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University or polytechnic? A fuzzy-set approach of prospective students' choice and its implications for higher education institutions' managers[☆]

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ABSTRACT

This study aims to provide a deeper knowledge of the factors behind undergraduates' choice of an higher education institution (HEI) in Portugal. Based on Chapman's model (1981), this study presents the results of a survey on the personal characteristics and institutional drivers that influence this choice. The survey results in a sample of 368 Portuguese secondary or vocational education students in their final year who intend to apply to a public HEI. To the best of the authors' knowledge, this study is the first to apply the fuzzy-set qualitative comparative analysis to this field of study. The findings indicate that the choice criteria of prospective students are the same irrespective of whether they are applying to a university or a polytechnic school. Among the criteria, job opportunities and the institution's reputation are the most important. Thus, managers should account for these criteria when seeking to increase their institution's competitive advantage.

1. Introduction

In the context of the competition in “global market for higher education” (Mazzarol & Soutar, 2012), this study investigates what factors influence the students' choice of a higher education institution (HEI). This topic has attracted wide interest not only from the academic community but also from the managers of educational institutions. The literature on this topic finds that this choice results from a highly complex process in which both institutional and personal factors have an influence (see, e.g., Briggs & Wilson, 2007). The factors that the literature frequently identifies are cost, location, institutional reputation, and job opportunities; but it also identifies financial conditions or the opinions of others (see, e.g., Briggs & Wilson, 2007). From the students' point of view the choice is a “highly perceived risk decision” due to the long-term implications for their lives and careers (see, e.g., Simões & Soares, 2010). The high diversity of institutions and courses increases the complexity of this choice (Price, Matzdorf, & Agahi, 2003), which the students do not always manage systematically and logically (Moogan, Baron, & Harris, 1999), or with complete information (Chapman, 1981). Being able to know which criteria shape prospective candidates' decisions allows HEI managers to focus more on

improving communication and marketing strategies, recruitment programs, international partnerships, and on diversifying the offers of degrees and courses (Maringe, 2006; Però, Soriano, Capilla, Olmos, & Hervás, 2015; Sarkane & Sloka, 2015; Teixeira, Rocha, Biscaia, & Cardoso, 2012). This is especially important in a context of intensified global competition between institutions to attract the best students in the face of funding cuts and a decrease in the number of applicants, which is due mainly to low birth rates.

The aims of the study are first, to use fuzzy-set theory to test the most relevant personal and institutional factors in these choices and second, to explore whether an underlying hierarchy exists within each set of factors. Portugal is an empirically appropriate country to study because it faces the same trends as other countries, such as competition, funding cuts, and a decrease in applications due to low birth rates and high dropout rates, particularly at the secondary school level. The need to keep up with the competition has led Portuguese HEIs to implement important changes in their governance, operations, and management (Santiago, Carvalho, Amaral, & Meek, 2006; Santiago, Carvalho, & Cardoso, 2015). However, Portugal is unique in that it also is a country where public universities and polytechnics coexist, have relatively low tuition fees, and where the former has a more prestigious reputation.

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The sociological research has identified Portugal as a society in which mixed forms of dualism coexist (Nunes, 1964). While Portugal has a younger population with education levels similar to those of the most developed countries in Europe, its older population still has very low qualifications. This situation invites reflection on the importance of education (Horta, 2010), especially the choice of courses and HEIs after secondary school.

The study is divided into six parts. After the Introduction, Part 2 presents a short characterization of the dual Portuguese higher education system, which is made up of universities and polytechnics. Part 3 reviews the factors that influence students' choice when choosing which specific HEI to attend and identifies the research gap that this study aims to respond to. The research design is described in Part 4. As the study applies fsQCA, we provide a justification for the adequacy of this method as well as its requirements and calibration. Part 5 presents and discusses the results, and Part 6 concludes the study and describes its limitations and future avenues for research.

2. The Portuguese higher education system

The Portuguese higher education system comprises two kinds of institutions with different characteristics: universities and polytechnics (also known as universities of applied sciences). In the public system, universities and polytechnics share some criteria with input from the government: (1) nationwide coordination of the number of applications allowed, (2) similar tuition fees, and (3) common standards for ranking students' degree preferences and their grades in secondary school and on national exams. In contrast, in the private sector each institution determines the number of available applications and the value of tuition fees.

Portugal has 14 public universities out of 54 and 15 public polytechnics out of 75 (CHEPS, 2013). The government determined this binary distinction between universities and polytechnics in the late 1980s (Education System Act, Law 46/86, 14 October) and further reinforced it during the implementation of the Bologna three-cycle system (Veiga & Amaral, 2009). The Agency for the Assessment and Accreditation of Higher Education (A3Es) initiated degree and program accreditations in 2009. But this system does not show any statistical differences between universities and polytechnics, which are measured by the percentage of nonaccredited study programs (Sin, Tavares, & Amaral, 2016). In the 2014 to 2015 academic year, Portugal had 349,658 students in the higher education system: 67% in universities and 33% in polytechnics. Of those, 83% of the students attended public institutions and 17% attended private ones (DGEEC, 2015). Some of these institutions have various campuses in different regions. Seven of the public polytechnics are in underdeveloped areas in the interior of Portugal; and the universities are mainly in cities (CHEPS, 2013).

3. Drivers influencing the undergraduate choice of a HEI

The process of choosing a HEI is very complex (Chapman, 1981; Moogan & Baron, 2003) and depends on several factors and multiple influences (Briggs & Wilson, 2007; Simões & Soares, 2010). Various studies tend to approach this matter based directly, or indirectly, on two sets of factors: institutional and personal. This division goes back to Chapman's seminal essay of 1981 in which the author presents a longitudinal model on students' decision-making that combines a set of personal characteristics (current and background) and external influences. The personal characteristics include socioeconomic status and the levels of educational aspiration, achievement, and aptitude. Family income is one of the most relevant aspects of the socioeconomic status because it has important influence on prospective students' choice of a HEI. Students' educational expectation levels reflect their hopes and perceptions about their future performance. The research has proven that these expectations are positively correlated with high school performance. Student's achievement depends on their aptitude and serves

as a criterion for acceptance by a HEI. Achievement also allows students to judge if a certain university is adequate for them; they tend to prefer a HEI where they can find other students with similar levels of achievement (Chapman, 1981).

External influences incorporate important persons (e.g., family, friends, and high school personnel), HEIs' characteristics (e.g., cost, financial aid, location, availability of desired courses program, and campus environment), and HEIs' efforts to communicate with students (e.g., written information, campus visits). Chapman's model considers an HEI's characteristics as fixed even if it intends to change them because those changes will take time before they affect an HEI's reputation in the eyes of prospective students. The HEI's efforts to communicate with students are more flexible, and its marketing department can use them to attract new students.

Chapman (1981) clearly points out that his model does not pretend to be exhaustive in including all possible factors that influence the choice process. Further studies either have consolidated the importance of some factors or have helped to extend Chapman's model with additional external influences such as the reputation of the institution, location, academic life, availability of courses, educational facilities, and job prospects (Drewes & Michael, 2006; Harris, 2009; Kallio, 1995; Ming, 2011; Moogan & Baron, 2003; Nurlida, Faridah, Nooraini, & Norzaidi, 2010; Peró et al., 2015; Price et al., 2003; Rochat & Demeulemeester, 2011; Ruslan, Ariffin, Islam, & Zaidi, 2014; Sia, 2013; Sojkin, Bartkowiak, & Skuza, 2012, 2015).

Despite the numerous recent studies on the topic, no consensus exists on the multiple factors that affect the students' choice of an HEI (Simões & Soares, 2010). For instance, Kallio (1995) identifies location and work-related concerns as the main factors that affect the choice of a university. Connor, Pearson, Court, and Jagger (1996) find that tuition fees as well as the location and the supply of courses are important factors. Drewes and Michael (2006) conclude that location, scholarships, and nonacademic student services expressively influence the students' choice. Briggs (2006) and Briggs and Wilson (2007) identify the HEI's reputation as being the most important decision factor for students. Further, Sojkin et al. (2015) add the importance to students of the courses offered, the cost of studies, and the accessibility of financial aid to the list of factors. More recently, Peró et al. (2015) find that in Spain, gender and the area of study influences the relative importance of many assessment factors, such as academic reputation, geographic location, and courses. In line with these perspectives, Sarkane and Sloka (2015) show that the main factors in the students' choice of HEI are household budget, university's reputation, and job opportunities. The literature also includes individual variables that seem to be related to students' choice of an HEI, such as gender, number of siblings, parents' level of education, or the family's average monthly income (Anelli & Peri, 2015; Denzler, 2011; Goodman, Hurwitz, Smith, & Fox, 2015; Paulsen, 1990). The parents' level of education is an important facet of the family's background, which has proved to influence the choice of an HEI, particularly the choice between a university or a polytechnic (Denzler, 2011). Students from more privileged family backgrounds tend to prefer universities. Likewise, students also tend to be influenced by their older siblings. As pointed out by Goodman et al. (2015), younger and older siblings' choices are very closely related. Additionally, Anelli and Peri (2015) find that the siblings' gender also affects students' HEI choice, namely which degree they decide to pursue. It is also probable that the number of siblings in families of a lower socioeconomic status can influence not only the decision to proceed with academic studies, but also the choice of a specific HEI because of the education costs.

Despite the abundant literature regarding the two main sets of factors that influence students' choice, a research gap remains regarding the possibility of a presumed hierarchical structure within each set of factors. In other words, prospective students are likely to not equally weigh each sub-factor when making their decisions. Personal and institutional factors could be subdivided into first and second order conditions, or sub-factors in terms of students' preferences. At the top of

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