

ŁUKASZ BRZEZICKI

Uniwersytet Gdański, Polska ■ University of Gdansk, Poland

## The Efficiency of Third Age Universities in Poland: a non-Parametric DEA Approach

**Abstract:** The growing number of the elderly in many countries has made it necessary to develop a well-thought-out policy. In the European Union, the concept of lifelong learning is being promoted which includes third-age universities aimed to activate the elderly through education, learning, expanding knowledge and developing interests, as well as a way of actively spending free time and meeting new people. Third age universities (U3A) have been operating in Poland for over 40 years, but they are very rarely analysed. This article measures the efficiency of twenty U3As operating within state universities in Poland in the 2017/2018 academic year. A non-radial SBM model, which is a non-parametric DEA method, was used to analyse efficiency. The results show that seven U3As were 100% efficient. Two were in a quantitative (number of students) or a qualitative (number of classes) model, and five in both models simultaneously. However, most universities focused on the number of students rather than the number of classes offered to their students.

**Keywords:** data envelopment analysis; DEA; efficiency; higher education; third age universities

**Received:** 2 December 2019

**Accepted:** 30 August 2020

### **Suggested citation:**

Brzezicki, Ł. (2019). The Efficiency of Third Age Universities in Poland: a non-Parametric DEA Approach. *Przedsiębiorczość – Edukacja [Entrepreneurship – Education]*, 16(2), 141–151. doi: 10.24917/20833296.162.11

## Introduction

In Poland, as in other European countries, the trend to a longer life expectancy has been systematically increasing. Thus the share of the elderly in the population of a given country (Eurostat) has increased. This increase means that in many countries, there is a growing interest, usually in the context of ‘senior citizens’, the ‘silver economy’ or the ‘grey pound’.

Public administration increasingly recognises the need to take care of the elderly, and this is reflected in the creation of an appropriate legal framework and monitoring of their situation (*Ustawa...*) with the development of financial assistance for various bodies through the introduction of a grant system for activities (e.g. education, social activity promoting intra- and intergenerational integration, social participation, social services) related to their various needs (*Komunikaty Ministra Nauki i Szkolnictwa Wyższego z 2016 i 2017; Uchwała...*). The Statistics Poland (2018) report on measuring the situation in Poland shows that 14.1% of all institutions have activities for those who are at least 60 years old.

Activity for older people can be considered through participation in classes conducted through Universities of the Third Age (U3A). Their mission is to activate the elderly through education, learning and developing interests, as well as a way of actively spending free time and meeting new people. The idea of U3As was favourably received by the academic community and has been successfully implemented in the higher education system. It is because the institution of a university itself has transformed in the 21<sup>st</sup> century from a traditional model, where its activity was to create and transfer knowledge during teaching and research, towards an entrepreneurial model that actively creates its future in various areas (Olearnik, Pluta-Olearnik, 2015). The idea of an entrepreneurial culture in higher education meets today's requirements of various stakeholder groups. Currently, universities are required to be more active than before, paying more attention outside of standard teaching and research activities to a so-called 'third mission', concerning openness and activities for society (Krčmářová, 2012; Rubens et al., 2017).

It should also be noted that U3A activities fall under the concept of lifelong learning. The Lifelong Learning Programme (LLP) is an initiative of the European Union, which aims to develop various forms of such learning by supporting cooperation between education and training systems in participating countries. U3As play a significant role in lifelong learning in Poland (Szluz, 2016). Because of this, universities should be investigated in terms of their services addressed to the elderly.

The research aims to measure the efficiency of selected U3As operating in state universities in Poland in the 2017/2018 academic year. The article consists of six parts. After the introduction, in the second part, the U3A sector in Poland is described while the third reviews research on various aspects. The fourth section presents the methodology for the empirical research on selected U3As, the variables adopted for analysis, and the assumptions of the DEA model. The fifth part presents the empirical results and interprets them while the last summarises and presents directions for further research.

## University of the Third Age in Poland

The literature (Malec Rawiński, Zakowicz, 2018) indicates that the first University of the Third Age was founded in 1973 at the Faculty of Social Sciences of the University of Toulouse, France, by Pierre Vellas. In Poland, the first U3A was established in 1975 at the Medical Centre of Postgraduate Education in Warsaw on the initiative of Halina Szwarc (Malec Rawiński, Zakowicz, 2018). It is worth emphasising that Poland was the third country in the world (after France and Belgium) in which the U3A movement quickly developed.

The number of U3As is growing rapidly in the world, a natural consequence of the establishment in 1976 of AIUTA – Association Internationale des Universités du Troisième

Âge, an association of U3As from different countries. The association's goal is to promote the education of older people, exchange knowledge and experience between universities from different countries, as well as to conduct research on adult education. In 2007, a U3A Federation was established in Poland to unite Polish U3As, and their dynamic development was influenced by various factors, the most important being the systematic increase in the number of the elderly who form the natural group of participants. The launch of substantive and financial support for U3As by the Polish-American Freedom Foundation (PAFF) was followed by the establishment of the Polish Association of Universities of the Third Age (Ogólnopolska Federacja Stowarzyszeń Uniwersytetów Trzeciego Wieku) as a part of its activity from 2007. U3As from all over Poland could benefit from free training and consultation, as well as financial support from the Ministry of Science and Higher Education as part of the "Support for Universities of the Third Age" (Wsparcie Uniwersytetów Trzeciego Wieku) and the Ministry of Family, Labour and Social Policy as part of the "Governmental Program for the Social Activity of the Elderly" (Rządowy Program na rzecz Aktywności Społecznej Osób Starszych).

Currently, both in Poland and elsewhere in the world, two main U3A models dominate which can be divided according to the strength of relationship with the university:

The French model: the U3A is closely related to an academic centre, characterised by a high level of teaching, research and development, and diverse in terms of organisational forms (full integration with the university, close cooperation or independence).

The British model (also called the Cambridge model): based on self-education and self-help of the elderly without support from universities. This means that they must organise classes using their knowledge and experience. There is also no rigid division between students and teachers.

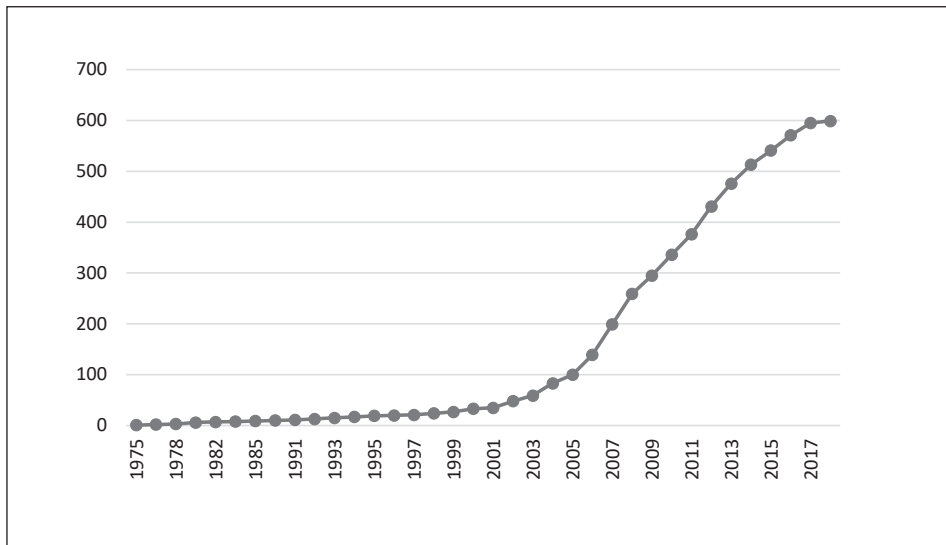
In the literature (Czerniawska, 2009; Marcinkiewicz, 2012) many different U3A models and intermediate forms are listed, classified according to various criteria, among which are worth mentioning:

- The American model - Road Scholar (Elderhostel) - whose concept assumes the education of older people at a high level combined with travel (training courses, classes and trips).
- The Chinese model which aims primarily at cultivating Chinese culture and customs, e.g. calligraphy, the basics of natural medicine, etc. at a professional level.
- An internet (virtual) variant is a natural consequence of the development of modern technology, as well as a response to the needs of the elderly, who for various reasons cannot participate in activities organised in a classic U3A.

Although in Poland two main U3A models dominate (French and British), it can be seen more and more often that the program offer and organisational form deviate from classic models by mixing the ideas of the classic U3A models with others. Since the establishment of the first U3A in Poland, their number has been increasing yearly (Figure 1).

On the one hand, the increase in U3As in Poland can be welcomed, but on the other, Poland lags when it comes to the level of social involvement of the elderly. In a survey conducted in all European Union countries on the Active Aging Index (AAI), Poland ranked last out of 28 countries (UNECE, 2015). The AAI index measures the extent to which the potential of older people in relation to the economy and society is used (active participation in the labour market, participation in social life, leading an active and healthy life).

Figure 1. The number of U3As in Poland in 1975–2018



Source: Statistics Poland (2019b: 16)

Based on the Statistics Poland survey (2016, 2019a; 2019b), it can be seen that there is a considerable regional variation in the number of U3As with the most massive increase between 2014/2015 and 2016/2017 being found in Wielkopolskie, Śląskie and Mazowieckie voivodeships with the largest number in both academic years being recorded in Mazowieckie. Polish U3As operate under various organisational and legal forms (Statistics Poland, 2019a); however, for the most part, U3As operate within state and private universities, local government institutions and NGOs. The vast majority of U3As (96%) focus on organising cultural and artistic events for their students (91.8%) with regular classes (courses, workshops, interest groups and others), which take place regularly or cyclically (87.8%), coming third.

## Literature review

Universities of the Third Age are usually investigated in Poland and the world through their students. Few studies concern an analysis of the organisations conducting activities for the elderly as part of a U3A. The likely reason for such an orientation in the literature is the assumptions behind the establishment of the first one in France which set out the general framework of activities and the goals that U3As should follow. During a meeting organised by Pierre Vellas to discuss the question of what the elderly expect from a university (the prelude to the idea of a U3A) in 1972, three assumptions were formulated which became the basis for the so-called French model. These were (1) that the medical potential of the university should be used to promote knowledge about maintaining health in old age, (2) knowledge about culture should be enriched by the experience and knowledge of older people, (3) their research potential should be mobilised to solve the problems of the elderly and old age (Szluz, 2016). These demands result in a direct reference to gerontology.

A review of research on university programs for older people in Europe (Menéndez et al., 2018) shows that selected studies focused primarily on education and the characteristics of such people in dimensions like the quality of life, as well as health or satisfaction with retirement. Among studies on Polish U3A students, research by J. Krzepota et al. (2015) on the relationship between the level of physical activity and quality of life can be mentioned along with E. Zasadzka et al. (2017) who assessed the impact of regular exercise on efficiency and well-being. I. Zając-Gawlak et al. (2016) analysed physical activity, body composition and the general health of active students while L. Piejko and Z. Nowak (2017) studied the quality of life and health, and D. Kozieł et al. (2008) the impact of U3As on the health of older people. By contrast, J. Śniadek and J. Górka (2016) focused their research on tourist activity.

The first attempt at a comprehensive examination of U3As in Poland was made by M. Lenart (2009) who obtained responses from 87 institutions, from about 250 operating in 2009. However, it was only in the nationwide U3A study in Poland entitled “Zoom na U3A” (Towarzystwo Inicjatyw Twórczych “ $\xi$ ”, 2012) that data was obtained from a much larger number, as 282 out of approx. 400 operating in 2012 participated. The study was carried out in 2012 by Towarzystwo Inicjatyw Twórczych “ $\xi$ ” in cooperation with the Institute of Applied Social Sciences of the University of Warsaw, and three years later the official statistical services became interested in it. In 2015, Statistics Poland conducted the first nationwide official survey of Third Age Universities, covering the 2014/2015 academic year (Statistics Poland, 2016) and 464 entities from the 575 operating in Poland took part in the study. In 2018, a second nationwide survey was conducted by the Central Statistical Office with data for the 2017/2018 academic year (Statistics Poland, 2019a, b) and 599 out of 640 operating U3As took part. A third survey is planned for 2021. It should be emphasised that the number of U3As in Poland is only estimated, as activities for the elderly are carried out by entities having different legal and organisational characters, which translates into no obligatory register of such units in which each U3A operating in Poland would be included. In connection with this, the figures provided by the Federation of Polish U3As, operating an open database, and Statistics Poland are different. Research has also been conducted on a smaller scale concerning the Warsaw U3As (PBS, 2015; Urząd m.st. Warszawy, 2013).

## Research methodology

This section provides details of the research methodology where information is provided on the dataset and the DEA model used. The critical issue was the selection of appropriate inputs and outputs to analyse the efficiency of U3As because it determines both the purpose of the analysis and the results obtained. The choice of data for the study was primarily guided by the variables used in the literature to measure the efficiency of higher education and its availability.

For inputs, it was decided to include the total number of those who gave lectures, seminars or regular classes at U3A ( $X_1$ ) as the first, and the gross expenditure on U3A activities in 2017 ( $X_2$ ) as the second. It was recognised that the critical inputs for U3As are the people who have the appropriate knowledge and skills to efficiently work there, in addition to the primary financial resources necessary to conduct any activity. The inclusion of the number of research and teaching staff in the study is obvious.

However, it should be noted that U3A activity is slightly different than that of universities. Therefore, to meet the various needs of older people (educational, information, social, health, spiritual, hobbyist, etc.), classes are conducted by both specialists and those with relevant knowledge in a given subject, as well as enthusiasts and others who can bring positive value to the lives of the elderly.

The total number of U3A students in the academic year ( $Y_1$ ), the total number of lecture and seminar (including open ones) hours ( $Y_2$ ), the total number of regular U3A classes organised in the academic year ( $Y_3$ ) were used as the output. Accepting only the number of U3A students would be a significant simplification of research because unlike the formalised and specific study program and the time frame of higher education, the organisation of U3A courses is very diverse in various respects (topics of classes, forms of activity, frequency of meetings, etc.) and is developed by U3As themselves.

Concerning the above, it was decided to separately assess the efficiency of two aspects of U3A activity by adopting two empirical models (M-1, M-2) for the study, differing in the variables accepted on the output side. The first model (M1) relates to the quantitative characteristics of activity in the form of the number of students ( $Y_1$ ). However, the second model (M-2) takes into account the number of classes ( $Y_2, Y_3$ ), which, to some extent, relates to the qualitative characteristics of the activity. It has been assumed that the more classes, the more varied they will be and the greater the chance for students to learn something new. The adoption of two empirical models (M-1, M-2) will enable the discovery of which area (quantitative - number of students, or qualitative - number of classes) is more efficient. The variables used for the empirical study are presented in Table 1.

Table 1. Inputs and outputs in the empirical study

Description of variable	M-1	M-2
$X_1$ – total number of people who gave lectures/seminars or regular classes at a U3A	X	X
$X_2$ – gross expenditure on U3A activities in 2017	X	X
$Y_1$ – total number of U3A students in the academic year	X	
$Y_2$ – total number of lecture/seminar hours (including open ones) organised in the academic year		X
$Y_3$ – total number of hours of regular classes in the academic year		X

Source: author

Statistics Poland (2019 a, b) show that in the 2017/2018 academic year, nearly 130 Polish U3As operated as part of either state or private higher education institutions. However, it was decided to focus on U3As operating only in state higher education. After analysing the websites of those operating in state higher education (supervised by the Ministry of Science and Higher Education), they were asked to provide information on U3A activities and data was obtained from twenty (Table 2). The choice of the study period was due to the availability, but above all, the recent date of the data, which is why the 2017/2018 academic year was used.

The DEA method in a formalised form was presented by A. Charnes et al. (1978), who created his first CCR model (from the names of the authors), based on radial efficiency and constant return to scale (CRS). R.D. Banker et al. (1984) presented the second BCC model with the variable return to scale (VRS). These models are based on radial

efficiency, enabling a proportional reduction of all inputs (input orientation – minimisation) or increase of all outputs (output orientation – maximisation). However, in business practice, different inputs or outputs do not always have the same effect on business efficiency (Johnes, Tone, 2017). Noting these deficiencies, K. Tone (2001) presented the SBM model (Slack Based Measure) based on non-radial efficiency assuming that individual inputs and outputs have a varying impact on efficiency levels (Johnes, Tone, 2017). The analytical capabilities of the SBM model determined its selection for the analysis of U3A efficiency.

Table 2. Names of third age universities accepted for empirical research

DMU	Name
U1	University of the Third Age at ATH in Bielsko-Biała
U2	University of the Third Age at the University of Physical Education in Wrocław
U3	University of the Third Age at the Częstochowa University of Technology
U4	University of the Third Age at the Łódź University of Technology
U5	Academy of Young Hearts at Opole University of Technology
U6	University of the Third Age at the Warsaw University of Technology
U7	University of the Third Age at the Koszalin University of Technology
U8	University of the Third Age at the University of Economics in Kraków
U9	Open University of 'Erga Omnes' at the University of Economics in Poznań
U10	University of the Third Age at the University of Economics in Wrocław
U11	University of the Third Age at the Długosz Academy in Częstochowa
U12	University of the Third Age at the Pedagogical University in Kraków
U13	Open University of the Third Age at the University of Life Sciences in Wrocław
U14	University of the Third Age at the University of Agriculture in Kraków
U15	University of the Third Age at the University of Rzeszów
U16	University of the Third Age at the University of Silesia in Katowice
U17	University of the Third Age at UTH in Radom
U18	University of the Third Age at UTPW Bydgoszcz
U19	University of the Third Age at the University of Wrocław
U20	Kazimierzowski University of the Third Age at UKW in Bydgoszcz

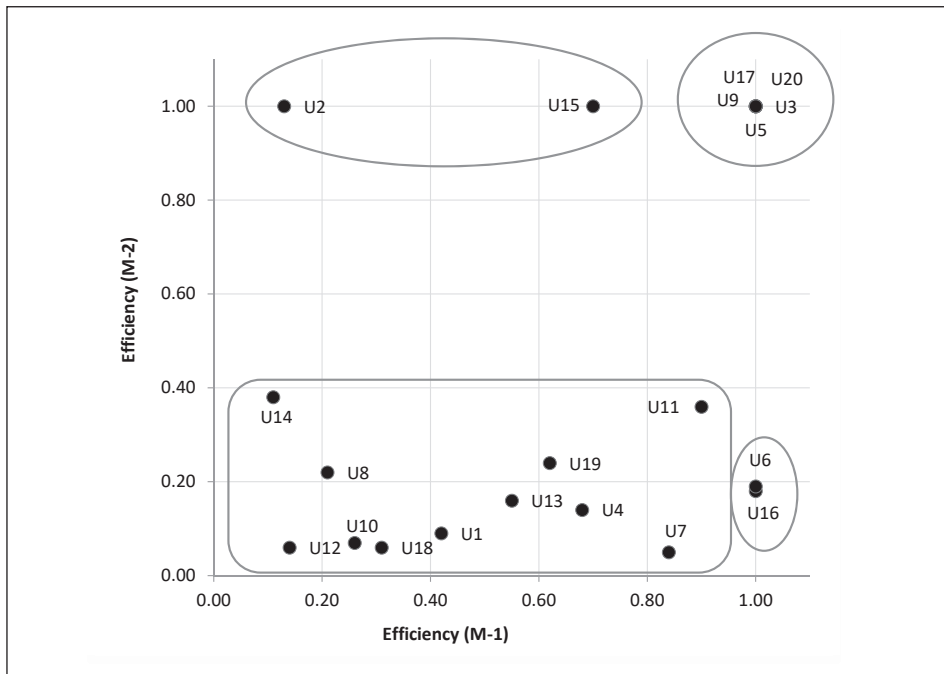
Source: author

After choosing the DEA model, it is necessary to specify its research assumptions in terms of orientation and return to scale. Because U3As differ in size, according to the literature (Cooper, Seiford, Tone, 2007), the SBM model with a variable return to scale was used. The primary purpose of U3As is to conduct varied and interesting classes for the largest possible groups of students; therefore, it was decided to apply the output-orientation SBM model. To study the efficiency of U3As, the non-radial SBM model with the variable return to scale and output-oriented, i.e. SBM-V-O, was finally used.

## Empirical results and discussions

The results of the research on the efficiency of U3As through two empirical models (M-1, M-2) are presented in Figure 2. The average efficiency result in the first model (M-1) was

Figure 2. U3A efficiency in the 2017/2018 academic year



Source: author

0.64 and in the second model (M-2) 0.46. The standard deviation values in M-1 and M-2 were 0.35 and 0.42, respectively. In contrast, the Pearson correlation coefficient between the M-1 and M-2 models was 0.42, which means that there was a moderate correlation. In both U3A models, it was 100% efficient, which corresponds to 35% of the examined group of units. The lowest efficiency in the M-1 model was the U3A at the University of Agriculture in Kraków (U14) and in the M-2 model, the U3A at Koszalin University of Technology (U7). The distribution of efficiency points on the graph shows that most universities focused primarily on the number of students (however, in this case, there was a wide variety from 11% to 90% efficiency) than on the number of classes, because the efficiency value in the M-2 model, for the most part, was in the range of 0%–40%. Therefore, there is a greater concentration around low efficiency in terms of the number of classes (not exceeding 40% efficiency), but it is more differentiated for the number of students. The resulting group brings together eleven U3As, 55% of the entire research sample. It is also worth noting, observing the distribution of performance indicators, that there are none whose level of efficiency in the M-2 model is in the range of 40%–90%, which indicates the absence of an intermediary group because either there is low efficiency (0%–40%) or 100%. It means that the universities were either determined to organise as many classes as possible for their students, or only implemented a small number.

Among U3As, some were only efficient in one or the other model but some in both models simultaneously. In the case of the U3A at Warsaw University of Technology (U6) and the U3A at the University of Silesia in Katowice (U16) they were efficient only in the M-1 model, and in the U3A at the University of Physical Education in Wrocław (U2)



and the U3A at the University of Rzeszów (U15) in the M-2 model. It means that some universities focused more on the number of students than on the number of classes, while other centres tried to organise as many classes as possible. As many as five from all the universities analysed, i.e. U3A at Częstochowa University of Technology (U3), Academy of Young Hearts at Opole University of Technology (U5), Open University of `Erga Omnes` at the University of Economics in Poznań (U9), U3A at UTH in Radom (U17) and Kazimierzowski U3A at UKW in Bydgoszcz (U20) were efficient in both M-1 and M-2 models.

## Conclusion

Based on the research, the following conclusions can be drawn. The average efficiency level fluctuated between 0.64 in M-1 and 0.46 in M-2. This means that universities focused more on the number of students than on the number of classes taught: seven universities achieved a full 100% efficiency, 35% of those surveyed. It should be remembered, however, that the efficiency analysis carried out only concerned selected aspects of U3A activities. In connection with this, units assessed as inefficient may likely perform other tasks (e.g. help for other needy social groups) and activities (e.g. trips) and use their resources to focus their attention on these. That is why the entire work of U3As should be carefully assessed.

Future research on U3As should be developed in several directions. First, a comparative analysis of the U3A efficiency should be measured in different countries. A growing interest in this type of research can be seen in the literature (see Formosa, 2019). Secondly, analysis of the relationship between the efficiency of U3As and the assessment of the quality of services provided by them in the opinion of their students should be made. Thirdly, comparative analysis of U3A efficiency across various legal and organisational forms and their impact on the level of regional development in the context of social capital should be developed.

## References

- Banker, R.D., Charnes, A., Cooper, W.W. (1984). Some models for estimating technical and scale inefficiencies in Data Envelopment Analysis. *Management Science*, 30, 1078–1092.
- Charnes, A., Cooper, W.W., Rhodes, E. (1978). Measuring the Efficiency of Decision-making Units. *European Journal of Operational Research*, 2, 429–444.
- Cooper, W.W., Seiford, L.M., Tone, K. (2007). *Data Envelopment Analysis. A Comprehensive Text with Models, Applications, References and DEA-Solver Software*. New York: Springer.
- Czerniawska, O. (2009). Uniwersytet trzeciego wieku, 30 lata działania. Przemiany, dylematy i oczekiwania w epoce ponowoczesnej. *Chowanna*, 2, 97–113.
- Eurostat. (2019, 30 November). *Population by age group, % of total population*. Retrieved from: <https://ec.europa.eu/eurostat/tgm/refreshTableAction.do?tab=table&plugin=1&pcode=tps00010&language=en>
- Formosa, M. (2019). *The University of the Third Age and Active Ageing. European and Asian-Pacific Perspectives*. Cham: Springer.
- Johnes, G., Tone, K. (2017). The efficiency of Higher Education Institutions in England revisited: comparing alternative measures. *Tertiary Education and Management*, 23, 191–205.

- Komunikat Ministra Nauki i Szkolnictwa Wyższego z dnia 12 października 2016 r. o ustanowieniu programu pod nazwą „Wsparcie Uniwersytetów Trzeciego Wieku” (M.P. 2016, poz. 980).
- Komunikat Ministra Nauki i Szkolnictwa Wyższego z dnia 17 października 2017 r. o ustanowieniu programu pod nazwą „Wsparcie Uniwersytetów Trzeciego Wieku” (M.P. 2017, poz. 967).
- Kozieł, D., Kaczmarczyk, M., Naszydłowska, E., Gałuszka, R. (2008). Wpływ kształcenia w uniwersytecie trzeciego wieku na zachowania zdrowotne ludzi starszych. *Studia Medyczne*, 12, 23–28.
- Krčmářová, J. (2012). The third mission of higher education institutions: conceptual framework and application in the Czech Republic. *European Journal of Higher Education*, 1, 315–331.
- Krzepota, J., Biernat, E., Florkiewicz, B. (2015). The Relationship between Levels of Physical Activity and Quality of Life among Students of the University of the Third Age. *Central European Journal of Public Health*, 23(4), 335–339.
- Lenart, M. (2009). *Raport z diagnozy uniwersytetów trzeciego wieku w Polsce*. Nowy Sącz: Ogólnopolska Federacja Stowarzyszeń UTA.
- Malec Rawiński, M., Zakowicz, I. (2018). Renesans czy zmierzch idei uniwersytetów trzeciego wieku? Refleksje i wnioski z realizacji projektu „UTA: Uczyc – Tworzyć – Wspierać”. *Rocznik Andragogiczny*, 25, 141–156.
- Marcinkiewicz, A. (2012). Uniwersytet Trzeciego Wieku jako instytucja przeciwdziałająca marginalizacji osób starszych. *Ogrody Nauk i Sztuk*, 2, 458–467.
- Menéndez Álvarez-Dardet, S., Padilla, J., Maya, J. (2018). Empirical research of university programs for older people in Europe: A systematic review. *Educational Gerontology*, 44(9), 595–607.
- Olearnik, J., Pluta-Olearnik, M. (2015). Entrepreneurial university – from ideas to reality. *OPTIMUM Studia Ekonomiczne*, 5, 110–120.
- PBS. (2015). *Raport z badania słuchaczy warszawskich uniwersytetów trzeciego wieku*. Warszawa.
- Piejko, L., Nowak, Z. (2017). Jakość życia a zachowania zdrowotne słuchaczy uniwersytetów trzeciego wieku (UTA). *Gerontologia Polska*, 25, 235–241.
- Rubens, A., Spigarelli, F., Cavicchi, A., Rinaldi, C. (2017). Universities' third mission and the entrepreneurial university and the challenges they bring to higher education institutions. *Journal of Enterprising Communities: People and Places in the Global Economy*, 11(3), 354–372. doi: 10.1108/JEC-01-2017-0006
- Statistics Poland. (2019a). *Uniwersytety trzeciego wieku w Polsce w 2018 r.* (informacja sygnałna). Warsaw.
- Statistics Poland. (2019b). *Uniwersytety Trzeciego Wieku w roku akademickim 2017/2018 (Universities of the Third Age in the 2017/2018 academic year)*. Warsaw.
- Statistics Poland. (2018). *Silver Economy in Poland – State and Measurement Methods*. Warsaw.
- Statistics Poland. (2016). *Uniwersytety Trzeciego Wieku w roku akademickim 2014/2015*. Warsaw.
- Szluz, A.M. (2016). Umocowania prawne polskich uniwersytetów trzeciego wieku. *Annales Universitatis Mariae Curie-Skłodowska, Sectio J – Paedagogia-Psychologia*, 29(1), 163–171.
- Śniadek, J., Górka, J. (2016). Aktywność turystyczna słuchaczy Uniwersytetu Trzeciego Wieku na przykładzie wybranych placówek w Wielkopolsce. *Zeszyty Naukowe Uniwersytetu Szczecińskiego. Ekonomiczne Problemy Turystyki*, 2(34), 107–118.
- Tone, K. (2001). A slacks based measure of efficiency in data envelopment analysis. *European Journal of Operational Research*, 130(3), 498–509.
- Towarzystwo Inicjatyw Twórczych „ę”. (2012). *Zoom na UTA. Raport z badania*. Warszawa.
- Uchwała nr 237 Rady Ministrów z dnia 24 grudnia 2013 r. w sprawie ustanowienia Rządowego Programu na rzecz Aktywności Społecznej Osób Starszych na lata 2014-2020 (M.P. 2014, poz. 52).
- UNECE. (2015). *Active Ageing Index 2014: Analytical Report*. Retrieved from: <https://stat-swiki.unece.org/download/attachments/76287849/AAI%20Report%20LOW%20RES.PDF?version=2&modificationDate=1433927681725&api=v2>
- Urząd m.st. Warszawy. (2013). *Raport z badania opinii słuchaczy warszawskich uniwersytetów trzeciego wieku. Uczestnikami badania były uniwersytety korzystające w 2013 r. z dotacji m.st. Warszawy*. Warszawa.
- Ustawa z dnia 11 września 2015 r. o osobach starszych. Dz.U. 2015, poz. 1705.

- Zajęc-Gawlak, I., Pośpiech, D., Kroemeke, A., Mossakowska, M., Gába, A., Pelclová, J., Přidalová, M., Kłapcińska, B. (2016). Physical activity, body composition and general health status of physically active students of the University of the Third Age (U3A). *Archives of Gerontology and Geriatrics*, 64, 66–74.
- Zasadzka, E., Trzmiel, T., Pochylska, J., Kropińska, S., Pawlaczyk, M. (2017). Sprawność i samopoczucie słuchaczy Uniwersytetu Trzeciego Wieku. *Gerontologia Polska*, 25, 106–111.

**Łukasz Brzezicki**, assistant professor, University of Gdansk, Faculty of Economics. He is interested in the efficiency and productivity of higher education. He specialises in the non-parametric Data Envelopment Analysis (DEA) method.

**ORCID:** <https://orcid.org/0000-0002-0761-1109>

**Address:**

Uniwersytet Gdański  
Wydział Ekonomii  
ul. Armii Krajowej 119/121  
81-824 Sopot, Polska  
e-mail: brzezicki.lukasz@wp.pl

**Acknowledgement**

The author thanks the universities for providing reports on the activities of Universities of the Third Age necessary to conduct this study.