

STEPPING STONES OR OBSTACLES ON THE LONG WINDING ROAD TO ACADEMIC PERFORMANCE

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ABSTRACT

Students' academic performance and resilience are any Higher Education Institution's goal. However, the road there is determined by both the obstacles and stepping stones that may hamper or improve these two outcomes. Therefore, it has become a priority for universities all over the world to identify the factors which might positively or negatively affect academic performance and resilience. The aim of this research is to identify the factors which could affect academic performance, to analyze the impact they have on it, and to determine how the COVID-19 pandemic has affected student's academic resilience. We performed two multiple linear regression and paired samples T-test using IBM SPSS Statistics to test the hypotheses deduced from the theoretical framework. The results show that motivation has a positive influence on academic performance, especially extrinsic motivation, while employment situation, residential environment, and surrounding environment have negative influences, but these are not statistically significant. Furthermore, the academic resilience of students has been affected by the pandemic. In conclusion, we identify motivation as a stepping stone and the other factors as obstacles on the long winding road to academic performance.

KEYWORDS: *academic performance, employment situation, face to face learning environment, motivation, online learning environment, residential environment, surrounding environment.*

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1. INTRODUCTION

Over the last few decades, Academic Performance has been considered a significant subject for both education service providers and policy makers, resulting in an increasing number of researchers placing more and more importance on it (Beltran-Velasco, Donoso-Gonzales, & Clemente-Suarez, 2021). While the most accessible way to measure Academic Performance has been the grades students received in their exams, the necessity to identify the key indicators affecting academic performance of university-level students has generated a strong body of academic research in various fields (Khan et al, 2020; Waheed et al, 2020), placing these factors in two main categories: internal and external (Muhammad, Hafazah, & Ishak, 2012; Riswanto, & Aryani, 2017; Wuthisatian, 2020). The internal factors include motivation, adaptability, and psycho-cognitive factors, while the external factors represent socio-economic factors and the environment (Mushtaq & Khan, 2012).

Academic resilience has been researched for the past few decades, but it has become of even greater importance during the lockdown imposed by the COVID-19 pandemic, when students were abruptly forced to adapt to a new environment. Defined as the ability to persevere and obtain enhanced

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academic results even under non-favorable conditions, such as risk factors and adversities (Morales, 2014), academic resilience has proven to be a major component of academic performance.

While the face-to-face study environment has long proven to be effective under normal conditions, the sudden switch to on-line learning in the face of the COVID-19 pandemic has prompted the world, in general, and particularly the education system to adapt on the go. Even though this is not the first crisis experienced by the education system, its effect has been felt more acutely by all the actors involved (Williamson, Eynon, & Potter, 2020). The crisis proved to be an opportunity as well, facilitating education professionals' efforts in developing alternative teaching methods (Minguez, Martinez-Hernandez, & Yubero, 2021). The most prevalent strategy adopted by educational institutions was the move to the online environment (Tolkach & Pratt, 2021). The online environment has become indispensable in education nowadays, and we would be realistic in assuming it will contribute to students' acquisition of new skills and knowledge, thus being a factor which can impact Academic Performance in the post-pandemic period as well.

Identifying the factors which can affect academic performance and resilience has become an increasingly important matter for academic service providers. Previous studies have focused mainly on internal factors which could influence academic performance, such as motivation, but not related to the on-line environment. While, in the past, researchers examined how students' employment situation affects academic performance, the topic hasn't been approached in more recent studies. The impact residential environment (on/off campus) has on academic performance has only been analyzed under normal conditions, before the COVID-19 pandemic. Moreover, the rural surrounding environment presented no interest to researchers before the lockdowns, since most university students were studying in the city, the theme being tackled only from the perspective of a positive influence of green infrastructure over the students' well-being. The occurrence of COVID-19 has also re-highlighted the importance academic resilience, however the pandemic being a recent matter, little work has explored its effect on students' academic resilience.

The purpose of this research is to analyze the effect internal and external factors have on university students' academic performance as well as to determine whether the COVID-19 pandemic had an impact on their academic resilience.

The remaining part of the paper is structured in the following manner: the first section introduces the theoretical framework and the empirical evidence on which we based our hypotheses. In the second part, the research methodology is introduced, and in the third section, the results are presented and discussed. The last part of this paper presents our conclusions, implications, and the future directions.

2. THEORETICAL FRAMEWORK AND HYPOTHESES DEVELOPMENT

2.1 Academic Performance

Performance is defined in the Explanatory Dictionary of the Romanian Language as a good result achieved by someone or a special achievement in a field of activity (Romanian Academy, 2016). This definition reflects the idea that performance leads to satisfaction, in the sense that achieving outstanding results leads to feelings of accomplishment and fulfillment.

Other researchers (Burduş & Popa, 2018) consider that performance represents the degree of participation of an individual in performing the tasks he must perform. Thus, as the degree of participation of the individual is higher, the level of performance will also increase. However, performance depends on factors such as skill level, understanding of the task, and chance. Although the individual makes an effort to complete the tasks and is well motivated, it is possible that he does not have a special performance due to the lack of the necessary skills and abilities, a fact that leads to inefficient consumption of effort.

Higher education has always played a significant role in providing the workforce market with well-informed, highly skilled professional capital able to promptly resolve issues in a community, thus

becoming a driver of economic growth. (Idris, Hassan, Ya'acob, Gill &, Awal, 2012). Education has been considered a major agent of change impacting not only the economic growth of a certain region but also its social stability. However, Tadese, Yeshaneh and Mulu (2022) highlighted that enhancing skills, acquiring knowledge, and forming attitudes as well as values by means of education is a long winding road in life, students being expected to achieve high academic results regardless of the obstacles they meet along the road.

Academic Performance is defined as the degree to which a student is able to attain their academic goals (Talib & Sansgiry, 2012). Previous studies (Tentama & Abdilah, 2019) have identified the benefits of high academic performance in outcomes such as higher earnings, better employment perks, higher promotion eligibility. Moreover, highly academically performant students have proven to be more confident, to have higher self-esteem, and to be more sociable; they have also shown lower levels of depression or anxiety as well as a lower tendency to engage in alcohol consumption or substance abuse (Tadese, Yeshaneh, & Mulu, 2022). On the other hand, low academic performance, measured not only through continuous assessment or Cumulative Grade Point Average but also through the interval of time spent by student between enrollment and graduation, is proven to result in unemployment, homelessness, poverty, illegalities, social isolation, substance abuse as well as low self-esteem (Yigermal, 2017).

More research (Bravo-Agapito, et al., 2021) has recently been done to predict academic performance based on data from the learning management system. One challenge we see is the difficulty of finding a set of variables that can consistently predict student performance in multiple courses. Identifying the factors affecting academic performance has constituted the preoccupation of researchers for the last decades resulting in various studies analyzing both internal and external influencers of Academic Performance (Muhammad, Hafazah, & Ishak, 2012; Riswanto & Aryani, 2017; Wuthisatian, 2020).

2.2 Employment Situation

An increasing number of students choose to work either part-time or full-time during their higher education years to bridge the gap between their available financial resources and the university tuition fees (Darolia, 2014). At a macro-level this contributes to the economic growth of the community they belong to, thus stimulating higher education providers and the labor market to pay close attention to the relationship between student employment and academic performance with the intent to develop better work-study programs as well as workforce training (Darolia, 2014). At the individual level, besides the increase in income, employment during school years contributes to university students' work experience accrual as well as development of personal connection and soft skills, leading to professional success (Molitor & Leigh, 2005).

Students' employment during their university years could impact their academic performance both negatively and positively. Bartolj and Polanec (2018) analyzed the relationship between workload and performance, concluding that an increase in workload as well as in its complexity causes a decline in performance quality. As students' time resources are fixed, they are forced to sacrifice time they would otherwise spend on academic tasks or leisure for work, thus resulting in a decreased grade point average (GPA) (Stinebrickner & Stinebrickner, 2008). On the other hand, experience gained through employment can have a positive impact on students' GPA by providing applied context to their academic study, structuring their schedules more efficiently, and by developing their soft skills (Molitor & Leigh, 2005). While the results of Darolia's 2014 study highlighted a negative impact of full-time employment on students' interval of time spent until graduation – full-time students taking longer to graduate - no significant evidence was found to connect students' employment hours to their GPA (Darolia, 2014). Considering the above, we developed the following hypothesis:

H1: Employment situation has an influence on academic performance.

2.3 Environment

The environment is one of the major external factors impacting university students' academic performance. Being a very general term, it involves a wide variety of factors such as the residential environment, the surrounding environment, and learning environment - both face to face and online, as well as the interactions taking place within these environments, namely interactions with people, infrastructures, systems, technology, nature, etc. We also approached the COVID-19 pandemic as a new type of environment.

On/off campus residential environment under normal circumstances (e.g.: pre and post pandemic) While students residing in an off-campus environment tend to enjoy more comfort (some living at home), more freedom in residence choices, as well as a lack of necessity to abide by strict regulations and curfews, they also find themselves at a disadvantage in terms of commuting distance and traffic stress (Hasnine, Lin, Weiss & Habib, 2018), higher financial burdens, as well as a decreased attendance to academic and recreational activities on campus (Coutts, Aird, Mitra & Siemiyatycki, 2018). The impact of these factors on academic performance is only one of the many reasons why we've seen a dramatic rise in demand for campus residency.

Faced with such a high demand, the quality of the campus residential environment has been subject to evaluation according to international standards of performance measurement (Lugoshi, 2019), fact which resulted in postsecondary educational providers feeling pressed to analyze the relationship between various campus factors and the students' academic performance, aiming to improve the campus services, academic and recreational programs, as well as the facilities put at students' disposal.

While, to the best of our knowledge, there is no unified approach to analyzing the quality of the residential environment on campus, various studies have been conducted to prove the relationship between one or several campus factors and students' academic performance. Elkins, Forrester, and Noel-Elkins (2011) argue, in their research, that participation in campus recreational activities conveys a greater sense of community supporting Kuh, Gonyea and Palmer (2001)'s idea that off-campus residing students are less engaged in campus activities. In the same study, the authors also mentioned that resident students were more involved in academic activities and had better interaction with faculty. Gora (2016) conducted a study on the educational services offered by the Bucharest University of Economic Studies. This study analyzes students' opinions on teaching activities and materials, conduct of specialist practice, student scientific sessions, Erasmus mobilities, university facilities and library services. As a result of the analysis conducted on the campus environment elements, it was demonstrated that the level of satisfaction perceived by students in terms of the quality of educational services is in continuous improvement. The students' orientation towards a more highly performing management has an overview of the quality of educational services at the international level and can represent a direction to meet the expectations of students. Therefore:

H2: Residential environment has an influence on academic performance.

Surrounding Environment - urban or rural - before and during the pandemic

Geographic location is assumed to play a major part in moderating/grooming a student's academic performance even from a young age (Ezeudu & Theresa, 2013).

Before the pandemic, researchers identified certain differences between urban and rural students in terms of academic performance (Ansong, Ansong, Ampomah, & Adjabeng, 2015; Ataç, 2019; Zhao, Ye, Li & Xue, 2017). Factors such as lack of financial resources, less access to quality teachers and limited technology availability have been found to explain the lower performance of students in rural areas. (Ezeudu & Theresa, 2013).

The COVID-19 pandemic has forced students into isolation. The advancements in technology made online lectures accessible from anywhere, allowing most migrant students to go back to the rural environment for financial considerations – this diminishing their spending on urban accommodation,

and, at the same time, bridging the gap between the academic outcomes of students in the rural environment when compared to the urban residents. Considering the general benefits of a green infrastructure vicinity (Reyes-Riveros et al., 2021), researchers have tried to prove its positive effects on wellbeing (Jato-Espino, Moscardo, Rodriguez & Lazaro, 2022). While the concept of a green infrastructure vicinity suggests various types of land surfaces covered by green vegetation like parks, gardens, forests, pastures, or crop zones (Rusche, Reimer & Stichmann, 2019) mainly in urban areas, in this research we will be associating it to the rural environment.

Previous researchers (Dushkova et al., 2021; Geng, Innes, Wu & Wang, 2021) have proved, in their studies, that green spaces positively impact citizens' mental well-being as well as their morale (Jato-Espino, Moscardo, Rodriguez & Lazaro, 2022). In this paper we will test whether the rural environment (SE-R) would also have a positive effect on rural students' academic performance as compared to those who remained - willingly or not - in the urban environment. Thus, we assume that: *H3: Surrounding environment has an influence on academic performance.*

COVID-19

The COVID-19 pandemic has shaken the foundations of everything mankind used to call normality, forcing many countries to establish nationwide lockdowns, and causing a major change to the environment as we knew it. The education system suffered a major disruption during this period, which none of the actors involved (education institutions' management, faculty, or students) knew how to handle. While the educational institutions made every effort to keep the academic process going, an increase in emotional distress has been observed among students and faculty alike (Debbarma & Durai, 2021). Since our research focuses on students' academic performance, we'll be referring strictly to the way it has impacted them. Psychological distress has caused a decrease in students' concentration, and, at the same time, an increase in anxiety - due to uncertainties related to their future -, and frustration - generated by the confinement, which caused a reduced access to study resources, as well as a lack of interaction with both faculty and peers (Maqableh & Alia, 2021).

Online/Face to Face Environment

The closure of universities in the face of the COVID-19 pandemic has forced everyone (policy makers, local governments, service providers, academic institutions, and students alike) to think on their feet, a process which resulted in the development of alternative methods to accommodate the lockdowns, such as the development of high-quality on-line communication, work, and study tools at an unprecedented speed (Williamson, Eynon, & Potter, 2020). This has granted students the possibility to study from everywhere, and access to on-line platforms and media which facilitated their access to course materials, schedule, faculty, and peers, highlighting the need for communication, collaboration, and information exchange (Saidi, Sharip, Rahim, Zulkifli & Zain, 2021).

It was anticipated that these platforms and media would facilitate students' access to knowledge, leading to an improved academic performance (de Moura, De Souza & Viana, 2021). Studies examining students' academic performance in an online learning environment during the COVID-19 pandemic have shown varied results, each limited to the specifics of the area they were conducted in, to the characteristic of the samples and to the type of analysis. While certain studies found that the online learning environment had a negative influence on students' academic performance when compared to the face-to-face (Altindag, Filiz & Tekin, 2021; Bird, Castleman & Lohner, 2022; Kofoed, Gebhart, Gilmore & Moshitto, 2021), others have observed a positive influence on students' academic performance (Atlam, Ewis, El-Raouf, Ghoneim & Gad, 2021; Hsu, 2021). The inconsistency in results is explained by the fact that this was just a period of transition towards a digitalization of the learning environment caused by the COVID-19 pandemic called 'emergency remote teaching', which should not be considered proper 'online learning' (Hodges, Moore, Locke, Trust & Bond, 2020).

2.4. Motivation

Motivation is a complex construct, studied by researchers in various fields, like psychology, education, management etc. (Isaksen, Dorva & Treffinger, 2011). It is the drive behind people's needs, desires, and actions (Sharma & Sharma, 2018). In their theory of self-determination, Ryan and Deci (2000) make a distinction between intrinsic and extrinsic motivation. The same authors identify the drivers of intrinsic motivation as inner rewards such as satisfaction, joy, or the individuals' perception of the meaning their work has, while the extrinsic motivation is driven by external rewards. Motivation lies within every aspect of human activity, an important one being the academic environment (Kremenkova, 2019). In the same study, the author points to various psychological elements as influencing factors for students' behavior, highlighting the role of motivation as one of the most necessary aspects in students' academic development.

In an academic setting, university students' intrinsic motivation can be driven by 3 main factors: autonomy – which gives them freedom to base their decision-making process on their own interests and values, thus leading to a feeling of control -, need for relatedness – which contributes to an enhanced commitment when it comes to working in teams for a specific project -, and competence – greater knowledge increasing their feeling of proficiency which could result in a higher motivation, leading them to invest more effort into a specific task (Ryan and Deci, 2000). On the other hand, the same authors associate extrinsic motivation with external factors like high or low grades.

Various research studies have shown that the link between student motivation and the adoption of academically oriented behaviors lies in the amount of time allocated to studying, active participation in class, working with peers, and pursuing more demanding courses. These activities directly lead to increased learning, improved academic performance, and better preparation for individual success. Therefore, motivation and its forms contribute to increasing the quality of student life, academic performance being one of its main aspects (Xie et al., 2020).

The link between motivation and performance lies in the fact that many specialists believe that good motivation implies an increase in satisfaction that leads to performance. Other specialists believe that performance determines satisfaction, especially when performance is accompanied by appropriate rewards (Oprea, 2017).

In a previous study, Foong et al. (2021) have proved that an increase in students' motivation shows an enhanced engagement in the learning process and a higher probability to increase their academic performance. Another study mentioned that offering a wide variety of programs to choose from enhances students' motivation and increases their willingness to engage in specific projects (Evans and Boucher, 2015). Thus, it is the education service providers' role to make the development of students' motivation an educational goal (Foong, Liew & Lye, 2022). Thus, the following hypotheses emerge:

H4: Motivation has an influence on academic performance.

H4a: Intrinsic motivation has an influence on academic performance.

H4b: Extrinsic motivation has an influence on academic performance.

3.4. Academic Resilience

As a result of the COVID-19 pandemic, the concept of resilience has been amplified not only among students but throughout the academic environment (de los Reyes, Blannin, Cohrssen & Mahat, 2022). In the literature, academic resilience is described as the likelihood of being successful at school despite unfavorable conditions. It is associated with school support, teacher expectations, instructor interactions, academic environment, and peer groups (Mills, 2021). Rudd, Meissel and Meyer (2022) think that academic resilience refers to high academic performance despite adversity, which is an essential component to promote educational equity.

Thus, students who lived in an adverse environment characterized by a low socioeconomic status are those who demonstrate academic resilience. Despite the risk of school failure, they continued to have

higher academic performance. Therefore, it is difficult for researchers to decide how to measure academic resilience and introduce this in a statistical model (Rudd, Meissel & Meyer, 2021).

In their research on students from a university in the UK, Crick, Pricket and Bradnum (2022) found that learner's resilience had no significant impact on their academic performance. The authors explain the outcomes through the supposition that these results could be deriving from the disruptive effects of the COVID-19 pandemic and suggest the continuation of such research during the post-pandemic period, as students will keep facing challenges which will affect their academic performance and resilience. Taking the above into account, we presume that:

H5: The COVID-19 pandemic affected the academic resilience of students.

3. RESEARCH METHODOLOGY

This paper analyzes employment situation, residential and surrounding, as well as motivation as influencers of academic performance, and measures students' academic resilience to observe how it was affected by the COVID-19 pandemic. The case was conducted among students enrolled at Bucharest University of Economic Studies in the years 2019-2021. We collected data from 1023 students with the help of an online questionnaire. To measure the motivational factors, we were guided by the definition of the forms of motivation by Burduş & Popa (2018). Also, we used the Likert scale from 1 to 5 (Joshi et al., 2015). The scale is used both to measure the intensity of motivational factors (from 1 – in a very small measure at 5 – to a very large extent), as well as for evaluating the level of students' academic performance (from 1 – totally unsatisfactory to 5 – totally satisfactory).

The first section of the questionnaire includes demographic questions about the study program, employment situation, residential environment, and surrounding environment. In the second part, we asked about motivational factors and academic performance in a face-to-face environment with reference to the first semester of the academic year 2019-2020. Then the last section of the questionnaire was constructed mirroring the second part, to measure motivational factors and academic performance in an online environment with reference to the first semester of the academic year 2020-2021.

Thus, our sample has the following characteristics: 70.4% of students were enrolled in bachelor's programs and 29.6% in master's programs. Regarding the surrounding environment, 76.1% were living in urban areas and 23.9% in rural ones. In terms of the residing environment, 25.5% were campus residents, and 74.5% were living off campus. With respect to their employment situation, 24.1% of students were employed during their full-time studies, 20.9% were employed part-time, and the remaining 54.9% were not employed.

A statistical analysis was conducted using the IBM SPSS Statistics, version 29.0 (IBM Corp. Released, 2022). A multiple linear regression was applied to test the first four hypotheses which measures the influence of the factors mentioned above on academic performance in an online environment. Thus, we considered the following variables: academic performance (AP) as a dependent variable and motivation (M), employment situation (ES), residential environment (RE), and surrounding environment (SE) as independent variables. For an accurate analysis, we created dummy variables for ES, RE and SE because in those cases the answers were yes or no.

Moreover, for the fourth hypothesis, we created two sub hypotheses for intrinsic (IM) and extrinsic (EM) motivation. Also, we used linear regression for identifying the influence of two forms of motivation on academic performance. Thus, we considered intrinsic (IM) and extrinsic motivation (EM) as independent variables and academic performance (AP) as dependent variable.

For the fifth hypothesis, we used a paired sample T-test to measure differences in academic performance (AP) before and during the COVID-19 pandemic and determine the academic resilience (AR). Moreover, we constructed the questionnaire with reference to three categories:

- Performance considering personal development (acquired knowledge, skills acquired, volunteering)
- Academic results (learning activity products, grades, qualifications)
- Behavioral outcomes (attendance, active participation, attention)

4. RESULTS AND DISCUSSION

In this research we analyzed the impact internal and external factors have on university students' academic performance and determined whether students' academic resilience was affected by the COVID-19 pandemic.

For a preliminary analysis, we calculated the Cronbach Alpha coefficient for items of both scales, motivational factors (intrinsic and extrinsic) and academic performance. To be accepted, the value of the Cronbach Alpha coefficient must exceed the accepted threshold of 0.7 (Popa & Ștefan, 2019). The results of the reliability analysis, presented in Table 1, show that Cronbach Alpha coefficient has values between 0.860 and 0.928, thus supporting the reliability of the scales.

Table 1. Means and Cronbach Alpha Coefficients

Scales	Face to face			Online		
	Mean	Standard Deviation	Cronbach ALPHA	Mean	Standard Deviation	Cronbach ALPHA
Intrinsic motivation						
Desire to deepen their knowledge	3.70	1.08	0.894	3.34	1.27	0.928
Confidence in their own abilities	3.86	1.08		3.58	1.23	
Competitive spirit	3.67	1.20		3.40	1.32	
Building a successful career	3.94	1.10		3.61	1.27	
Sense of self-realization	4.02	1.07		3.68	1.25	
Extrinsic motivation						
Teachers' attitude	3.64	1.13	0.860	3.12	1.24	0.893
Availability of resources	3.38	1.14		3.11	1.23	
Content of the studied subjects	3.57	1.03		3.26	1.17	
Campus climate	3.14	1.20		2.66	1.23	
Learning environment	3.44	1.22		2.92	1.35	
Academic performance						
Personal development	3.25	0.85	0.885	2.71	1.01	0.911
Academic results	3.69	0.90		3.33	1.08	
Behavioral outcomes	3.81	0.96		3.33	1.16	

Source: authors using IBM SPSS

The results of the multiple linear regression used to determine the influence of ES, RE, SE, and M on AP can be seen in table 2.

Table 2. The influence of M, ES, RE, SE on AP

Variables	Academic performance							
	B	β	t	p	CI 95%		Collinearity	
					Lower	Upper	Tolerance	VIF
Constant	0.385		4.224	< 0.001	0.206	0.564		
M	0.720	0.707***	31.687	< 0.001	0.676	0.765	0.991	1.009
ES (yes, full time)	-0.042	-0.018	-0.738	0.460	-0.153	0.069	0.861	1.162
ES (yes, part time)	-0.039	-0.016	-0.67	0.503	-0.153	0.075	0.903	1.108
RE-C	-0.041	-0.018	-0.761	0.447	-0.146	0.064	0.929	1.077
SE-U	0.011	0.005	0.196	0.845	-0.098	0.120	0.899	1.113
R Square	0.498							
F / Sig. F	201,709*** / 0.000							

Note: B - Unstandardized coefficient; β - Standardized coefficient; t - Value of the t test; p – the probability of t; CI 95% - Confidence interval; VIF - variance inflation factor; R Square - coefficient of determination; F – F statistic; Sig. F - the probability of F

Source: by authors with IBM SPSS

The regression model is valid because the F-test probability is less than 0.05 ($F_{(5,1017)} = 201.709, p < .001$) and according to the coefficient of determination R Square ($R^2 = 0.498$) it can be stated that 49.8% of the variance of academic performance can be explained by those factors. However, if we look at coefficients, it can be observed that not all variables are statistically significant. The ES (either full or part-time) has a negative influence on academic performance leading to its decline, but the test is not statistically significant. For the RE, in this case the influence is also negative, but it is not statistically significant. For the SE ($\beta = 0.005, t = 0.196, ns$), which means that contribution to the variation of the dependent variable is not significant because the regression coefficient is not significantly different from 0. The only factor which has proven to have a significant contribution is M ($\beta = 0.707, t = 31.687, p < 0.001$). For M, $p < 0.05$, so the regression coefficient is significantly different from 0 and according to the standardized Beta coefficient, motivation has a positive influence (70.7%) on academic performance.

Regarding ES, our results confirm previous researchers' conclusions that students' workload (whether full time or part-time) have a negative impact on students' academic performance both when measured by the GPA unit (Bartolj and Polanec, 2018; Stinebrickner & Stinebrickner, 2008), or by the interval of time spent until graduation (Doralia, 2014).

Even though we assumed that RE-C would have a positive influence on AP, the results of our analysis showed that the RE-C influence is not statistically significant. This could be explained by the fact that the campus was closed during the pandemic. Those who lived on campus could not interact with the academic elements of the residential environment (faculty, facilities - such as libraries) in a way that would help them improve their performance, nor with their peers, since they couldn't take part in any on-campus recreational activity. Another explanation could be the fact that students' focus on academic performance was negatively affected by the pandemic stress and the risk of infection. One more reason for our RE-C not being statistically significant could be the fact that out of the total number of respondents to our questionnaire, only 25.5% lived on campus.

Contrary to our assumption that the return to the SE-R would have a positive influence on AP- explained by the positive effects the vicinity to a green infrastructure would have on students' well being (Jato-Espino, Moscardo, Rodriguez & Lazaro, 2022), our results showed a neutral influence of SE-U towards SE-R. This can be considered an acceptable explanation, if we consider the fact that on the one hand, the COVID-19 pandemic has restricted the free movement of people, but on the

other hand, students were soon able to participate in on-line lectures from anywhere. In this context, it is justifiable that the SE does not have a major impact on their ability to perform.

The only factor that has a positive influence and can be considered a stepping stone on students' way to academic performance is M. The major impact of M can be explained through the students' desire to build a successful career in these uncertain times. Having a high academic performance ensures their stability, especially when performance is accompanied by appropriate rewards, such as: scholarships, appreciation by those around, and gaining the employer's attention.

Because motivation has a strong influence on academic performance, we deepened the analysis into two categories of motivation: intrinsic and extrinsic. We considered IM and EM as independent variables and kept AP as a dependent variable.

The regression model is valid ($F_{(2,1020)} = 865.366, p < 0.001$) and according to R Square ($R^2 = 0.629$), 62.9% from variance of academic performance is explained by motivation. In this case, both IM ($\beta = 0.339, t = 12.738, p < 0.001$) and EM ($\beta = 0.519, t = 19.511, p < 0.001$) have p -value lower than 0.05, the significance threshold, which means that these forms of motivation are statistically significant. IM has a positive influence of 33.9% on academic performance and EM has an impact of 51.9% on academic performance.

Table 3. The influence of IM and EM on AP

Variables	Academic performance							
	B	β	t	p	CI 95%		Collinearity	
					Lower	Upper	Tolerance	VIF
Constant	0.615		9.671	< 0.001	0.490	0.740		
IM	0.294	0.339***	12.738	< 0.001	0.249	0.339	0.514	1.946
EM	0.482	0.519***	19.511	< 0.001	0.434	0.531	0.514	1.946
R Square	0.629							
F / Sig. F	865,366*** / 0.000							

Note: B - Unstandardized coefficient; β - Standardized coefficient; t - Value of the t test; p - the probability of t; CI 95% - Confidence interval; VIF - variance inflation factor; R Square - coefficient of determination; F - F statistical; Sig. F - the probability of F

Source: by authors with IBM SPSS

The results show that students find extrinsic motivational factors like the teachers' attitude, the availability of resources, the content of the studied subjects, the campus climate, and the learning environment more important in achieving high performance. However, the percentage of students who rely more on intrinsic motivational factors, such as the desire to deepen their knowledge, confidence in their own abilities, the competitive spirit, building a successful career, and the sense of self-realization, cannot be considered negligible either. While our results - highlighting the predominance of EM over the intrinsic one - oppose previous studies which favored the prevalence of IM (Trevino, DeFreitas, 2014; Khalaila, 2015; Semenova, 2022), they are consistent with a more recent study (Grande et al., 2022) which compared academic motivation of nursing students in 3 countries, proving that extrinsic motivation means were the highest.

To measure academic resilience, we made a comparison between academic performance before COVID-19 pandemic and academic performance during COVID-19 pandemic. Descriptive statistics for three performance categories are presented in Table 4.

Table 4. Paired Samples Statistics

Paired Samples		Mean	N	Standard Deviation
Pair 1	Personal development before COVID-19	3.26	1023	0.85
	Personal development during COVID-19	2.72	1023	1.01
Pair 2	Academic results before COVID-19	3.70	1023	0.91
	Academic results during COVID-19	3.34	1023	1.08
Pair 3	Behavioral outcomes before COVID-19	3.81	1023	0.96
	Behavioral outcomes during COVID-19	3.33	1023	1.17

Note: N – number of cases

Source: by authors using IBM SPSS

The results of the descriptive statistics show a decrease in university students' performance averages during the COVID-19 when compared to the performance averages they obtained before the pandemic, a fact which leads to the conclusion that students' academic resilience has been affected by the pandemic. To determine if these differences are statistically significant, we must analyze results of the paired samples test, which can be seen in table 5.

Table 5. Paired Sample Test

Paired Samples	t-value	Significance		95% Confidence	
		One-sided p	Two-sided p	Lower	Upper
Personal development before COVID-19 - Personal development during COVID-19	16.25	0.000	0.000	0.47	0.60
Academic results before COVID-19 - Academic results during COVID-19	10.89	0.000	0.000	0.30	0.43
Behavioral outcomes before COVID-19 - Behavioral outcomes during COVID-19	12.65	0.000	0.000	0.40	0.55

Source: by authors using IBM SPSS

Regarding the results of the T test, the *p*-value is lower than 0.05 in all cases, which means that the differences between the academic outcomes obtained in a face-to-face learning environment and the ones in an online learning environment are statistically significant. Therefore, considering small averages of academic performance online, we can confirm that AR was affected by the COVID-19 pandemic. Although the literature specifies that students demonstrate AR despite an adverse environment characterized by low socioeconomic status (Rudd, Meissel & Meyer, 2021), the COVID-19 pandemic was something new for the entire world, leaving people in complete uncertainty. The sudden emergence and pressure of the infection risk was so high that a wave of negative thinking took over their actions and reactions. This context could explain students' difficulty to concentrate on their academic performance, and the reason why their resilience has decreased.

5. CONCLUSIONS

In order to identify the stepping stones and the obstacles on the long winding road to academic performance, we analyzed a number of external and internal factors which can influence higher education students' academic performance either positively or negatively.

An important stepping stone was identified in motivation. The influence of motivation on academic performance has been shown to be positive and statistically significant. It has been shown that increased motivation leads to the adoption of academically oriented behaviors which directly ensure

improved academic performance. Concerning the intrinsic motivation and extrinsic motivation, based on the results of our research, we concluded that extrinsic motivation is more significant than intrinsic motivation, finding which opposed previous studies that highlighted the prevalence of intrinsic motivation.

Factors such as employment situation, residing environment and surrounding environment proved to be obstacles on the road to academic performance because these have always needed an adaptation to world requirements. These environments are continuously changing, and it is difficult to keep up with them. Today you can work from a desk, tomorrow you will work from home.

The ES does not have a statistically significant influence because a student could miss many classes in favor of work hours but, at the same time working experience would help them gain skills which could, eventually contribute to a better academic performance. Thus, the fact that students' employment situation is not statistically significant could be explained through the existence of both the advantages and the disadvantages related to it.

Nowadays, technology makes us „available” anywhere, regardless of whether we are in a rural environment or an urban one. We can learn/work from anywhere. So, neutral influences of surrounding environment can be explained by these conditions. The neutral influence of residing environment over students' academic performance is explained by the fact that the pandemic has forced educational institutions, campuses included, to close during the lockdowns, which resulted in campus-resident students returning to their hometown.

Following the measurement of academic resilience, we found that their level of performance is lower in the online environment because students need a longer period to adapt to the new changes in the educational process (organization of courses on e-learning platforms, new teaching, learning, and assessment methods). The academic resilience was negatively affected by COVID-19 pandemic in the sense of its decrease. This hypothesis was supported by the results of our research which showed a decreased resilience during the COVID-19 pandemic because of the sudden emergence and pressure of the high infection risk.

5.1. Implications

Considering these research results, a series of implications can be identified in the academic environment. This study can bring value to students because it highlights the factors which have an influence on academic performance. Consequently, they will be able to design a strategy for achieving higher academic performance.

Also, the research has implications for top management who, on the one hand, can improve the academic environment through appropriate rewards (scholarships, more available resources), and on the other hand, can enhance the ergonomic conditions, the overall atmosphere in the campus so as to contribute to increasing students' performance. This goal can be achieved in tight collaboration with service providers who will allow them to create better online media and facilitate instant access to international online libraries so as to make students' study easier, more appealing and efficient in a fast changing and highly digitalized society. Besides that, collaborative work will be exceptionally developed at both national and international level, which will contribute to an appropriate, qualitative academic performance.

Moreover, the education providers can offer a wider variety of programs to choose from because studies have proved that this sort of approach enhances students' motivation and increases their willingness to engage in specific projects.

In regard to academic resilience, the management of universities can design and implement a detailed and customized strategy for the post-pandemic period so as to allow students to be successful despite all sorts of unfavorable conditions.

In addition to all the above, a very important role is played by the policy makers who can create updated policies which can help students better adjust to critical conditions like the one caused by the COVID-19 pandemic.

5.2. Future Directions

Regarding the academic resilience, it would be worth studying to what degree stress might have influenced the academic performance during the pandemic because of the high risk of infection or even death. It would also be helpful to continue studying the post-pandemic period, as students will still be facing a series of changes and challenges that might influence their academic performance and resilience either positively or negatively. Additionally, it might be useful to determine to which extent online learning has bridged the gap between academic outcomes of the rural and the urban residents.

Concerning the internal and external factors which influence academic performance, it would be interesting to conduct more research, so as to determine in which ways and to what extent motivation, satisfaction and performance are correlated, based on the drivers of intrinsic and extrinsic motivation. Additionally, it might be worth conducting case studies or further research in order to identify possible solutions and changes of paradigm that could increase the influence of the external factors such as employment situation, residing environment and surrounding environment on the academic performance, because out of the challenges imposed by the changes in these factors, new opportunities can emerge. To this view, it might be worth conducting deeper research regarding the employment situation so as to identify an optimal number of working hours which could produce a positive impact, as well as to establish how accrual of work experience affects students' academic performance.

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