies to overcome the effects of a pandemic crisis and lockdown. The overall Cronbach's alpha coefficient of Resilience Potential measurement was 0.96. But the item-total correlation varied from 0.37 to 0.93. It means that the strength of the correlation was from weak (0.2–0.39) to perfect (0.9–1.00), but most of the values were within the strong correlation range (Akoglu, 2018). As α CR were higher than 0.70, it was confirmed that the questionnaire is reliable for data evaluation. In this way, a high value of internal consistency was obtained. (Taber, 2018). The considered confidence level was 0.05. The goal of our research is to build up a consistent measure of sub-resilience categories.

The list of factors presented in Table 2 was used to develop scales of individual resilience dimensions in the organization. The questionnaire consisted of five sub-measures: a measure of static resilience, a measure of dynamic resilience, a measure of leadership &

culture ability, a measure of change ready ability and a measure of networks & relationships ability. The specified sub-measures can be obtained from the measurement of the potential of total resilience (Table 3). Table 3 presents the list of factors in individual resilience scales in the aviation organization.

Table 2. *Internal consistency analysis results*

No.	Rated Item	Indicator	Mean	SD	Item-total correlations
1	The company's management thinks forward-looking, flexibly and entrepreneurially when making decisions. This is especially visible during the crisis.	Leadership	4,10	1,10	0,50
2	The management team analyzes the many different options and available data before making a final decision.	Leadership	4,90	0,99	0,88
3	Employees are properly motivated and, at work, they focus on achieving clearly defined goals.	Staff engagement	3,30	1,33	0,81
4	People in our organization work on the problem until it is resolved.	Staff engagement	4,30	1,49	0,89
5	As an organization, we constantly monitor the internal and market situation in search of conditions for crisis situations.	Situation awareness	4,50	1,50	0,88
6	Employees express their opinions on the activities of the organization in order to improve its operation.	Situation awareness	3,80	1,32	0,64
7	Our organization is able to make difficult decisions in the shortage of time thanks to the use of SOP (Standard Operating Procedures) and thanks to dynamic management.	Decision making	4,30	1,34	0,77
8	We have a clearly defined contingency response cell that—if necessary—will be able to take control over the activities of the organization.	Decision making	4,90	1,10	0,83
9	The organization supports people who can think creatively and solve problems effectively.	Innovation and creativity	3,40	1,43	0,84
10	There are activities organized to promote innovation and creativity within the company.	Innovation and creativity	4,00	1,25	0,77
11	We build strong business relationships with various other organizations, both during and outside the crisis.	Effective partnerships	4,50	1,43	0,65
12	Critical points that may lead to a disturbance in cooperation with other organizations are constantly monitored.	Effective partnerships	4,50	0,85	0,69
13	If decision makers are not available at the moment, we also have others that can substitute them.	Leveraging knowledge	4,30	1,49	0,37
14	Employees are provided with training programs to help mitigate the impact of the pandemic on the organization's activity.	Leveraging knowledge	3,30	1,70	0,85
15	Employees from various departments effectively cooperate with each other, exchange ideas and information.	Breaking silos	3,70	1,16	0,65
16	A sense of community with other employees is a very important part of cooperation. Disputes are resolved efficiently and quickly and the atmosphere is generally friendly.	Breaking silos	3,70	1,70	0,44
17	The number of employees and resources is constantly kept at a satisfactory level, which allows the organization to cope with the crisis as well.	Internal resources	4,60	1,58	0,71

18	Employees' qualifications are systematically raised and their potential developed.	Internal resources	3,80	1,62	0,71
19	Co-workers have clearly defined goals and priorities during the crisis.	Unity of purpose	4,30	1,34	0,74
20	Management actions support a sense of unity among employees.	Unity of purpose	3,50	1,90	0,74
21	As an organization, we chose the areas of risk monitoring and defined indicators that characterize them.	Proactive posture	4,90	1,79	0,67
22	The procedures within the company can be modified in order to increase the quality of management and better adapt them to the situation.	Proactive posture	5,60	1,07	0,37
23	Our company has alternative plans that will be implemented during various types of market breakdowns.	Planning strategies	3,70	1,25	0,57
24	The company has an "ideal vision" of its own functioning, which it constantly strives for thanks to its actions.	Planning strategies	4,20	1,75	0,82
25	As a company, we regularly review our capabilities to identify potential weaknesses.	Stress testing plans	4,10	1,45	0,93
26	System operation gaps found during the audit are the basis for the analysis of their causes and the introduction of new, innovative solutions that will not allow their reappearance in the future.	Stress testing plans	4,90	1,52	0,54

Source: *Own study.*

Table 3. *Subscales of Organizational Resilience Potential*

Scale	Items list	Cronbach's alpha	Item-total correlations	Mean	SD
Potential of total resilience	1-26	0.96	0.44-0.93	109.10	26.62
Potential of static resilience	2, 3, 5, 8, 11, 12, 13, 16, 17,18, 19,20, 21, 23,24, 25	0.94	0.35-0.93	67.70	17.08
Potential of dynamic resilience	1, 4, 6, 7, 9, 10, 14, 15, 22, 26	0.90	0.33-0.89	41.40	9.82
Sub potential of Leadership & Culture	1-10	0.94	0.47-0.92	41.50	10.53
Sub potential of Change ready	11-18	0.85	0.31-0.80	32.40	8.20
Sub potential of Networks & Relationships	19-26	0.88	0.42-0.86	35.20	9.02

Source: *Own study.*

An individual resilience sub scales in the organization based on the results obtained from both flying personnel and ground one's answers are depicted in Table 4.

Table 4. *An individual resilience sub scales for flying personnel and ground one*

Scale	Personnel	Mean	SD
Potential of total resilience	flying	3.70	0.80
Potential of static resilience	flying	3.68	0.85
Potential of dynamic resilience	flying	3.74	0.76
Sub potential of Leadership & Culture	flying	3.72	0.95

Sub potential of Change ready	flying	3.85	0.83
Sub potential of Networks & Relationships	flying	3.53	0.69
Potential of total resilience	ground	4.69	1.05
Potential of static resilience	ground	4.79	1.03
Potential of dynamic resilience	ground	4.54	1.09
Sub potential of Leadership & Culture	ground	4.58	1.06
Sub potential of Change ready	ground	4.95	1.19
Sub potential of Networks & Relationships	ground	4.58	1.09

Source: *Own study.*

To better illustrate the data obtained by flying personnel, ground personnel and as a whole, with 13 indicators of resilience, the results are presented on radar charts for the whole – Figure 3, for flying personnel – Figure 4 and for ground personnel – Figure 5, respectively.

Figure 3. *Key indicators of assessment of the total organizational resilience potential.*

Source: *Own elaboration.*

5. Discussion

Redevelopment of the OrgRes Diagnostic tool has been just initially verified positively through a survey of a selected Polish commercial air transport operator. But, because of dynamic crisis the study will provide useful suggestions in the context of resilience to the aviation management. The tools in the improved form of a questionnaire and additionally in-depth interview were used to examine the organizational resilience potential of the selected airline. These methods are so versatile that they can also be used as measures of resilience potential in other organizations for comparison purposes.

Figure 4. *Key indicators of assessment of the organizational resilience potential according to flying personnel.*

Source: *Own elaboration.*

Figure 5. *Key indicators of assessment of the organizational resilience potential according to ground personnel.*

Source: *Own elaboration.*

The key objective of the study was to identify particularly sensitive areas in the company that require immediate improvement. Their further neglect will result in the deterioration of the company's resilience potential. Based on the comparison of the results obtained

from both above methods, it can be concluded that they are characterized by a high degree of reliability despite a relatively small group of respondents as they confirm each other.

The study made it possible to develop three main aspects of resistance potential by examining thirteen indicators. Adding to each indicator one more question compared to the original one made the questionnaire more precise (26 items). Networks and relationship's ability occurred to be best, followed by leadership & culture ability and finally change ready ability.

However, it should be remembered that this is the average of the measured component factors. After the survey had been performed, some question arose. To better understand and interpret the results, the in-depth interview was prepared and performed. Two previously surveyed respondents were interviewed, one was representing the ground personnel and the other was speaking on behalf of the flying personnel. Both had sufficient background knowledge or management-level work experience. They have similar opinions regarding the individual resilience potentials of the company in which they work. Both members of the flying and ground personnel agreed that proactive posture and decision making were among the best functioning aspects of the company's activity. In the opinion of both surveyed groups, the company flexibly adjusts to the dynamic market situation, looks forward and modifies procedures as often as possible to adapt to the prevailing conditions.

The first example is the immediate setting up of a crisis team to monitor the current situation related to the COVID-19 pandemic. Another example is the actions that led to an increase in the number of charter flights in the face of a pandemic. This proves the dynamic transformation of the carrier's business policy. Moreover, according to employees' opinions, procedures were introduced very quickly to limit the spread of the virus (masks, temperature measurements, no meals for the staff) for both flight and ground personnel. Opinions of the respondents regarding the negative characteristics of the organization also confirm the results of the questionnaire. Employees do not cooperate well enough with each other, and their commitment largely depends on the situation changes and current earnings.

In the surveyed company, the relations between the management board and employees are mainly of a business nature, and at times one can even observe disinformation among lower-level employees. According to the respondents, the company is not an integral whole, but rather the management board and employees are two different worlds. Although the procedures are extensive and detailed, they are not always followed by employees, which results in the standardization and supervision being at a poor level. According to the flying personnel, the strengths of the company they work for are primarily: proactive posture (5.3) and decision-making (4.2).

The subcategories mentioned by flying personnel as the most sensitive turned out to be: the sense of unification of employees (3.0), strategy (3.1) and cooperation within an organization (3.2). The greatest difference in the respondents' opinions could be observed in the subcategory of leadership and culture, where standard deviations in the case of questions examining employee involvement as well as innovation and creativity

amounted to 1.44 and 1.34 respectively. The respondents most consistently answered the statements examining periodic testing. The three main categories of resilience potential, i.e., Leadership and Culture, Community and Relationships, and Approach to Change in the opinion of flying personnel, reached 3.72, 3.53, and 3.85. A similar situation applies to components of the resistance potential – static/dynamic resistance and the total resistance potential. Points for the above potentials were as follows: 3.68; 3.74; 3.70.

The ground personnel assessed the following subcategories best in the company: proactive posture (5.2), leadership (5.1), internal resources (5.1). The most sensitive subcategories were, in turn, the use of knowledge (4.0), innovation and creativity (4.0) and cooperation within an organization (4.2). The highest values of standard deviations were observed when examining periodic testing (1.62), use of knowledge (1.5) and situation awareness (1.54). Ground personnel assessed the three main categories of resilience potential, i.e., leadership and culture, community and relationships, and approach to change respectively as: 4.58; 4.58 and 4.95. Ground personnel rated the static resilience potential of the company to 4.79, the dynamic resilience potential to 4.54, and the total organizational resilience potential to 4.69. The results obtained by examining the ground personnel significantly differ from the results obtained from the flying personnel (Potential of total resilience was estimated at 59.95 % in relation to the maximum possible score of points for the company, however ground personnel obtained a score of 67.00 %, while flying personnel obtained a score of 52.86 %). At first glance, there are more negative opinions about the resilience of the company in the group of flying personnel.

In questions concerning the differences in the assessment of a company's resilience potential by ground and flying personnel groups, the key issue is the situation regarding the current working conditions of individual employees. Ground personnel is more stable in employment. Their work is less dependent on the demand for travel than the flying personnel. A large proportion of the ground personnel work unchanged number of hours and are financially relatively stable. It is worth noting that the ground personnel have, in the opinion of the respondents, more detailed information about the current condition of the carrier compared to the flying personnel. This is largely due to the office character of work.

The situation of flying personnel in the face of the crisis is less stable. Flying personnel, accustomed to "prosperity", because of their salaries depending on the number of hours in the air, earn much less than before the crisis. Reductions in working hours and salaries by several dozen percent are common, which translates into dissatisfaction. A large proportion of flying personnel are afraid of dismissal, as it is by no means a group more exposed to job cuts compared to ground personnel. The results of the research show that the potential of static resilience is higher than that of dynamic resilience, but, generally, the potential is at an average level in the examined organization (mean scores).

One should consider the differences between resilience and its potential. An organization can have relatively good resilience potential but in the face of such a serious global crisis it can fail and lose its potential, but on the other hand thanks to its resourcefulness it can use it as an advantage. This depends on how the organization recognizes threats and if it

sees them also as opportunities rather than risks only. The presented tool allows executives to find out what aspects should be taken into account to increase the resilience of the organization.

This research comes with some limitations. This study is not conclusive because of its sample size and results can be incomplete and cannot be generalized. But because of the previous validation of the original version of the questionnaire and changing dynamics of the current pandemic, the presented tool allows the management staff to find out what aspects need to be paid attention to increase the resilience of the organization.

The research took place only in one company from aviation branch. Thus, it may be considered that there could have been a selection bias. However, we believe that the surveyed company provide sufficient statistical representativeness for initial validation of the tool. This makes the findings an important element of discussion in the development of resilience by companies in the future. However, because of these limitations, additional surveys should be taken in more companies and from other industries to ultimately validate the tool.
Finally, this paper provides knowledge about the redevelopment of the OrgRes Diagnostic tool for better explanation of the findings. The improved set of research tools (the enhanced questionnaire and the in-depth interview) was prepared for better analysis of the survey. Additionally, two specified sub-measures can be obtained from the measurement of the potential of total resilience. According to them, the organization can focus on proper phase of the crisis situations and sensitive areas concerning both static and dynamic resilience of the company that require immediate improvements.

The results have allowed managers to find out what aspects need to be taken into account to increase the resilience of the organization and its components in a more detailed way. It also provides the benefits that companies can obtain by adopting the tool to combat COVID-19, mainly boosting the organizational resilience, and minimizing the pandemic risk. The tool also allows to determine (measure) the state of organizational resilience potential of individual organizations or particularly their departments. The tool also can benchmark the potential of resilience among organizations and departments. The final results have allowed managers to find out what aspects need to be taken into account to increase the resilience of the organization in a more detailed way.

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