

KEY VARIABLES IN THE PARTICIPATION OF UNIVERSITY STUDENTS IN EXCHANGE PROGRAMS**Piedad Mary Martelo Gómez¹, Raúl José Martelo Gómez² and Carlos Alberto Severiche Sierra³**¹Odontologist. Independent researcher. Professor of the Dentistry Program at the Universidad de Cartagena, Colombia²Specialist in Networks and Telecommunications; Master in Computer Science. Systems Engineer. Full-time Research Professor of the Systems Engineering Program at the Universidad de Cartagena. Leader of the INGESINFO Research Group. Cartagena de Indias, Colombia³Professor at the Corporación Universitaria Minuto de Dios - UNIMINUTO. Barranquilla, Colombia¹pmartelog@hotmail.com., ²rmartelog1@unicartagena.edu.co and ³carlos.severiche@uniminuto.edu.co.¹ORCID: <https://orcid.org/0000-0002-5405-0324>, ²ORCID: <https://orcid.org/0000-0002-4951-0752> and ³ORCID: <https://orcid.org/0000-0001-7190-4849>**ABSTRACT**

This study determines the key variables associated with the participation of university students in exchange programs. It was a mixed investigation for occupying qualitative and quantitative data. The design was sequential exploratory. The documentary review was used as an information collection technique, consultation with experts, and MICMAC technique to analyze the data. As a result, four key variables, four determining variables, two autonomous variables, and two result variables were found, which allow to glimpse the main reasons why students participate in these programs. It is concluded that thanks to the application of the MICMAC technique, not only the relationships between the variables are evidenced, but also allows classifying in keys, determinants, autonomous, and results, which enriches the results. In this context, the key variables were: to study different subjects, the methodology used at the University of Destination, the improvement of the language, and the prestige of the University of Destination, which are of greater utility when entering the world of work.

Keywords: Education, cultural, international, students, variables, micmac.

INTRODUCTION

Cultural intelligence represents an individual's ability to cope with diversity and function in novel cultural contexts. It is a key variable (KV) for successful performance in global environments (Schlaegel, Richter, & Taras, 2021). For this reason, an exchange program (EP) is one of the many strategies implemented in universities to develop students' intercultural skills and international knowledge (Daly, 2011). This strategy exposes students to a foreign culture and a different school, relegating them from their usual environment and curriculum (Czarnitzki, Joosten, & Toivanen, 2021). In this sense, student EPs are recognized as one aspect of a broader set of internationalization strategies aimed at improving students' intercultural understanding and competence (Daly & Barker, 2010).

When evaluating the benefits of an international EP, not only the participating students benefit in terms of their interactions and cultural exchange but also the other students of the host institutions (Thampi, 2022). On the other hand, the impact that the exchange has on the academic performance of the students is not known with certainty; however, various studies show that participation in these broadens the student's mentality, increases their linguistic ability, and confronts them with a different teaching style (Sorrenti, 2017). Consequently, by positively correlating these variables with learning, it can be said that the exchange would increase academic performance. However, some studies analyze the effects of EP based on qualitative data only (Santoro & Major, 2012), while others point out the paucity of quantitative research examining the effectiveness of EPs (Justo & DiBiasio, 2006).

Other studies analyze the variables that impact the participation of learners in EPs, for example, Daly (2011) proposes a model of the contextual and individual factors that can influence when making the decision to

participate in a EP and when choosing the destination. Likewise, in Fernández & others (2016) they determined the factors that drive university students to decide on an EP, and the factors that affect when choosing a destination.

Due to the above and the importance of the internationalization of higher education, the purpose of this study was to investigate the variables that impact the students' decision to participate in EPs. Likewise, these variables were classified into four groups: key, determinants, autonomous, and result. This classification was carried out through a structural analysis (SA) with the MICMAC prospective technique, which is a widely used technique when one wants to determine factors or VCs as in Martelo, et al. (2020a) where the factors linked to the production of teak crops were defined, and in Martelo, et al. (2020b) was used to specify the factors that affect consumer loyalty in the electronic tourism market. Research such as the one proposed shows the versatility of this technique.

METHODOLOGY

The methodology of this research was mixed since quantitative and qualitative perspectives were used (Sampieri, 2018). The design was non-experimental, transversal, descriptive, and correlational. The literature and teachers were consulted about the variables that intervene in the participation of university students in EPs, likewise, the literature was reviewed to obtain information on those variables and finally, a SA was carried out with which the essence of the system of links between the variables environment and their dynamic structure were identified, this was analyzed with a qualitative approach (Herrera, 2017). The MICMAC technique was used to carry out the SA. This technique uses qualitative and quantitative approaches to identify factors or VCs using a square matrix and then allows them to be classified in a four-quadrant plane (FQP), either in factors or variables: results, key, determinants, and autonomous (Arango & Cuevas, 2014). Below, the steps of MICMAC are described.

Phase I. Definition of the list of variables

In this phase, the variables that make up the system are determined with the objective of preparing a list of variables external and internal to the system. In this phase, a detailed description of each variable is required to allow location in the FQP, analysis, and description of the links between them.

Phase II. Description of links between variables

This stage leads to the formulation of the following questions: is there a direct link of incidence between the variables j and i ? If the answer is no, the result will be 0, otherwise the question would be whether this direct incidence link is weak (1), medium (2), strong (3), or potential (4). By resolving these questions, the direct influence matrix is completed.

Phase III. Classification of variables

This stage allows the VCs to be identified and classifies them directly, indirectly, and potentially, which shows the importance of some variables and exposes others that indirectly have a relevant role that, through direct classification, is not possible to appreciate. The classification is shown in an FQP, where the VCs are located in Quadrant I, the determinant variables are located in Quadrant II, the autonomous ones are located in Quadrant III, and the result ones are located in Quadrant IV.

RESULTS

After acquiring the survey results, the experts were presented with a list of 12 variables and agreed with each selected variable. In this sense, for the application of the MICMAC technique, for Phase I, the variables were coded in a table with their respective description, which is seen in Table 1. The first column is equivalent to the number of the variable, the next corresponds to the code or short name, the third is equivalent to the full name, and finally, the description.

Table 1: Variables that impact the participation of learners in EPs.

#	Code	Variable	Description
1	RCA	Recreational-cultural attraction of the destination	Get to know the culture and recreational activities of another country different from the one of

			origin.
2	PFA	Planned financial aid	Financial aid provided to the student through scholarships.
3	MP	Meet people	Interest in meeting people and expanding the circle of relationships with participants of the EPs and individuals at the destination.
4	TDS	Take different subjects	Take subjects that are not in the syllabus of the university of origin.
5	DT	Desire to travel	Interest in traveling and getting to know other countries.
6	MU	Methodology used in the host university	Possibility of experimenting with methodologies different from the one implemented by the university of origin.
7	NE	New experiences	Have the feeling that it will be a unique experience that will mark the personal career and envision future career options.
8	LI	Language improvement	Possibility of improving in another language other than the native one.
9	PP	Permanence perspective	Possibility of knowing and staying in the destination country and envisioning higher studies.
10	PU	Prestige of the destination university	Desire to study at a prestigious university that improves professional experience.
11	HPR	Have positive references	Have positive references of the PEs through family, friends, or acquaintances.
12	GL	Geographic location	Distance or proximity of the destination country.

Source: Authors.

Once the variables were listed, group reflection was applied to the group of experts to assess the dependency and influence relationships of each variable in a square matrix, a step that belongs to Phase II of MICMAC. Figure 1 shows the matrix of direct influence/dependence matrix (MDI), filled with its values, the result of the collective reflection of the experts. As can be seen, in Figure 1, the first row corresponds to the RCA variable (Recreational-cultural attraction of the destination). Regarding the influence/dependence relationship of this variable with itself is zero (0), with the variable PFA (Planned financial aid) it is weak (1); with the variable MP (Meet people) it is moderate (2); with the variable TDS (Take different subjects) it is weak (1); with the variable DT (Desire to travel) the relationship is moderate (2). In this way, the direct influence/dependence relationship of each variable is described.

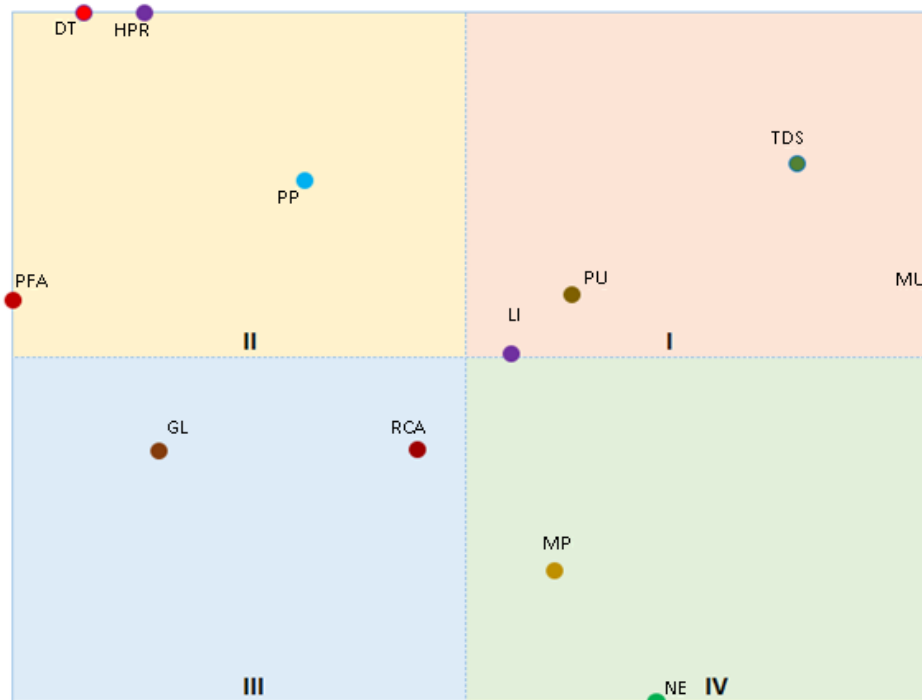
Figure 1: MDI

	RCA	PFA	MP	TDS	DT	MU	NE	LI	PP	PU	HPR	GL
RCA	0	1	2	1	2	1	1	2	1	2	1	0
PFA	2	0	0	3	2	1	0	3	2	1	2	2
MP	1	0	0	2	1	2	3	1	1	1	0	0
TDS	2	0	3	0	2	3	1	1	1	2	2	3
TD	1	2	2	3	0	3	3	2	2	3	0	2
MU	0	0	2	3	1	0	2	1	3	3	1	1
NE	1	1	1	2	0	1	0	1	0	1	0	1
LI	3	1	3	0	1	3	1	0	1	1	2	0
PP	1	2	2	2	0	3	2	2	0	3	2	1
PU	2	1	1	2	1	3	1	2	2	0	2	0
HPR	3	1	2	3	2	3	3	2	0	1	0	3
GL	1	1	1	2	1	1	3	1	2	1	0	0

Source: Authors

Once the relationships in the MDI have been described, the next step is the classification of the variables. This classification is represented in a plane of direct influence/dependence (PDID) as shown in Figure 2. In this research, four (4) variables were located in quadrant I: TDS, MU, LI, and PU. Four (4) variables were also located in quadrant II: PFA, DT, PP HPR. Two (2) variables were located in quadrant III: RCA and GL. Finally, in quadrant IV two (2) variables were located: MP and NE.

Figure 2: PDID



Source: Authors

The results of the MDI and PDID allowed the classification shown in Table 2.

Table 2: Classification of variables by indirect influences/dependencies

Types of variable	Variable	Code
Key	Take different subjects	TDS
	Methodology used in the host university	MU
	Language improvement	LI
	Prestige of the destination university	PU
Determinants	Planned financial aid	PFA
	Desire to travel	DT
	Permanence perspective	PP
	Have positive references	HPR
Autonomous	Recreational-cultural attraction of the destination	RCA
	Geographic location	GL
Results	Meet people	MP
	New experiences	NE

Source: Authors

As can be seen in Table 2, TDS was classified among the VCs, which refers to taking subjects that are different from the home university, but that are approved by it. This variable is key because it was one of the variables that most attracts the attention of the students. This result agrees with those obtained in (Pons, et al., 2007), where it was found that students consider their interest in taking certain subjects not offered at the university institution of origin to improve a curriculum and obtain better job opportunities. As for the MU variable, which corresponds to the methodology used in the host university, it is a VC, because students are interested in knowing the study methodology used in other universities and comparing it with their own because these, to a large extent, have to do with the success of the university, which is why it is necessary for universities to constantly innovate in their teaching methods.

On the other hand, another variable that was key was language improvement, which is one of the reasons why students decide to participate in EPs. These results agree with those found in (Teichler & Jahr, 2001) where it was found that students are motivated to study abroad to develop their competence in a second language and learn about another culture. However, other researchers affirm that the lack of a second language in students is one of the main reasons why students do not study outside their country of origin (Mazzarol & Soutar, 2002). In the case of the variable Prestige of the destination university, it resulted as VCs, because the most prestigious universities, through the rankings, have a better quality of education, this is reflected in the results acquired in (Campbell, et al., 2019).

Among the variables classified as determinants is Planned financial aid, this variable is a determinant one because in some studies it is observed that students from more privileged backgrounds are more likely to take advantage of opportunities to travel abroad compared to less privileged ones (Mapp, 2012). Likewise, the variable Desire to travel is consolidated as a determinant variable since, for students, the exchange represents an opportunity to travel and get to know other countries and cultures. Likewise, Nguyen, et al. (2023) state that the desire to travel for cognitive purposes is considered an innate characteristic of a person.

On the other hand, the variable Permanence perspective was determinant, because some students feel attracted to obtaining residency in the destination country. According to Marciniak & Winnicki (2019), when choosing a city or country, students are more interested in the climate, geographic location, language, and culture of the destination. In the case of the variable Have positive references, this variable is determinant for students because according to the results of Marciniak & Winnicki (2019), employers are more likely to decide to hire people who participated in an international student exchange. Likewise, the analyses show that student EPs are associated with a greater probability of opting for postgraduate degrees.

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In the case of the autonomous variables, the ones that resulted were Recreational-cultural attraction of the destination and Geographic location. These variables are autonomous because they depend on the characteristics of the country of exchange. Students are attracted to participate in student exchanges due to these variables. This is supported by Marciniak & Winnicki (2019), who in their study found that depending on gender, women are motivated by the desire to travel, as well as the development of linguistic skills, and in the case of men, they are mainly motivated by having fun and have a good time. Likewise, when choosing a university, participants in a student exchange pay close attention to the location of a given university (Daly, 2011).

Finally, the variables classified as results are Meet people and New experiences. According to Van Hoof & Verbeeten (2005), in their results, they found that the two main reasons cited by the students were that the EP was a good opportunity to live in another culture, live new experiences, and have a good opportunity to travel. These two variables are, among many other aspects, the result of carrying out a student exchange, living new experiences, and meeting new people.

CONCLUSIONS

With the results obtained, it can be noted that the literature agrees with these, consequently, it can be concluded that, when deciding to participate in an EP, some variables are more attractive than others, such as: Take different subjects, Methodology used in the host university, Language improvement, and Prestige of the destination university; which are most useful when entering the world of work. Likewise, it is concluded that carrying out a student exchange represents an advantage for those who carry it out, because, as stated by other authors, employers are more likely to decide to hire people who have participated in an international student exchange, and the risk of long-term unemployment among graduates with international experience is lower than the case for graduates without such international experience. It should be clarified that the MICMAC technique is subjective in nature, so the results depend on the knowledge and opinions of experts. However, in this case, the experts agreed with the results obtained, which allows confidence in said results.

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