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Business location decision: the behavioural aspect in empirical research

ABSTRACT

The behavioural location theory helps to understand business location decisions which are not explained in the perfect rationality paradigm. In this article, we survey empirical research on business location decisions which include the behavioural aspect. We conclude that entrepreneurs appear to be biased towards choosing locations in their place of residence and are reluctant to make complicated location analysis. We also indicate the research gap – a lack of research on the impact of heuristics on location decisions.

Keywords: behavioural economics, location theory, heuristics, business location decisions

JEL Classification Codes: D91, R30

Introduction

The behavioural location theory links the traditional location theory and behavioural economics. Among others, it deals with how business owners actually choose locations for their businesses. To our knowledge, so far there has been no review of empirical evidence on business location decisions which share the behavioural aspect. For this reason, we have decided to conduct a critical literature review to draw conclusions and indicate knowledge gaps. The main goal of the authors was to find out if empirical studies confirm the relevance of subjective factors and home region bias in making location choices by enterprises. To find out the relevance of behavioural location in contemporary science and location decision context, the authors have performed a standardized literature review basing on the Boolean search of selected scientific databases (EBSCO, Emerald, Goole Scholar, BazEkon, and *The Central European Journal of Social Sciences*) on 14th–21st of July 2017. Key phrases used within the search included behavioural economics, bounded rationality, location theory, location decision heuristics and location decision.

In search of the relevant literature, Boolean search operators were used, such as AND, NEAR and PHRASE. Within our research we prioritized review of scholar papers published within 10 years from our research (2007–2017) and refer to them within our paper.

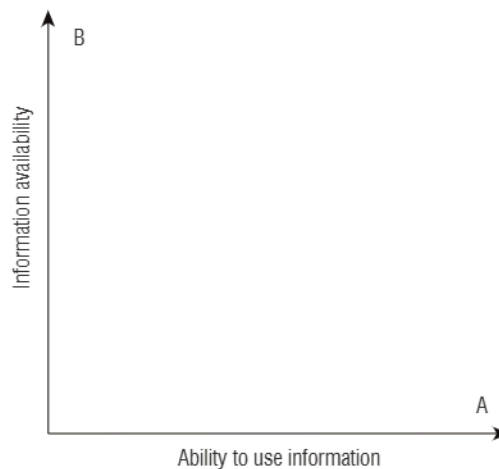
We also examined whether the evidence gives more support for a *homo oeconomicus* or *homo satisfaciendus* as a decision maker. We looked for scientific articles dealing with business location decisions which contain an original empirical research on behavioural aspects of such decisions. Surprisingly, despite the fact that empirical verification of hypotheses constitutes the core of behavioural economics, the number of suitable articles for our review is rather modest.

1. Behavioural location theory: concepts relevant to business location decisions

We set up the behavioural location theory within the classic and neoclassic location of economic activity theories and behavioural economics. The latter emphasizes psychological and cognitive aspects of the context in which decisions are made and limitations impacting rationality of decision-making process. Thus, the behavioural location theory derives from behavioural economics concepts such as bounded rationality, usage of heuristics in decision making and subjective perception of spatial aspects. We anchor the behavioural location theory in H. Simon's *homo satisfaciendus* concept, which in relation to the decision maker outlines choosing satisfactory rather than economically optimal options from a variety of choices possible. The behavioural location theory is based on H. Simon's *homo satisfaciendus* concept of decision maker, who aims to choose a satisfactory rather than optimal option [Simon, 1955, pp. 99–118].

The bounded rationality has been directly linked to the business location choice in the work of A. Pred, who proposed the Pred matrix. The Pred matrix visualises the concept that there is a positive relationship between the quantity of information, the decision maker's ability to use the information and the profitability of the chosen business location [Pred, 1967, p. 76]. Point A represents the so-called *homo oeconomicus*, a perfectly rational person who has all information relevant to the decision problem and a perfect ability to use the information. Such a person will choose the optimal business location. On the contrary, the person represented by point B has little information and a low ability to process the information, so he or she will choose a poor location for their business.

Figure 1. The Pred matrix



Source: own elaboration on the basis of: Pred (1967), p. 76.

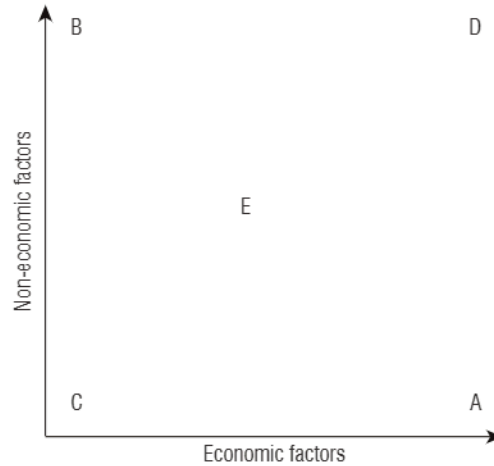
Among the scholars who have indicated the impact of non-economic factors on the location decision we can point out M. Hurst, who proposed the Hurst matrix [Wieloński, 2007, p. 25]. This is a simple graph, which shows that decision makers take into account economic and non-economic factors as a certain combination. According to Hurst, the business location decision maker is rather a *homo satisfaciendus* (point E in Figure 2) than *homo oeconomicus* (point D).

Heuristics are rarely taken into account in empirical research regarding the location theory. As identified by H. Godlewska-Majkowska, they can be useful in explaining location decisions, because “subjective assessment of location virtues by autopsy has significant importance. They can be explained by availability, representativeness and anchoring heuristics” [Godlewska-Majkowska, 2016, p. 48]. Therefore, we will discuss some well-known heuristics and the research gap that could be filled by linking them to location theory research.

It can be argued that behavioural scholars try to capture the actual behaviour of decision makers, while the authors of more formal models give normative suggestions, how the location selection process should be performed. In Table 1, we present some of such formal models,

which one can treat as an approximation of how a *homo oeconomicus* would behave to choose the optimal business location.

Figure 2. The Hurst matrix



Source: Hurst (1974), on the basis of Wieloński (2007), p. 25

Table 1. An overview of economic activity location choice formal models

Model	Description
Weber's model	Weber's model of industrial business location is based on an algorithm of finding the location that minimises the transportation cost.
Points-based location assessment	The decision-maker sets their own criteria of location assessment and their weights. Then, he/she rates considered locations on the 0 to 5 scale against his/her criteria and sums up the points for each potential location, separately. The location with the highest number of points is selected as the business location.
Grabow's model	This is a multiple-step model. In Phase I, the decision maker searches for a region/continent with the largest market for his or her product/service (demand maximisation). During this stage soft location factors, such as the investor's knowledge about the competitor's outcomes operating there, plays an important role. Next, in Phase II, the investor chooses the profit-maximising location on the basis of hard location factors (such as the cost of land). In case there is more than one profit-maximising location, soft factors may help to decide.
V. van Thai and D. Grewal's model	This is a four-stage model of location selection. Firstly, the decision maker chooses a large, general territory for an investment. In the next step, he/she makes a short list of most attractive potential location. In the third stage, he/she conducts a quick screening of potential locations. The ones which pass the screening, are carefully examined in the last, fourth stage. In this model both qualitative and quantitative methods of analysis are allowed.
J. Ashayeri and J.M.J. Rongen	In this model, suitable for logistics companies, the decision maker takes the following steps: <ul style="list-style-type: none"> • collecting information on distribution; • assessment of potential locations; • choosing the location; • conducting a sensitivity analysis.
Porter's diamond	Porter's diamond is based on an analysis of a potential location with respect to opportunities for gaining a competitive advantage. The factors taken into consideration are: factors of production, related and supporting industries, the character of businesses, their strategy, structure and competition.
Center of gravity method	It is a mathematical model which helps to indicate the location of logistics network elements so that the transportation cost is minimised.

Source: own elaboration on the basis of Godlewska-Majkowska (2013); Resmer (2015); Wierzbicka (2015); Kuczyńska, Ziółkowski (2012).

2. Location decision as a process

The research by N. Berg suggests that entrepreneurs consider a few business locations and often potential locations are found unintentionally, for example during holidays [Berg, 2014, pp. 1700–1709]. He concluded so on the basis of in-depth interviews with 49 entrepreneurs from the Dallas agglomeration, who represent diversified industries and scale of business. No respondent considered more than 10 potential locations and approximately 80% of them considered no more than 3 locations. This is far fewer than one could expect from a *homo oeconomicus*.

On the basis of the collected data Berg constructed a decision tree (Figure 1), which predicted with over 90% accuracy how high was the return on investment, depending on four variables: quantity of the information acquired, size of investment, usage of imitation heuristics and the number of locations considered.

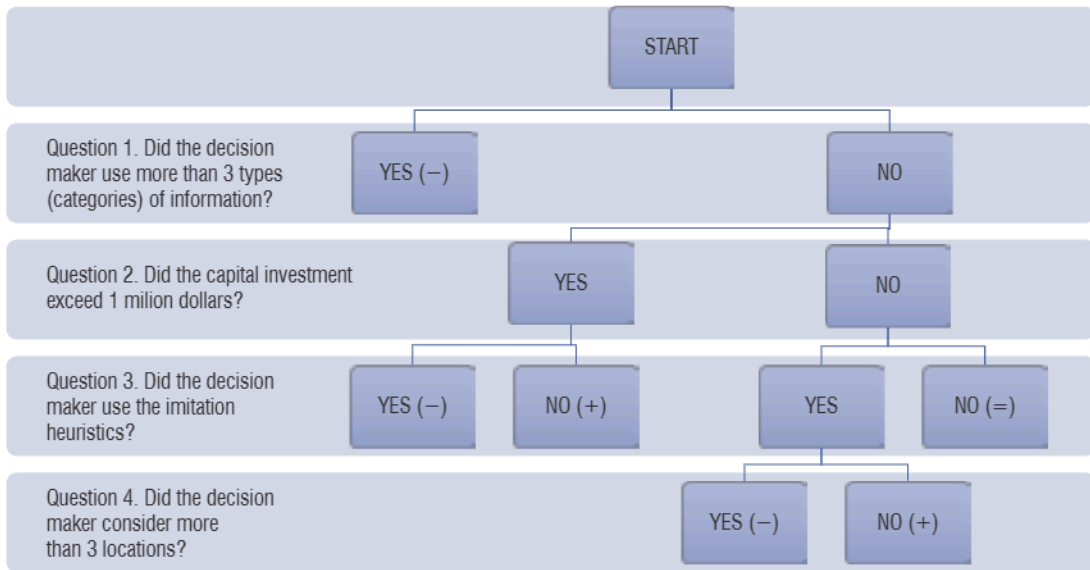
Let us walk through one of possible paths on the classification tree in Figure 1. We select the answer NO to Question 1, so that we will consider investment projects in which the decision maker has collected up to three information types. The first question may be understood as a broad approximation whether the decision maker gathers full information available. The answer NO means the decision makers who collected no more than 3 categories of information on possible locations of economic activity behaved in line with the bounded rationality model. Then, we select the answer NO to Question 2, which means we will consider investment projects worth up to 1 million dollars. Next, we choose the answer YES to Question 3, so that we will focus on the decisions where imitation heuristics were used. Finally, we select the answer NO to Question 4, which means we will only consider decisions where no more than 3 possible locations were considered. The sign '=' at the end of the path means that typically the actual and expected return on investment were equal for location decisions with the following characteristic: *no more than 3 categories of information collected, value of investment no more than 1 million dollars, imitation heuristics were used, no more than 3 possible locations were considered*. Interestingly, projects where the decision maker collected more than three types of information (the answer YES to Question 1) were classified as those which bring lower than expected return.

It does not follow the neoclassical approach, which underlines the benefits of gaining full information. A drawback of the presented tree is that it does not follow the logical order of steps during a decision-making process.

P.J. Buckley et. al conducted an experiment on managers' potential behaviour when choosing a location for foreign direct investment in various scenarios [Buckley, Devinney, Louviere, 2007, pp. 1069–1094]. Their methodical approach may be seen as complimentary to the more frequent survey method or analysis of secondary data. The managers were presented 32 pairs of investment projects. For each pair their task was to indicate the better project or to tell that none of them is good enough for further consideration or actual investment. The investment

projects were described by 12 features, such as the cost of operations, return on investment and potential market size. Buckley et al. conclude that “in creating sets of investments to ‘consider’, managers appear to follow fairly rational rules. However, the choice of actual ‘investments’ appears less aligned to traditional models” [Buckley, Devinney, Louviere, 2007, p. 1069]. Following the B. Grabow et. al terminology [Grabow, Henckel, Hollbach-Grömig, 1995, p. 267], we can say that during the screening stage of a location decision hard factors play the key role, but the final decision on investment location depends heavily on soft factors, such as similarity of the language or culture.

Figure 3. Location decision process and the return on investment: the classification tree



The return is represented by the following notation in the last element of a given branch: (+) higher than expected, (=) equal to expected, (-) lower than expected

Source: own elaboration on the basis of Berg (2014), p. 1705.

3. Poland: the case of Tricity entrepreneurs

O. Martyniuk and A. Gierusz examine the location choice process on a sample of 251 small and medium-sized enterprises from Tricity (Trójmiasto) in Poland. The main focus of the research was the differences in location factors between family and non-family businesses, so the sample consisted of both types of companies [Martyniuk, Gierusz, 2016, pp. 283–295]. According to Martyniuk and Gierusz, there have been previously no studies on economic activity location factors of family businesses in the Polish literature. They conclude that “in the case of family business, when deciding on the place for their business activity, a majority chose a location near the place of the owners’ residence. Another significant factor is family considerations e.g. the ease of accommodating childcare with work”. An increased significance

of the cost factors for non-family entities was not confirmed [Martyniuk, Gierusz, 2016, pp. 283–295]. In addition, they think their respondents tried to find a satisfactory location: “it can be stated that the surveyed family enterprises, in large part, made location decisions according to the behavioral theory, which assumes the so-called satisfactory behaviour of the decision-maker, accentuating the non-economic factors in the decision-making process” [Martyniuk, Gierusz, 2016, pp. 283–295]. Martyniuk and Gierusz documented that family ownership has an influence in the location choice between place of residence and outside the place of residence of the owner – it turns out that “family enterprises more often are located in the place of the owners’ permanent or temporary residence than in the case of non-family enterprises” [Martyniuk, Gierusz, 2016, pp. 283–295].

O. Martyniuk examined the location decisions of micro- and small enterprises in the Tricity region in the context of location risk [Martyniuk, 2016, pp. 419–429]. She conducted a survey-based research on a random sample of 246 respondents from the Tricity region. The surveyed businesses often named non-economic reasons as important in their location decision – ‘place of residence’, ‘proximity of the place of residence’ and ‘family circumstances’ were indicated as important by approximately 43, 30 and 20 per cent of the respondents, respectively. Interestingly, all the three factors were more important than ‘demand’, which was selected by only 14 per cent of the respondents. An advantage of this research is that random sampling allows for generalisation of the results for the chosen research population.

4. Home region preference of start-ups

E. Stam investigated the spatial behaviour of young companies (start-ups) in the Netherlands – why they tend to locate in their home regions and are reluctant to relocate beyond their region of origin [Stam, 2007, pp. 27–50]. He found that in the research population of 174 entrepreneurial firms, 55% of them changed their location, but only 4% moved by more than 50 kilometres, which Stam treated as moving outside one’s region. The population consisted of companies which met the following criteria: age between 5 and 11 years, operating in the industry or business services and where the founder was still present. The research sample was significantly smaller (in total 33 companies, as 8 micro-firms were added). On the basis of the interviews with the companies’ founders, Stam concluded that usually founders start their business in their home region and sees three possible explanations:

- the business opportunities are local and it is easier to discover those opportunities in an environment which a person knows well;
- founders prefer to stay in their region for personal motives;
- low financial resources limit the number of potential locations.

The reasons behind the relocation were different for subsequent phases of the start-up development and were summarised to become a part of Stam’s Theory of Locational Behaviour of Entrepreneurial Firms. An interesting quality of the theory is path-dependency: “The spatial

organization of entrepreneurial firms co-evolves with the accumulation of their capabilities, which implies that the locational behaviour of entrepreneurial firms is highly path dependent” [Stam, 2007, pp. 27–50].

M.S. Dahl and O. Sorenson performed an econometric analysis of the data on over 13 000 start-ups and their founders in Denmark [Dahl, Sorenson, 2012, pp. 1059–1071]. They find that entrepreneurs prefer to start their businesses in the place of birth or long residence and it is good for them: “entrepreneurs benefit from regional embeddedness: their ventures survive longer and earn more in annual profits and cash flows when they found firms in the regions in which they have lived for a long time” [Dahl, Sorenson, 2012, pp. 1059–1071].

5. Selected heuristics in economic activity location and their implications for theory and practice

In the subchapter we focus on the heuristics relevant in the business location decision-making process and provide their practical examples. Empirical research indicates that there are plenty of imperfections in human perception of probability, and that people do not use the rules of the probability theory when they deduce the probability of risky events [Zieliński, 2012, pp. 124–139]. Heuristics indicate that rationality required by conventional economic theories is relatively rarely used in decision making. Therefore, the knowledge of selected heuristics applicable to the business location decision-making process might impact both reflection on decision making itself, and its final results. The heuristics of representativeness is one of mechanisms that might impact the business location decision-making process. It relates to equating resemblance with probability by a human. Humans are convinced that the probability of an object of class A belonging to class B or process B is a result of process A the more A resembles B [Kahneman, Tversky, 1974]. The calculation of probability by humans in decision-making processes requires more than referring to resemblance and requires conducting complicated operations. Therefore, judgments made by humans often neglect probability and base only on resemblance [Klepczarek, 2012, pp. 57–75]. Implications of this heuristics might relate to the process of business location selection in a couple of ways. On the one hand, people might deduct fitness of a certain location for business by referring to the density of other companies in that location or in its neighborhood. On the other hand, these heuristics might lead to the elimination of initially considered locations due to the stereotype referring to the class it belongs, such as a district, or city believed to be polluted, unfriendly, expensive or of other character. In both examples what is neglected in the decision-making process is no reference to the evidence in form of data, including statistics and facts. The heuristics of availability is another mechanism which impacts the context of decision making that we analyse. The mechanism of these heuristics relates to assessing the frequency and probability of certain phenomena by a human through easiness people can refer to in mind or imagine certain circumstances or examples. According to the heuristics of availability,

deduction bases on the psychological availability and easiness of using decision-making patterns which have occurred more frequently. As a result, the reliance on the availability of examples already existing in one's mind leads to biased decision-making implications of these heuristics in business location selection. It might relate to locations well known to the individual making the decisions, via other experiences such as the place of birth, place of living, or place of working and being satisfied with the decision resulting in the selection of a well-known location [Kahneman, Tversky, 1974, pp. 1124–1131]. A certain type of market activity, advertising deeply, derives from the heuristics of availability.

The goal of advertising activities is to have a certain service or good considered in the class of alternatives related to the decision to be made. In that context, individuals should remain cautious in their decision-making process and use data other than the advertising slogans and place promises promoted by real estate developers, real estate agencies, and districts and cities using the approach of territorial marketing.

The last type of heuristics we would like to bring attention to is the heuristics of adjustment and anchoring. It relates to making a decision with reference to the initial value or reference point that an individual learnt first during the decision-making process. As a result of these heuristics, the final result of the decision-making process is adjusted to the values or reference points taken into account in first steps of decision making or incomplete information. The nature of the data and facts used as these reference points impacts the quality of the decisions being made. If they consist of rumors, informal information, or are not based on thorough analyses, they impact negatively the final decisions made. In the business location decision-making process, these heuristics relate to anchoring the deduction process to unconfirmed, initial assumptions, and using them as basic ones in our decision-making process.

We have based our considerations of the role of heuristics in location decision-making in the dominant approach to heuristics in behavioural economics, which stems from the works of D. Kahneman and A. Tversky. However, there are also scholars who reject this approach to heuristics. For example, G. Gigerenzer argues that heuristics do not always lead to worse decisions, or that people use heuristics only due to human limited cognitive capabilities. According to G. Gigerenzer, the usage of less information and fewer computations in the real world results in the benefits of saving time, which the heuristic method of decision making allows [Gigerenzer, 1997, pp. 1–14].

Moreover, G. Gigerenzer also does not agree with the concept of two types of mind introduced by D. Kahneman and A. Tversky – one for thinking fast and making decisions based on heuristics, and one for thinking slow and making thorough and well-justified decisions. G. Gigerenzer provides arguments for treating the two types of minds as one continuum, not a dichotomy [Gigerenzer, 2008, pp. 20–29].

As can be seen, D. Kahneman and A. Tversky treat heuristics rather as a limitation to people's rationality, while G. Gigerenzer puts an emphasis on the benefits those heuristics bring. But in both cases, it is acknowledged that heuristics help to understand the way people make decisions. We find the impact of heuristics on business location decision-making worth of further exploration.

Summary

The collected evidence supports the conclusion of H. Godlewska-Majkowska, who noticed that “in the literature there is attention paid to the high importance of subjective factors in location decision or even a lack of location analysis by small entrepreneurs or people considering starting a business, regardless of the choice of organisational and legal form” [Godlewska-Majkowska, 2016, p. 48]. In the cited empirical studies, entrepreneurs expressed their preference for their home region. Moreover, the research by P.J. Buckley et. al and N. Berg suggests that subjective factors play a significant role also for larger companies. Overall, the collected evidence gives more support for the *homo satisfaciendus* than *homo oeconomicus* as a model of decision maker.

In addition, we have identified the knowledge gap related to using heuristics as an explanation for location decisions. We find empirical research on populations of entrepreneurs and managers the most suitable approach to fill the gap.

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