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# Evaluation of revitalisation projects in Poland using the Maslin Multi-Dimensional Matrix. Heading towards green & social revitalisation

Tomasz Starczewski<sup>1, CDFMR</sup>, Krzysztof Rogatka<sup>2, CDFMR</sup>, Mateusz Kowalski<sup>3, FMR</sup>

<sup>1</sup>Nicolaus Copernicus University in Toruń, Doctoral School of Social Sciences, e-mail: [t.starczewski@doktorant.umk.pl](mailto:t.starczewski@doktorant.umk.pl) (corresponding author), <https://orcid.org/0000-0002-5534-2599>; <sup>2</sup>Nicolaus Copernicus University in Toruń, Faculty of Earth Science and Spatial Management, Department of Urban Studies and Regional Development, e-mail: [krogatka@umk.pl](mailto:krogatka@umk.pl), <https://orcid.org/0000-0001-5500-4197>; <sup>3</sup>Nicolaus Copernicus University in Toruń, Faculty of Earth Science and Spatial Management, e-mail: [302777@stud.umk.pl](mailto:302777@stud.umk.pl), <https://orcid.org/0000-0002-7530-5488>

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**Abstract.** One of the greatest challenges currently facing cities is the evaluation of the revitalisation process, i.e., verifying whether and to what extent it has been successful. This assessment is important as it will determine the extent to which the revitalisation needs of a place have been met. The aim of this article is to present the results of the evaluation of a post-revitalisation space made by its users and to determine the usefulness of the Maslin Multi-Dimensional Matrix (MMDM) method used. This is the first attempt, not previously reported in the literature, to use the MMDM for evaluating revitalisation. According to research, projects of an integration and environmental character and those improving security were the most appreciated and at the same time had the best revitalising effect on the Bydgoskie Przedmieście district in Toruń, Poland. The lowest ratings were given to infrastructural projects or those dedicated to narrow social groups (alternative arts). The MMDM method should be considered an appropriate tool for evaluating revitalisation.

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## 1. Introduction and research objective

The word “revitalisation” comes from Latin and means restoration to life. This means that the subject of revitalisation was in some way deprived of this “life”, because of both the poor condition of spaces and buildings and an unfavourable social structure (Palicki, 2015). Over the years, many different definitions of the revitalisation process have emerged. The lack of uniformity in defining the process leads to the misuse of the word (Chmielewski, 2001; Węclawowicz, 1988). Often, the process of revitalisation is equated with renovation, i.e.: restoring the condition of a building as it existed at the beginning of the previous exploitation cycle; or modernisation, comprising renovations supplemented by the introduction of new, better, more efficient, or even additional elements of equipment that increase comfort of use (Skalski, 2006). The revitalisation process includes the above-mentioned concepts, but it is broader and, apart from technical, technological or infrastructural issues, it also refers to the social, economic and cultural spheres (Markowski et al., 2005).

The Polish literature features the principles of revitalisation systematised by J.J. Parysek (2016). The most important of these are as follows:

- Different categories of areas are and should be the subject of revitalisation;
- The revitalisation process is most often carried out by adopting a specific, general revitalisation model;
- Revitalisation is a process undertaken and implemented under the impact of: the real-estate market, economic calculation, rationally defined individual and general social benefits (not only material), and principles of social justice;
- The basic principle for undertaking and carrying out revitalisation tasks should be their social rationality, which can only be guaranteed by a well-conceived and actual socialisation of revitalisation processes (Parysek, 2016).

By distinguishing the detailed objectives and tasks of revitalisation one can see how complex the process is. Adreas Billert (2006) argued that revitalisation is also a comprehensive process of renewal of an urbanised area whose space and functions have

been structurally degraded. This degradation creates a state of crisis that prevents or significantly impedes the proper economic and social development of the city in accordance with the sustainable development policy (Billert, 2006). It should be noted that, in this definition, the renewal process is directed exclusively at urbanised areas, i.e., areas that are parts of cities or post-industrial or post-military sites. In this approach, the revitalisation process excludes, e.g., rural areas, which according to the Poznań school of revitalisation are one of the subjects of revitalisation activities. Moving on, revitalisation is carried out in areas where there is degradation of elements of public space that has led to a state of crisis. It follows that the process itself cannot be carried out in areas where this state of crisis has not been diagnosed (Degen, 2017). The said degradation should include three basic elements: space, function and substance.

The literature abounds in definitions describing the revitalisation process (Table 1). They differ in content and focus on different facets of the process. Analysing the definitions quoted above and the previous considerations, an attempt can be made to synthesise these various definitions into one encompassing a range of meanings. Thus, for the purposes of the study, the following definition of the revitalisation process was adopted:

*A system of organisational measures that are oriented towards the recovery of economic, social and infrastructural functions and bringing degraded urbanised spaces out of crisis, and directed towards the implementation of projects aimed at giving new life to urban spaces*

Morphologically, the most important element of the revitalisation process is the degraded area – a certain section of space in which negative economic, social, spatial and environmental phenomena accumulate (Rogatka, 2019). It is around the degraded area that the activities of entities and stakeholders in revitalisation are concentrated. A proper diagnosis of the degraded area is the basis for revitalisation policy (Rachwał & Świerczewska-Pietras, 2010). Revitalisation proceeds according to specific stages. The most important phases include: 1) diagnosis of the state of affairs, 2) indication of the degraded area,

**Table 1.** Selected definitions of revitalisation

No.	Definition
1.	“a comprehensive, coordinated, multi-annual process of spatial, technical, social, and economic transformations carried out in a specific area, initiated by a self-government (mainly local) in order to lead this area out of a <b>crisis state</b> , by giving it a new functional quality and creating conditions for its development, based on characteristic endogenous conditions” ( <i>Guidelines of the Minister of Regional Development for programming activities concerning housing, Warsaw 2008</i> )
2.	a coordinated process, carried out jointly by the local government, local community, and other participants, being an element of the development policy and aimed at counteracting the <b>degradation of urban space</b> , crisis phenomena, stimulating development and qualitative changes through an increase in social and economic activity, improvement of the living environment, and protection of the national heritage, while maintaining the principles of sustainable development ( <i>Ziobrowski, Jarczewski, 2010</i> )
3.	<b>a system of organisational</b> , legal and financial <b>activities</b> binding state housing policy with local housing policy of self-governments; it is a source and determinant of the improvement of housing situation of the society ( <i>Skalski, 2000</i> )
4.	an integrated approach (from both the intervention and the effects side), taking into account social, economic, environmental, and technical aspects and <b>oriented towards functional recovery</b> (social revitalisation, economic revitalisation) ( <i>Markowski, 1999</i> )
5.	Revitalisation refers to forms related to the age of the city, its political and economic conditions. Broadly speaking, these forms fall into four related categories: (1) catalytic – driving the process (2) inner-city – caring for urban structures, (3) neighbourhood – relating to interpersonal relationships and social capital, and (4) <b>project-oriented – implementing revitalisation projects</b> . ( <i>Birch Oom, Beercham, 2007</i> )
6.	Revitalisation is the process of leading <b>degraded areas</b> out of the crisis state, carried out in a comprehensive manner through integrated actions for the benefit of the local community, space, and economy, territorially concentrated, carried out by revitalisation stakeholders on the basis of the commune revitalisation programme. ( <i>Revitalisation Act of 9 October 2015</i> )

Source: own elaboration

3) social consultations, 4) enactment of the Local Revitalisation Programme, 5) implementation of projects, 6) assessment and evaluation of the process (Czyżewska, 2008). Assessment and evaluation of revitalisation have been and will continue to be a fundamental challenge for cities that have conducted a revitalisation process. Determining whether and to what extent revitalisation has been successful is a key question in planning future revitalisation work. It is necessary to determine the degree to which revitalisation needs have been met, to indicate the areas in which revitalisation has improved the spatial, social and economic condition of a given place, but also to identify those areas in which revitalisation activities should be corrected (e.g., by initiating supplementary and corrective projects) so that a comprehensive renewal of degraded areas is ultimately achieved.

The aim of this article is to present the evaluation of the post-revitalisation space by its users and to determine the usefulness of the Maslin Multi-Dimensional Matrix (MMDM) method used. Thanks to the MMDM method, it is possible to

evaluate individual revitalisation projects, their usefulness and efficacy and the public demand for them. It allows for a detailed evaluation of activities through increased contact with the local community, consisting of face-to-face interviews during an MMDM workshop. The MMDM procedure guarantees the collection of detailed information, evaluations and perceptions of respondents. This method allows the researcher to have direct contact with the research group, expand their statements, clarify doubts (during the MMDM workshop), and subsequently evaluate revitalisation projects according to criteria prepared on the basis of the guidelines of the *Local Revitalisation Programme of the City of Toruń for the Years 2007–2015*. This assessment is important, as it will determine the extent to which the revitalisation needs of a given place have been met. The assessment tool that the authors will test will be the Maslin Multi-Dimensional Matrix (MMDM). This is the first attempt of its kind made by revitalisation researchers.

## 2. Revitalisation in Poland

After a period of intensive industrialisation and political transition, many post-industrial brownfields appeared in the country (Duży & Jakubínský, 2013). After the service sector started dominating the national economy, industrial areas or districts became problematic spaces in the urban fabric. Abandoned halls, warehouses, residential and commercial buildings began appearing in urban spaces (Soldak, 2021). It should be noted that the degradation happened not only at the technical level of the area, but also at the social level. Degraded areas suffered from more profound social problems (e.g., unemployment), were often subject to social exclusion, and the inhabitants did not feel safe there (Rogatka et al., 2021). Such spaces were naturally predestined for revitalisation.

The Polish practice of revitalisation began with the reform of the economic system from a command economy to a capitalist system. The changes in the political system in 1989 marked the informal beginning of the revitalisation policy, which steadily gained in importance in later years (Węclawowicz, 1988). Poland's accession to the European Union opened up new horizons for Polish revitalisation. Structural and pre-accession funds gave impetus to the renewal of degraded spaces in Poland (Ślodziak, 2000).

Currently in Poland, revitalisation is a common process that is based on endogenous resources (Chodkowska-Miszczuk & Szymańska, 2010). Revitalisation policy is carried out on the basis of local/communal revitalisation programmes. These are strategic documents that diagnose crisis situations in the city area. They mainly include revitalisation projects intended to bring a degraded area out of crisis. The programmes also include a financial framework for the process and monitoring methods. After Poland's accession to the European Union in 2004, European Funds provided an important impetus to carry out revitalisation projects. It was EU funds that financed most of the revitalisation projects. In order to be eligible for Community funding, Polish local authorities were obliged to draw up revitalisation programmes.

The revitalisation policy in Poland, as well as in other European Union countries, is carried out in parallel with financial perspectives that provide

funds for the realisation of investments, projects and cultural events. Programming the revitalisation process within the framework of EU funds necessitates the evaluation, assessment and ongoing monitoring of these projects (Połom, 2011). Projects are often evaluated using measurable indicators specified in the application for funding, such as number of new plantings, number of people using a park, or number of new jobs created. However, they do not always provide the actual evaluation of projects or give a picture of the post-revitalisation space, but are only a figure showing the realisation of the assumed effect (Jarczewski & Jeżak, 2010). The process of evaluating post-revitalisation spaces and the underlying projects is extremely difficult and complex due to the specificity of the process. "Hard" measures to improve the infrastructural sphere are visible to the naked eye. New façades, pavement renovation or a new square with street furniture are all tangible effects of revitalisation that are easy to assess and evaluate (Strykiewicz, 2002). According to the accepted definition of revitalisation, the process is to give new life to spaces, and spaces are infrastructure and people that interrelate. The evaluation of soft revitalisation measures that affect: for example, the creation of social capital, the acquisition of new skills or the formation of social ties constitute the more difficult part of the revitalisation evaluation process (Skowronek, 2014; Stawasz, 2017). The requirements of EU aid programmes stipulate that a revitalisation programme that has received financial support must be subject to ex-ante monitoring and ongoing monitoring connected with evaluation procedures (Sztando, 2008).

In order to carry out a comprehensive evaluation of the revitalisation process, it would be reasonable to supplement the above-mentioned forms based on measurable and stable indicators with the human factor in the form of an evaluation of completed revitalisation projects made by the inhabitants, i.e., project stakeholders. This would be a continuation of the participatory model used in the development of the revitalisation documents. The inclusion of such a form of project evaluation would help create a revitalisation audit that would give an overall picture of the process. If the inhabitants of the revitalised areas (who best know the problems of individual spaces) were to evaluate the completed

projects, it would yield measurable benefits in the form of information on whether the revitalisation carried out has met their expectations.


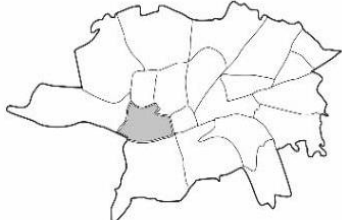

### 3. Aim of the study, temporal and spatial scope

The aim of this article is to present the evaluation of a post-revitalisation space by its users and to determine the usefulness of the Maslin Multi-Dimensional Matrix (MMDM) method used. Assessment is important as it will determine the extent to which the revitalisation needs of a place have been met. The assessment tool that the authors will test will be the Maslin Multi-Dimensional Matrix (MMDM). It should be added that this is the first attempt of this kind made by revitalisation researchers.

The analysis covers revitalisation projects implemented under the *Local Revitalisation Programme* (LRP) of the City of Toruń for the years 2007–2015. This is a comprehensive document taking into account the revitalisation needs of the city. The programme was adopted by Resolution No. 624/2009 of the Toruń City Council on 27 August 2009. The LRP was amended eight times, the latest amendment being dated 13 November 2014. The evaluation of revitalisation projects and the revitalisation process itself took place after material and financial completion of both the programme

itself and the individual revitalisation projects included in it. The local revitalisation programme is one of many strategic documents created at the commune level. It is a document that in its first part undertakes an in-depth social, economic, technical, spatial-functional and environmental analysis. On the basis of the analysis, it delimits the degraded area and the revitalisation area. The forecast part of the document indicates the objectives of the revitalisation process and the method of monitoring the process itself. The LRP also includes revitalisation projects thanks to which the space designated for revitalisation is transformed from urban fallow land into a socially, spatially and investment-wise attractive area. Revitalisation projects are complemented by a detailed description of project financing. The revitalisation projects analysed were carried out in an urban area of Toruń on the right bank of the Vistula River and conventionally known as the Bydgoskie Przedmieście district. In the Bydgoskie Przedmieście area, projects related to spatial and functional transformations dominated, and they were complemented by accompanying social projects. Such an arrangement in the first round of revitalisation in Poland was very common. In the Local Revitalisation Programme of the City of Toruń for the Years 2007–2015, Bydgoskie Przedmieście was identified as a degraded urban area to be revitalised (Table 2).

**Table 2.** Spatial scope of the study: Bydgoskie Przedmieście in Toruń

Toruń on the map of Poland	Bydgoskie Przedmieście (grey)	Bydgoskie Przedmieście on orthophotomap
		
Source: own elaboration	Source: own elaboration	Source: <a href="http://mapy.geoportal.gov.pl">http://mapy.geoportal.gov.pl</a> (DOA: 13.10.2021)

Source: own elaboration

Bydgoskie Przedmieście acquired its spatial form in the 19<sup>th</sup> century and at the beginning of the 20<sup>th</sup> century. It is from that period that the characteristic spatial layout of the district – an enclave of spatial order – originates (Rogatka & Ciesiółka, 2016). Apart from its distinctive layout, Bydgoskie Przedmieście is a space filled with extremely interesting architecture. It houses Art Nouveau and eclectic tenement houses with richly decorated fronts.

What distinguishes it from other parts of the city is its central location and its unique character, which is an architectural palimpsest: Art Nouveau, Modernism, half-timbered walls, and apartment buildings from the 20<sup>th</sup> and 21<sup>st</sup> centuries. The district was inhabited by the local elite – the intelligentsia, wealthy city-dwellers, officials who built rich villas with gardens and extensive green areas. They shaped the character of Bydgoskie Przedmieście (Rogatka, 2019; Jaroszewska-Brudnicka, 2007). After the Second World War, many of the flats were subject to obligatory rental and thus the spatial and social degradation of Bydgoskie Przedmieście began. At present, the area is struggling with many problems that are clearly defined in the Local Revitalisation Programme. In the document, the district was comprehensively diagnosed on many levels, such as poverty, social exclusion, long-term unemployment, economic activity, crime and a particularly rundown environment.

#### 4. Maslin Multi-Dimensional Matrix method

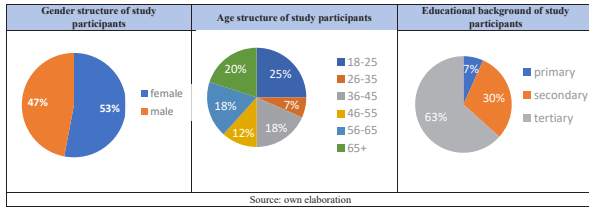
The analysis of revitalisation transformation was based on three research stages. Stage I included literature studies – a review of the relevant literature, scientific articles by Polish and foreign authors. Stage II included the analysis of the *Local Revitalisation Programme of the City of Toruń for the Years 2007–2015*, which was the basis for further research. Stage III, the main stage of the research process, involved conducting the MMDM procedure.

The MMDM is a mathematical and statistical tool that allows for the ranking of projects not only in the revitalisation sphere, but also in economics and broadly-understood business (Puffitt, 1993).

In this work, the method was used to assess revitalisation projects carried out under the *Local Revitalisation Programme of the City of Toruń for the Years 2007–2015*. Two factors are important in this procedure: the substantive preparation of the person conducting the procedure and the creation of ranking groups to evaluate individual projects (Montanari & Bracker, 1986; Puffitt & Prince, 2001).

The MMDM is a dynamic tool for exploring the needs and expectations of individual communities. The basic principle upon which the MMDM was developed is “creative explanation” (Johnson & Scholes, 2001). Here, the matrix was used to assess the revitalisation projects and the extent to which (through the implementation of these projects) the revitalisation needs of the residents have been met. The result is an evaluation of the post-revitalisation space as seen by its users. The only specified parameter of the matrix is the demand of the client group, i.e., the stakeholders of the revitalisation process rated on a scale of 1 to 5 (Każmierczak & Szulc, 2010). This parameter is marked on the x axis. The process of drawing up the MMDM was carried out in the form of an MMDM workshop during which the ranking groups evaluated individual projects according to the prepared evaluation criteria. The workshop took place in November 2020 and was attended by 60 people who came from different social groups and age ranges. It involved four ranking groups, each consisting of fifteen people. The first group comprised economically active people aged 27–45. The second ranked group consisted of fourth-year students of spatial management, the third of senior citizens, and the fourth of residents of Bydgoskie Przedmieście. All of these groups had links with Bydgoskie Przedmieście, either professional, residential, or private (leisure, shopping). Attention should be paid to the broad spectrum of people taking part in the workshop. It is important that the MMDM procedure involves different social groups who have different expectations and needs regarding the revitalisation process itself. This selection of ranking groups allowed the authors to objectivise the results of the research carried out (see Figure 1).

The first stage of the MMDM procedure is the preparation of an inventory of revitalisation projects based on the LRP. The next phase is to formulate the problems of the analysed area resulting from the



**Fig 1.** Basic information study participants  
Source: own elaboration

LRP. Projects are analysed in the context of these problems, i.e., to what extent they have responded to the needs and problems diagnosed in Bydgoskie Przedmieście, and how they have revitalised the space. The next step in the procedure is to assess how important the diagnosed problems are in relation to the situation in the analysed area. The importance assessment is carried out by the ranking groups (workshop participants) based on a five-point Likert scale (very low; low; average; high; very high). The next stage of the work is to transform the problems into evaluation criteria that involve the calculation of an average rating for each problem and the assignment of weights. This produces weighted values of the problems, which will be used in the subsequent steps of the investigation.

Once the criteria have been constructed, each of the projects should be evaluated according to them. Project evaluation is based on indicating how a project, on a scale of 1 to 5, has mitigated the problems and thus met the local revitalisation needs that were identified at the initial stage of the procedure. The rating averages are then calculated and multiplied by the previously prepared weights. This yields weighted ratings of the projects, which are then added up. In this way we obtain the second value of the matrix, which is marked on the y axis.

The MMDM is plotted on x and y axes and is divided into four parts.

As a result, a typology of projects is created that groups projects according to how well they alleviate problems and meet revitalisation needs. The upper right-hand side includes projects that should be continued and monitored – these are premium-quality projects, i.e., those that have met local revitalisation needs to the greatest extent. Projects in the upper left-hand side of the matrix should be lobbied, supported and developed because they revitalise the space well – they are good-quality

projects. In the lower right-hand section, we have projects to be reviewed and evaluated (these are projects that, with some modification, can meet revitalisation needs – “think and change”). The lower left-hand side of the matrix comprises projects that should be withdrawn (these are projects that did not meet revitalisation needs) – “run away” projects.

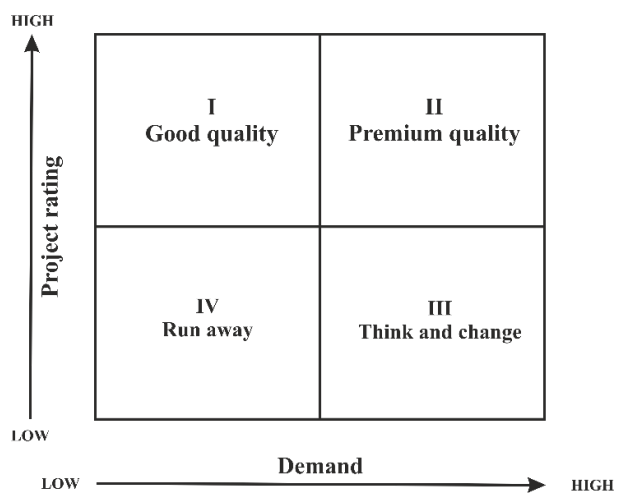
The MMDM shows how the completed revitalisation projects correspond to the needs indicated in the LRP and thus to the needs of the inhabitants, i.e., the stakeholders in the revitalisation process.

### 5. Research procedure and results

The MMDM method was applied in a workshop led by the authors of the paper. The procedure is presented in the Figure 3.

The first step in using the MMDM was to prepare the projects to be evaluated. They were selected from the projects annexed to the LRP. The next stage involved preparing and formulating the needs and problems of Bydgoskie Przedmieście, which resulted directly from the LRP analysis and were compatible with the programme assumptions. They included:

1. poor technical condition of buildings;
2. disorganisation of public spaces;
3. low level of economic activity;
4. social disintegration;
5. low sense of security.



**Fig. 2.** Layout of projects on the MMDM  
Source: own elaboration

These problems, later transformed into evaluation criteria, were the basis for rating revitalisation projects. The next stage was the prioritisation of the prepared problems by the ranking groups. The four ranking groups rated the importance of revitalisation problems on a scale of 1 to 5, where 1 meant a problem of the highest importance, and 5 of the lowest importance. The results of this procedure are shown in the Table 3.

Economically active people considered the low sense of security in Bydgoskie Przedmieście to be the most important revitalisation problem. For

students, on the other hand, the poor technical condition of the buildings was the most substantial issue. The senior group did not grant a highest rating to any single problem. For seniors, the biggest problems were the poor technical condition of the buildings and the low sense of security. The same issues were identified by the residents of Bydgoskie Przedmieście.

The next step in the MMDM procedure was to transform problems into evaluation criteria. The weights were determined by assigning points to each level of importance according to the following assumption: 1 – 5 points, 2 – 4 points, 3 – 3 points, 4 – 2 points, 5 – 1 point. Thus, for example, the point average importance of the problem of social disintegration is 3.75. Subsequently, the sum of the average ratings was calculated. Criteria weights were calculated as the quotient of the average criterion rating and the sum of all average ratings. The calculated criteria weights are shown in the Table 4.

The next stage was to evaluate the projects according to the criteria and to determine the need for the implementation of each of the projects. The evaluation was based on a five-point Likert scale (very high, high, average, low, and very low). Each level was given a numerical counterpart of 5, 4, 3, 2, 1, respectively. The evaluation was carried out by the ranking groups and the results are presented in the tables below (see Tables 5 and 6).

The final demand for revitalisation projects to be taken into account in creating the MMDM is the point average of the demand ratings given by the ranking groups included in Table 5 in the “mean” column. This created one of the two dimensions of the matrix marked on the x axis. Table 6 shows the average rating of the projects according to the criteria. Workshop participants evaluated how each of the projects improved the criteria presented. An average was then drawn from the individual groups’ partial ratings. The next stage of creating the MMDM was to compute the product of the average ratings of the criteria and the previously prepared weights (divided by 100) and to sum up the resulting values. This sum is the second dimension of the MMDM. This dimension is marked on the y axis. This gives two values for each project. The D-value, taking account of the demand for the project, and the E-value, which assesses how well the project addressed all the revitalisation needs identified at

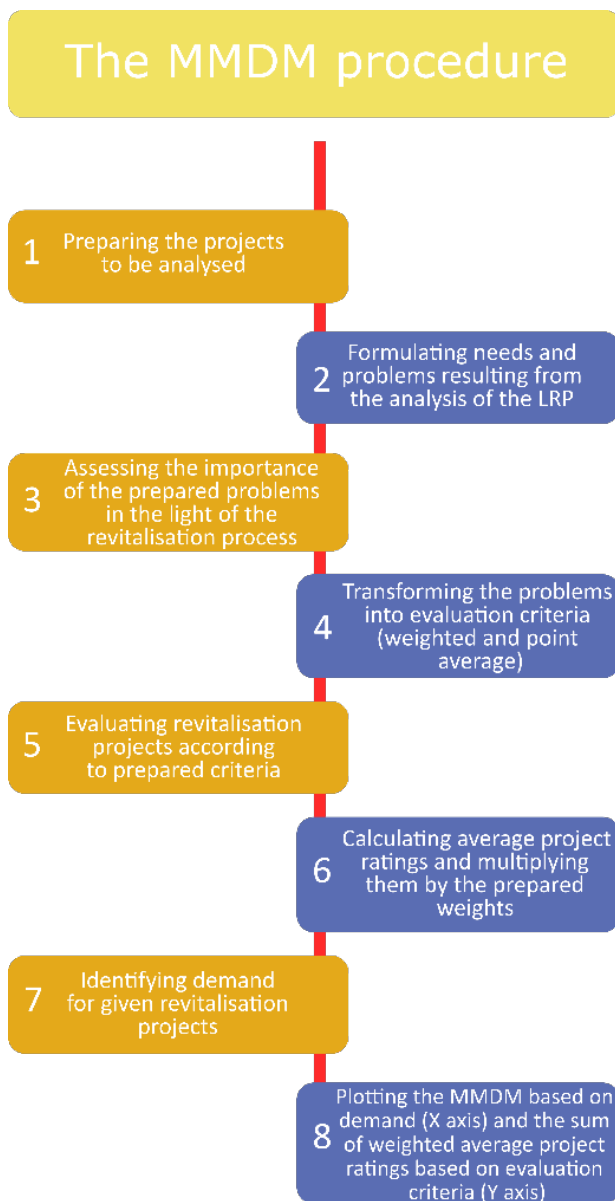


Fig. 3. Procedure of the MMDM method  
Source: own elaboration



**Table 3.** Importance of problems that revitalisation should solve, as indicated by workshop participants, i.e. ranking groups

No.	Revitalisation problems	Importance			
		G1	G2	G3	G4
1.	Poor technical condition of buildings	2	1	2	1
2.	Disorganisation of public spaces	2	2	3	2
3.	Low level of economic activity	3	3	4	3
4.	Social disintegration	2	2	3	3
5.	Low sense of security	1	2	2	1

Source: own elaboration

Legend: G1 – economically active people; G2 – students; G3 – seniors; G4 – residents

**Table 4.** Evaluation criteria for revitalisation projects and their weights

No.	Evaluation criterion	Weight
1.	Impact of the project on the improvement of buildings	23.68%
2.	Impact of the project on the improvement of organisation of public spaces	19.74%
3.	Impact of the project on the improvement of the level of economic activity	14.47%
4.	Impact of the project on social reintegration	18.42%
5.	Impact of the project on improving the sense of security	23.68%

Source: own elaboration

**Table 5.** Demand for individual revitalisation projects

No.	Revitalisation projects in Bydgoskie Przedmieście	Demand				
		G1	G2	G3	G4	Mean
1.	Revitalisation of the Spirit Foundation grounds	2	3	4	1	2.5
2.	Renovation of Municipal Kindergarten No. 4	1	2	1	2	1.5
3.	Development of Mickiewicza Street	1	3	1	1	1.5
4.	Revitalisation of Park Bydgoski	2	3	3	4	3.0
5.	Adaptation of the Childcare Association premises	3	3	5	1	3.0
6.	Modernisation of High School No. 1 gymnasium	3	3	4	5	3.8
7.	Extension of monitoring	1	2	3	2	2.0
8.	Revitalisation of the area at 32 Mickiewicza Street	2	1	3	4	2.5
9.	Revitalisation of elements of Zoobotanical Garden	1	2	2	1	1.5
10.	Revitalisation of Boulevard, from bridge to University Sports Association	3	1	2	3	2.3
11.	The Toruń John Paul II Run	2	3	4	5	3.5
12.	"Cultural revitalisation" project	2	1	2	1	1.5
13.	Michayland – Fantastic City for Kids	4	3	5	3	3.8
14.	Projects for the whole revitalised area including Bydgoskie Przedmieście	1	1	1	2	1.3

Source: own elaboration

the outset of the procedure. These data are included in Table 8.

The final step in the MMDM method is to create the matrix itself by marking the values obtained in Table 9 on the coordinate system. In this way, a complex evaluation of the individual revitalisation projects was made in the light of the opinions of the ranking groups. Each quadrant of the coordinate system is assigned a different project characteristic (Fig. 2).

There were four groups of projects:

- premium-quality projects, i.e., those with the best revitalisation potential;
- good-quality projects, i.e., those that should be lobbied, supported and developed because they revitalise well;
- “think and change” projects are projects that, with some modification, can meet revitalisation needs;
- “run away” projects are projects that have not met revitalisation needs.

The MMDM serves to determine whether a given project fulfils the assumptions of the LRP. The MMDM method placed the revitalisation projects within the LRP for Bydgoskie Przedmieście in all of the above-mentioned groups.

The projects implemented under the LRP were placed in each of the four distinguished groups of the MMDM. As a result, we have revitalisation projects that best revitalised Bydgoskie Przedmieście and met the needs of the inhabitants, and those that did little to eliminate these problems and further the revitalisation process itself. The best project in light of the MMDM was “Michayland – Fantastic City for Kids”. Workshop participants believed that this project best met revitalisation needs (see Fig. 4).

Premium quality projects are those that have revitalised Bydgoskie Przedmieście to the greatest extent and responded to the needs of local communities. It is significant that the project to revitalise the Municipal Park and the Michayland Integration Festivities were rated highest. The latter is a cyclical event held in Park Bydgoski that integrates all residents of the district and beyond, i.e., it has an impact on the entire degraded area. The year 2019 marked the 25th edition of this project. Michayland is a project aimed at children but also at intergenerational integration and revitalising the public space of Park Bydgoski. It has a direct impact on two identified revitalisation problems: the disorganisation of public spaces and the disintegration of society. The matrix analysis shows that the project relating to the Municipal

**Table 6.** Average project partial ratings for criteria 1 to 5

No	Project	Weighted average ratings per criterion					
		C1	C2	C3	C4	C5	Total
1.	Revitalisation of the Spirit Foundation grounds	0.36	0.49	0.41	0.52	0.59	2.36
2.	Renovation of Municipal Kindergarten No. 4	0.83	0.36	0.33	0.42	0.71	2.65
3.	Development of Mickiewicza Street	0.59	0.39	0.51	0.42	0.43	2.34
4.	Revitalisation of Park Bydgoski	0.66	0.65	0.36	0.46	0.71	2.85
5.	Adaptation of the Childcare Association premises	0.59	0.49	0.36	0.55	0.47	2.47
6.	Modernisation of High School No. 1 gymnasium	0.54	0.59	0.36	0.52	0.47	2.49
7.	Extension of monitoring	0.83	0.30	0.26	0.37	1.02	2.77
8.	Revitalisation of the area at 32 Mickiewicza Street	0.90	0.49	0.48	0.39	0.78	3.04
9.	Revitalisation of elements of Zoobotanical Garden	0.71	0.79	0.36	0.42	0.36	2.64
10.	Revitalisation of Boulevard, from bridge to University Sports Association	0.83	0.26	0.33	0.37	0.59	2.38
11.	The Toruń John Paul II Run	0.43	0.69	0.22	0.37	0.47	2.18
12.	“Cultural revitalisation” project	0.47	0.39	0.41	0.37	0.59	2.23
13.	Michayland – Fantastic City for Kids	0.66	0.75	0.33	0.52	0.66	2.92
14.	Projects for the whole revitalised area including Bydgoskie Przedmieście	0.54	0.59	0.26	0.37	0.54	2.31

Source: own elaboration

**Table 7.** Weighted project ratings for criteria 1 to 5

No.	Revitalisation projects in Bydgoskie Przedmieście	Average grades according to criteria				
		K1	K2	K3	K4	K5
1.	Revitalisation of the Spirit Foundation grounds	1.5	2.5	2.8	2.8	2.5
2.	Renovation of Municipal Kindergarten No. 4	3.5	1.8	2.3	2.3	3.0
3.	Development of Mickiewicza Street	2.5	2.0	3.5	2.3	1.8
4.	Revitalisation of Park Bydgoski	2.8	3.3	2.5	2.5	3.0
5.	Adaptation of the Childcare Association premises	2.5	2.5	2.5	3.0	2.0
6.	Modernisation of High School No. 1 gymnasium	2.3	3.0	2.5	2.8	2.0
7.	Extension of monitoring	3.5	1.5	1.8	2.0	4.3
8.	Revitalisation of the area at 32 Mickiewicza Street	3.8	2.5	3.3	2.1	3.3
9.	Revitalisation of elements of Zoobotanical Garden	3.0	4.0	2.5	2.3	1.5
10.	Revitalisation of Boulevard, from bridge to University Sports Association	3.5	1.3	2.3	2.0	2.5
11.	The Toruń John Paul II Run	1.8	3.5	1.5	2.0	2.0
12.	"Cultural revitalisation" project	2.0	2.0	2.8	2.0	2.5
13.	Michayland – Fantastic City for Kids	2.8	3.8	2.3	2.8	2.8
14.	Projects for the whole revitalised area including Bydgoskie Przedmieście	2.3	3.0	1.8	2.0	2.3

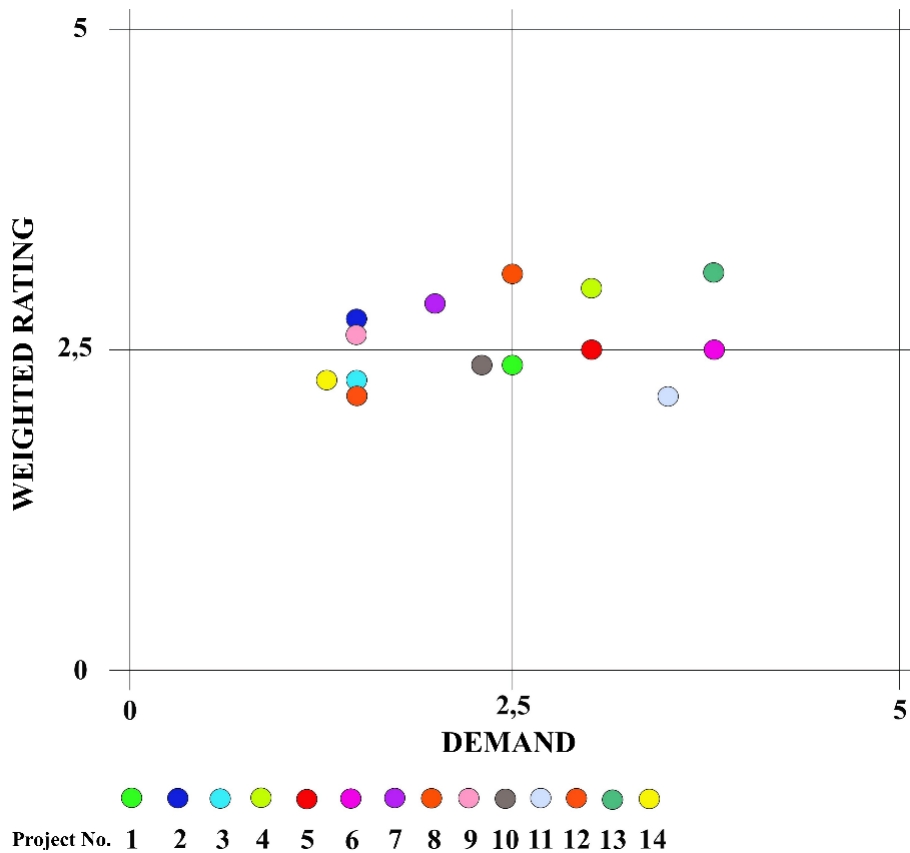
Source: own elaboration

**Table 8.** Total project ratings

No.	Project	Total ratings	
		E	D
1.	Revitalisation of the Spirit Foundation grounds	2.4	2.5
2.	Renovation of Municipal Kindergarten No. 4	2.7	1.5
3.	Development of Mickiewicza Street	2.3	1.5
4.	Revitalisation of Park Bydgoski	2.9	3.0
5.	Adaptation of the Childcare Association premises	2.5	3.0
6.	Modernisation of High School No. 1 gymnasium	2.5	3.8
7.	Extension of monitoring	2.8	2.0
8.	Revitalisation of the area at 32 Mickiewicza Street	3.0	2.5
9.	Revitalisation of elements of the Zoobotanical Garden	2.6	1.5
10.	Revitalisation of Boulevard, from bridge to University Sports Association	2.4	2.3
11.	The Toruń John Paul II Run	2.2	3.5
12.	"Cultural revitalisation" project	2.2	1.5
13.	Michayland – Fantastic City for Kids	3.0	3.8
14.	Projects for the whole revitalised area including Bydgoskie Przedmieście	2.3	1.3

Source: own elaboration

(E – project evaluation; D – demand for a given project)



**Fig. 4.** MMDM containing revitalisation projects implemented under Toruń LRP 2007–2015 in Bydgoskie Przedmieście  
Source: own elaboration

Explanation:1. Revitalisation of the Spirit Foundation grounds; 2. Renovation of Municipal Kindergarten No. 4; 3. Development of Mickiewicza Street; 4. Revitalisation of Park Bydgoski; 5. Adaptation of Childcare Association premises; 6. Modernisation of High School No. 1 gymnasium; 7. Extension of monitoring; 8. Revitalisation of the area at 32 Mickiewicza Street; 9. Revitalisation of elements of Zoobotanical Garden; 10. Revitalisation of Boulevard, from bridge to University Sports Association; 11. The Toruń John Paul II Run; 12. “Cultural revitalisation” project; 13. Michayland – Fantastic City for Kids; 14. Projects for the whole revitalised area including Bydgoskie Przedmieście

Park is characterised by high demand (and, thus, further revitalisation works are taking place there) and a relatively high weighted rating. The park in Bydgoskie Przedmieście is a place for residents to meet, relax and unwind. It is a space recognisable in Toruń and characteristic of the city. A wide range of tasks have been undertaken in the park, including reorganising the alleys, modernising the paving, new greenery planting, and restoring the fountain.

The results attest to the high need for socio-integrative projects embedded in a green environment. Good-quality projects are good revitalisation projects that have a positive impact on society and space. They improve the quality of space dedicated to the very young and to the general safety of Bydgoskie Przedmieście.

“Think and change” projects are projects for which there was relatively high demand, but whose final evaluation was not satisfactory. In order to further implement this type of projects, it would be necessary to modify the project assumptions to correspond to revitalisation needs. A sporting event was placed in the third group. Its form may not be acceptable and attractive to the entire local community, but perhaps only to the more physically active. However, there is certainly an integration potential that should be exploited.

The final, fourth group of projects is that of “run away” projects. These are the projects that least met the needs of the inhabitants, for which there was the lowest demand, and that thus did not contribute to the revitalisation of the area. This group included various infrastructural projects,

**Table 9.** Tabular presentation of the MMDM matrix

Premium quality	Good quality	Think and change	Run away
1. Revitalisation of Park Bydgoski	1. Renovation of Municipal Kindergarten No. 4	1. The Toruń John Paul II Run	1. Projects for the whole revitalised area including Bydgoskie Przedmieście
2. Michayland – Fantastic City for Kids	2. Revitalisation of elements of Zoobotanical Garden		2. Development of Mickiewiczza Street
	3. Extension of monitoring		3. “Cultural revitalisation” project
			4. Revitalisation of Boulevard, from bridge to University Sports Association

Source: own elaboration

such as the revitalisation of Mickiewiczza Street (treated by residents as a simple renovation), the renovation of the Vistula boulevards and the “Cultural Revitalisation”, i.e., an open-air poster gallery, which people found incomprehensible.

To sum up, the projects that received the highest ratings and at the same time did the most to revitalise the space in Bydgoskie Przedmieście were those of an integration and environmental character and those improving security. Lowest-rated were infrastructural projects or those dedicated to narrow social groups. The remaining revitalisation projects, not included in the four groups, cannot be assigned to a specific group due to their location on the matrix. They are on the demarcation lines of the project categories, but it is significant that most of them remain in balance, i.e., there is a convergence between the existing demand for such projects and their mitigation of revitalisation problems.

## 6. Discussion

The MMDM allows for detailed characterisation of individual revitalisation projects, evaluation and determination of the extent to which they have revitalised a given architectural and social space. An appropriate reformulation of the MMDM allows conclusions to be drawn as to whether the revitalisation projects have met the needs identified in the strategic documents (Szulc, 2013).

The MMDM method helps evaluate each of the projects implemented within the framework

of local revitalisation programmes and thus verify which initiatives revitalise a given area and which do not. It is characterised by increased contact with respondents and is less formal. It involves the local community and therefore has an important humanist and pro-social dimension. It is carried out in the form of a workshop, which is an obligatory stage in the MMDM method. The workshop takes the form of meetings for ranking groups, allowing participants to exchange experiences, views and insights related to the revitalisation process. Social participation is an important element of the revitalisation process and should take place at each of its stages. It provides an opportunity for the community to co-determine the transformation of the urban fabric.

The MMDM procedure presented in this article allows for a broad evaluation of the entire revitalisation process by evaluating each individual project, because it concretises in the revitalisation space the evaluation of individual projects, i.e., the degree to which revitalisation needs are satisfied in each instance. It should be considered innovative because it can be implemented at all stages of the revitalisation process. It can serve as a tool for selecting revitalisation projects, i.e., as *ex-ante* evaluation (Szulc, 2013). In this way, the projects will be adjusted to the expectations of the inhabitants – stakeholders in the process. The MMDM can also be used when evaluating projects during revitalisation activities. The use of the method for *ex-post* evaluation of the revitalisation process

in this article is a highly innovative approach to the issue. It allowed the authors to diagnose the implementation of revitalisation projects in the context of demand for them and the inhabitants' assessment. The results obtained in this way make it possible to correct revitalisation measures in order to focus on the types of projects that are most needed by the users of the revitalisation space in subsequent perspectives. Due to the complexity of the revitalisation process, its monitoring and evaluation is an extremely difficult yet necessary endeavour. The evaluation of revitalisation results should bring together all levels of the process, with particular emphasis on the social and spatial facets.

Revitalisation processes are evaluated on the basis of different research methods. Two streams can be distinguished: qualitative and quantitative. The qualitative stream includes the multi-criterion QAT (Quality Assurance Testing) method of analysis and evaluation of revitalisation projects. It was developed during the Hous-Es project within the European URBACT programme, using the findings enshrined in the Rotterdam *Urban Acqui* (2004), the *Bristol Accord* (2005), and the *Leipzig Charter* (2007). The QAT method includes a technical assessment of the project based on an evaluation questionnaire. The questionnaire is structured so that the answers given are binary in order to simplify the subsequent interpretation of the results (Bury, 2010). Applying this method to the analysis and evaluation of revitalisation makes it possible to focus on the technical dimension of the process, while further extensions of the method help show the entirety of revitalisation transformations.

Most often, revitalisation changes are evaluated using an indicator (quantitative) method, which is relatively cheap but inaccurate (Ciesiółka, 2019). Its first phase consists in preparing demographic, technical and economic indicators based on publicly available statistical data or coming from the commune's own resources. These indicators relate to the situation before the revitalisation process – baseline data – and after the revitalisation has taken place. This method allows us to learn whether the technical parameters of the revitalisation process have improved, e.g., whether the number of buildings in poor technical condition has decreased. It also shows social changes, e.g., whether the proportion of people on social assistance has dropped (Peng,

Lai & Zhang, 2015). This method provides hard data about the revitalisation carried out but does not refer to individual revitalisation projects – it only evaluates the process as a whole. It is not possible to correct ongoing activities based on the results of this method. It also does not provide information on how local communities evaluate revitalisation (McCulloch, 2000).

Another method for evaluating revitalisation activities is participatory observation and the individual in-depth interview method used by Hermawan to evaluate the implementation of a revitalisation programme at the Van Den Bosch Fort site in Ngawi, Indonesia (Hermawan, Sholihah & Pramanasari, 2019). The revitalisation transformations were assessed by the researchers based on their observations, which included an analysis of the spatial transformations, i.e., the use of former military sites, the adaptation of buildings and the materials used for this purpose. Interviews with residents and users of the space included a social analysis of the activities carried out, mainly focusing on the tourist use of the fort.

The MMDM method allows for a combination of the methods mentioned above. Its structure guarantees free selection of project evaluation criteria (which may come from different levels of the process) and a focus on both technical elements and social problems; thus, the method enables a multifaceted approach to the evaluation of the revitalisation process. The prepared evaluation criteria can serve as indicators that, if properly interpreted and prepared, will help rate the impact of a given project on the revitalised space. The MMDM is established based on workshops with residents, which are an essential part of conducting the matrix procedure. The workshops serve not only to prepare input data for the matrix, such as the demand for and evaluation of projects, but also to hold interviews and discussions with inhabitants (local communities) about the revitalisation process carried out.

## 7. Conclusions

According to the research, projects of an integration and environmental character and those improving security were the most appreciated and at the same

time had the best revitalising effect on the space of Bydgoskie Przedmieście district. The lowest ratings were given to infrastructural projects or those dedicated to narrow social groups (alternative arts). The MMDM method should be considered an appropriate tool for evaluating revitalisation. One can also draw further conclusions that revitalisation in Poland should have a “green” character. This “green revitalisation turn”, understood as a growing social demand for revitalisation of green areas, is particularly relevant in the context of negative climate change – greenery offsets it and improves the overall psycho-motor condition of people in general. The research has also shown that revitalisation should be socially inclusive, i.e., oriented towards the needs of local communities and their participation in the revitalisation process.

The authors are aware that the MMDM method is not a perfect tool and should be continuously modified and improved. Risks in conducting the matrix procedure include workshop participants’ level of knowledge about revitalisation. This is an extremely important element that can affect the results of the analysis.

In summary, the MMDM can be combined with other methods, such as surveys. They can work in synergy to yield a comprehensive evaluation of the revitalisation process. The MMDM method is an extremely flexible tool that should be widely used in research. Therefore, it is justified to recommend its implementation in assessments, evaluations and summaries of processes, undertakings, and projects concerning revitalisation but also other urban processes and activities.

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