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Factors Affecting University Dropout: Comparison of STEM and Public Affairs and Management Students

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ABSTRACT

University dropout poses significant challenges. This study examines factors influencing students' decisions to discontinue university education without obtaining a bachelor's degree. A survey was administered to 411 students in Public Affairs and Management (PAM) programs and Science, Technology, Engineering, and Mathematics (STEM) programs at two large universities in the United Arab Emirates (2022–2023). Key findings reveal that only 27.4% of PAM students and 27.5% of STEM students never considered quitting, and approximately 64% of all students remained committed to their majors. Six factors—society's expectations, economic factors, program requirements, institutional considerations, academic performance, and personal attitude—influence dropout decisions. Notably, no significant differences were observed between PAM and STEM students, except in their interaction with societal expectations. The study emphasizes the need for policies to enhance the overall university experience, promoting retention across majors.

KEYWORDS

Students; dropout; STEM; public affairs; university

Introduction and background

The diminishing commitment of male university students to complete their degrees poses an escalating challenge for parents, decision-makers, and educators. Despite a higher enrollment rate of female students in universities, male students constitute a dwindling minority (Gulftoday, 2021). Even though university education is freely accessible to all citizens (Emiratis or locals) in the United Arab Emirates (UAE), not all students, particularly males, seize this opportunity. Various challenges impede their motivation to persist in college until graduation (Engin & McKeown, 2017; Gulfnews, 2021).

This study aims to identify and compare the factors influencing dropout intentions among students in Science, Technology, Engineering, and Mathematics (STEM) and Public Affairs and Management (PAM) programs. By examining these factors, the research seeks to provide actionable insights for policymakers and educators to address dropout rates, particularly among male students, who are disproportionately affected. The study focuses on six key factors derived from the pull-push and falling-out theory (Doll et al., 2013): societal expectations, economic challenges, program requirements, institutional factors, academic performance, and personal attitudes. These factors were selected based on their prominence in existing literature and their relevance to the UAE context, where demographic imbalances and cultural pressures uniquely shape students' educational experiences.

Comparative research on student dropout rates in STEM versus PAM is sparse. STEM and PAM are pivotal fields of study, producing professionals vital to both the public and private sectors (Ridge, 2009; Yaghi & Bates, 2023). Additionally, these majors attract a substantial number of students, making dropout seemingly incongruent with their popularity. Existing research has primarily focused on STEM without comprehensive comparisons with other prevalent majors in management, law, and other social sciences (Ridge et al., 2013; Salim, 2019; Tabrizi, 2013; Wilkins, 2010).

Despite the widespread appeal of STEM and PAM programs, dropout rates raise significant concerns among stakeholders, including decision-makers, parents, and educators. While concerns about STEM dropout are extensively discussed, the same level of attention is not accorded to PAM. However, the limited research on this subject exacerbates these concerns, introducing ambiguity to the underlying factors behind student dropout across majors. The present study is an integral part of a larger project on students' experiences in the UAE, focusing solely on reporting findings related to dropout intentions in PAM and STEM majors. This project, distinguished by its unique scope, aims to address various interrelated issues. Subsequent sections

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of this study will delve into the country's contextual backdrop, theoretical frameworks and literature, methodologies employed, and the subsequent findings and discussions.

The novelty of this paper lies in its unique focus on comparing dropout intentions between STEM and PAM students, two critical yet understudied fields in many countries but particularly in the UAE. While existing research predominantly examines STEM dropout in isolation, this study provides a comprehensive comparative analysis, uncovering similarities and differences in dropout factors across these disciplines. Additionally, the study integrates the pull-push and falling-out theory (Doll et al., 2013) to frame its analysis, offering a robust theoretical foundation that has not been extensively applied in the UAE and similar contexts. By addressing the demographic imbalance and cultural pressures unique to the UAE, this research contributes fresh insights into how universal dropout factors manifest in a region-specific setting. Furthermore, the study's findings challenge the assumption that STEM students face unique challenges, highlighting the universality of dropout factors across disciplines, which has significant implications for theory building, policymaking decisions, and educators role.

Country context

The implications of dropout in the UAE, as well as in comparable countries, are profound. The UAE grapples with a longstanding demographic imbalance, where local citizens constitute a mere minority within their own country, making up around one-tenth of the total population (Al Kaabi, 2016; Yaghi, 2016; Yaghi & Bates, 2023). This preexisting issue amplifies the country's pressing need for locally educated graduates. Notably, the government expresses particular concern about the disproportionately low number of male graduates, who account for less than 35% of the total graduates from higher education. In contrast, dropout rates among female students across all majors are noticeably lower (Abdulla & Ridge, 2010; Al Kaabi, 2016).

Several studies have illuminated dropout rates for males and females in high school in the UAE, indicating rates of 20–25% for males and 14% for females (Edarabia, 2013). Chaudhary (2013), citing Zureik (2005), reported a dropout rate of 35% among boys in grades 10 to 12, compared to 25% among girls in the same years. Nasir (2017) quoted the Minister of Education, highlighting a 14% dropout rate for university students, although the accuracy of this figure remains uncertain due to limited scientific research on tertiary education dropout (Alkaabi & Noor, 2020; Ashour, 2020a, 2020b). Regrettably, most local studies and reports did not distinguish between dropout rates in high schools and universities, potentially obscuring the true extent of the issue (Bridi & Al Hosani, 2022; Chaudhary, 2013). Furthermore, these studies did not delve into the dropout phenomenon among university students, further complicating the understanding of dropout in higher education. Despite the implementation of several federal government policies aimed at ensuring an adequate supply of an educated local workforce and a reasonable reduction in dropout, especially among males constituting less than 30% of all university students (Said & A, 2013; Yaghi & Bates, 2023), government intervention has not yet effectively eliminated or significantly reduced dropout numbers (Nasir, 2017).

Previous research findings indicate that dropout, in general, is associated with various factors, including students' lack of interest in academic life, poor academic performance, low grades, excessive absences and tardiness, on-campus misconduct, repeated changes of schools, and changes in college majors (Ashour, 2020b; Hassock & Hill, 2022; Krstić et al., 2017; Parahoo et al., 2013). The persistent occurrence of this phenomenon, especially among males, necessitates a closer examination of these factors within the UAE context. The UAE's case is significant for multiple reasons; it is one of the few countries grappling with a deeply rooted demographic imbalance. Even before independence and the unification of the seven emirates, expatriates constituted a substantial portion of the UAE population (Ashour, 2020a; Wilkins et al., 2012). As the UAE embraces a free-market approach, the government faces the challenge of balancing its flourishing economy, heavily reliant on foreign human labor, with its obligation to cultivate a national capacity based on locally trained and well-qualified individuals, particularly university graduates. Government intervention appears to be a top national priority, as evidenced by the 70-year plan, a long-term national development strategy, which lists the training and qualification of local human capital as a top priority (Ashour, 2020b; Yaghi & Bates, 2023).

Theory and literature

This literature review section delves into the pull, push, and falling-out theory, elucidating the multifaceted factors associated with dropout, encompassing social maladjustment, behavioral disorders, delinquency, socioeconomic variables, academic advising, registration difficulties, work responsibilities, health status, anxiety, uncertainty, isolation, alienation, academic challenges, teaching methodologies, teacher attitudes, attendance,

motivation, interest, goal setting, expectations, engagement, social support, and economic challenges (Archambault et al., 2022; Bäulke et al., 2022). Additionally, it conducts a comparative analysis of findings from different countries and contexts to identify commonalities.

Pull-push and falling-out theory

The pull-push and falling-out theory, articulated by Doll et al. (2013), delineates three distinct groups of factors influencing the decision to drop out of school: push factors, pull factors, and falling-out factors. Push factors encompass elements within the school environment that contribute to a negative experience for the students, such as strained relationships with teachers, inadequate school infrastructure, testing policies, and attendance requirements (Jordan et al., 1994). Pull factors, identified by Jordan et al. (1994), involve external forces attracting or compelling students to leave, including family-related issues, recruitment by job agencies, economic pressures, social challenges, and disabilities. Falling out of school pertains to factors intrinsic to the students themselves, such as a lack of interest in learning, negative attitudes, aggressive behavior, and poor academic performance (Doll et al., 2013; Watt & Roessingh, 1994).

While push, pull, and falling-out factors are interconnected, they exert distinct effects on dropout, with the agency factor serving as a distinguishing element (Alhassan & Hassan, 2024). Doll et al. (2013, p. 2) clarify that the school is the agent in push-out factors, society is the agent in pull-out factors, and individual students are the agents in falling-out factors. This distinction is crucial in shaping public policy interventions to reduce dropout, as targeted efforts should address the specific components where push-out, pull-out, and falling-out factors manifest. However, regardless of the agent involved in the causes of dropout, the crux of the issue remains the student's disengagement with the school. Push, pull, and falling-out factors, often overlapping, pose a challenge for policymakers in determining where intervention efforts should commence (Finn, 1993; Yaghi et al., 2007). Lehr et al. (2004) underscore that disengagement constitutes the fundamental behavior leading to dropout, as students decide to leave school due to a sense of not belonging. Events occurring before or after disengagement may extend beyond the direct control of policymakers. Disengagement is associated with specific problems, which, according to Lehr et al. (2004) and Finn (1993), include constant student withdrawals, unusual school experiences, a poor sense of belonging, and a general dislike for school. These factors collectively contribute to the challenging reality of reversing student disengagement (Finn, 1993). Student engagement in school, therefore, becomes a pivotal aspect of their successful completion; when students are engaged on psychological, social, and academic levels, they are more likely to complete their studies and graduate.

Relevant literature

Dropout in higher education is a multifaceted issue influenced by a combination of individual, institutional, and socio-economic factors. Previous research has identified a wide range of factors that fit within the pull, push, and falling-out framework (Pasha-Zaidi & Afari, 2016). A comprehensive review of existing studies underscores three key findings: (a) dropout is influenced by a multitude of factors; (b) the UAE shares several factors influencing dropout with other countries; and (c) empirical studies substantiate the assertions of major theories discussed earlier. The ensuing discussion spotlights select studies closely aligned with the scope of this research.

Socio-economic and institutional factors

Aina, Baici, Casalone, and Pastore (2022) emphasized the role of financial constraints, family income levels, and labor market influences on dropout. Their findings reveal that students from low-income families are particularly vulnerable to dropout due to economic pressures, while the availability of academic support services and scholarship programs significantly enhances retention rates. Similarly, Hailat et al. (2022) investigated push-pull factors influencing student selection of higher education among Arabian Gulf students in the UK. Their findings reveal that economic pressures and institutional factors significantly impact dropout decisions, particularly among students balancing familial expectations and financial responsibilities. This study provides valuable insights into how cultural and economic factors intersect to influence student retention. In the UAE, Alkaabi and Noor (2023) explored the factors contributing to student dropout in public secondary schools using qualitative interviews and thematic analysis. The study identified socioeconomic status, family dynamics, and community involvement as key factors influencing student retention. The findings reveal that dropout is a multifaceted issue, with at-risk students often facing challenges such as financial constraints, lack of familial support, and disengagement from the educational process.

Disciplinary perspectives: STEM and PAPS

In the context of STEM education, Casanova, Vasconcelos, Casanova et al. (2021) explored the motives and trajectories of university dropout among engineering students, identifying academic challenges, lack of motivation, and mismatched expectations as primary drivers. Their study reveals that students who struggle with the demanding curriculum of engineering programs or feel disconnected from their chosen field are more likely to drop out, especially when institutional support, such as academic advising and mentoring, is lacking. Casanova et al. (2021) assert that age, gender, scholarship status, and grade point average significantly impacted students' adaptation to higher education, academic achievement, and dropout decisions. The results highlight the importance of addressing academic difficulties and providing institutional support to enhance student persistence, particularly during the critical first year.

In the field of public affairs and political science (PAPS), Yaghi (2024) investigates the factors influencing dropout among at-risk graduate and undergraduate students. The study identifies six key factors driving graduate student dropout: financial burdens (e.g., tuition costs and limited financial aid), program-related challenges (e.g., rigorous thesis requirements and lack of practical components), balancing multiple responsibilities (e.g., work, study, and family), health issues (e.g., anxiety and stress), poor academic performance, and personal difficulties (e.g., lack of family support). At the undergraduate level, factors that pushed students out included family and societal influences, economic considerations, program structure, institutional dynamics, academic performance, personal attitudes, and personal health.

Regional and cultural contexts

In the Gulf region, Ridge et al. (2013) and Patterson et al. (2021) discussed the gender gap in basic, secondary, and post-secondary education, where male students constitute less than half the number of female students. These studies report on many possible causes of the sharp decline in male numbers, such as social factors related to the family, economic factors related to supporting the family at an early age, personal factors due to students' inability to keep up with their study requirements, and policy-related factors as some legislations need more improvements to ensure more male students remain in school until graduation. In other regions, Sangeetha (2021) found that low-income, poor academic performance, and personal factors such as lack of interest and health problems influenced STEM student dropout in Oman. In Saudi Arabia, Al Abdulrazaq et al. (2022) identified absenteeism, lack of educational goals, the need for employment, and a perceived diminished value of academic degrees as predictors of dropout. In Morocco, Razouki et al. (2019) reported dropout rates between 28% and 30% among first- and second-year university students, with factors like health status, anxiety, academic challenges, inadequate teaching methodologies, and alienation contributing significantly.

Global perspectives and theoretical frameworks

On a broader scale, Véliz Palomino and Ortega (2023) conducted a systematic literature review of predictors of dropout intentions in higher education, analyzing scientific production in Q1 and Q2 journals from 2018 to 2023. The study highlights the critical issue of college dropout, emphasizing its economic and social costs. The review identifies two primary categories of predictors: (1) psychological factors, such as motivation and mental health and (2) academic and social integration factors, including institutional support and peer relationships. The findings underscore the multifaceted nature of dropout intentions, driven by a combination of individual, institutional, and contextual factors. Similarly, Arias et al. (2024) conducted a systematic literature review of undergraduate dropout in Colombia, analyzing 107 studies published between 2000 and 2021. Key causes of dropout include academic, economic, and institutional factors, while the proposed solutions emphasize the use of data science and early intervention strategies. However, the study highlights a lack of integration among stakeholders and insufficient detail in the implementation and impact of the proposed solutions, making it challenging to design effective strategies.

The literature highlights striking similarities in dropout factors across diverse countries, suggesting that dropout is increasingly a global concern (Fortin et al., 2006; Smith & Yang, 2017). Factors such as academic advising, registration issues, engagement, social support, learning difficulties, lack of motivation, and economic challenges were found to be common predictors in various international contexts (Smith & Yang, 2017). These findings indicate that while the factors influencing student dropout are similar across countries, their impact might differ based on cultural and institutional contexts. Despite extensive research, the literature reveals an intricate web of factors influencing dropout, lacking a clear distinction between universal and context-specific

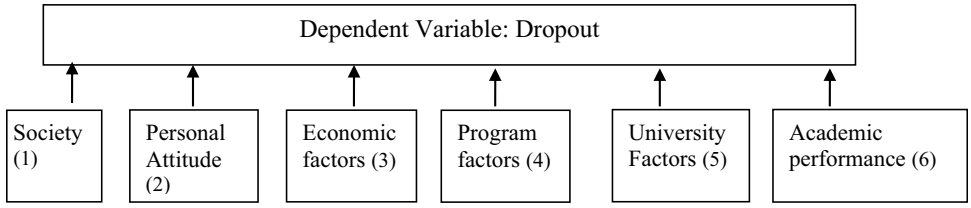

Figure 1. Proposed Model of the study. *Factors in the model rely on the findings by (1) Sangeetha (2021); (2) Al Abdulrazaq et al. (2022); (3) and (4) Arias et al. (2024), Véliz Palomino and Ortega (2023); (5) Pasha-Zaidi and Afari (2016); (6) Yaghi (2024), Sangeetha (2021).

factors and lacking comparative examinations of dropout among various groups of the student body. Consequently, this study constructed the model below (Figure 1) and proposes the following: (a) dropout intentions among PAM and STEM students are high (proposition 1), (b) six broad factors can predict dropout among PAM and STEM students: social expectations, personal attitude, personal academic performance, economic factors, institutional factors, and programmatic factors (proposition 2), and (c) these factors are expected to influence the dropout decision without significant differences between PAM and STEM students (proposition 3).

Methods

This study aims to explore the factors influencing students' dropout, comparing those majoring in STEM and PAM at two universities during the 2022/2023 academic year (see Table 1). The combined enrollment of these universities exceeds 20,000 students at the graduate and undergraduate levels. Following an extensive literature review and considering the UAE context, a survey was crafted to assess students' intentions to drop out. The survey underwent two rounds of evaluation by a panel of three experts, resulting in a reliable survey instrument with a Cronbach's Alpha of 0.863 upon piloting with 68 students (McNeish, 2018).

Table 1. Description of the study sample.

Variable	Number (%)	Variable	Number (%)
Age		**Mother has a bachelor degree or higher**	
19–22	277 (77.5%)	Yes	294 (71.5%)
23–26	88 (21%)	No	117 (28.4%)
27 and above	4 (1.1%)	**Father has a bachelor degree or more**	
Gender		Yes	311 (75.6%)
Male	176 (42.8%)	No	100 (24.3%)
Female	235 (57.1%)	**Parent(s) discuss my academic life**	
Social Status		Always	181 (44%)
Single	377 (91.7%)	Sometimes	87 (21.1%)
Married	34 (8.2%)	Rarely	143 (34.7%)
Other	-	Never	-
Family income		**Family chose my major**	
Low	60 (14.5%)	Somehow yes	97 (23,6%)
Medium	291 (70.8%)	Somehow no	118 (28.7%)
High	60 (14.5%)	Did not interfere	196 (47.6%)
Father and mother divorced		**Having health issues**	
Yes	13 (3.1%)	Severally	11 (2.6%)
No	395 (96%)	Moderately	86 (20.9%)
Else	3 (0.7%)	Minimally	84 (20.4%)
One parent is diseased		Not an issue	230 (55.9%)
Yes	7 (1.7%)	**Having disability**	
No	404 (98.2%)	Severally	18 (4.3%)
Number of siblings		Moderately	25 (6%)
0–2	96 (23.3%)	Minimally	30 (7.2%)
3–5	301 (73.2%)	No disability	338 (82.2%)
6–8	14 (3.4%)	**Suffering anxiety, stress, or depression**	
9 and more	-	Always	21 (5.1%)
At least one parent has a paid job		Often	43 (10.4%)
Yes	286 (69.5%)	Sometimes	112 (27.2%)
No	125 (30.4%)	Never	235 (57.1%)

$N = 411$. This table summarizes the demographic, socioeconomic, and health-related characteristics of the study participants.

The study was conducted in strict adherence to ethical guidelines and received approval from the University's ethical review board. Informed consent was obtained from all participants before they completed the survey. Participants were provided with a detailed explanation of the study's purpose, the voluntary nature of their participation, and their right to withdraw at any time without penalty. Confidentiality and anonymity were ensured by omitting personally identifiable information from the survey responses. Data were stored securely and accessed only by the research team for analysis purposes. These measures were implemented to protect participants' rights and ensure the integrity of the research process.

The research team utilized a drop-off, pick-up method to collect completed surveys (Allred & Ross-Davis, 2011; Jackson-Smith et al., 2016). Identifying undergraduate students who dropped out presented challenges due to outdated addresses or universities withholding relevant information. Consequently, the survey included questions about students' "intention" to drop out, encompassing those with low GPAs, multiple dropped courses, major changes, suspensions, or behavioral issues. Previous research supports assessing "intention" as a valid measure of students' dropout behavior (Astin, 1975; Fourie, 2020; Morelli et al., 2023; Mostert et al., 2023; Pascarella & Terenzini, 1980).

To ensure survey validity, the researchers administered it to a convenience sample of 1,739 STEM and PAM students. However, surveys where respondents answered "No" to any of the three introductory questions were excluded from further analysis. This exclusion was necessary because these students did not meet the criteria for being at risk of dropping out. As a result, 411 surveys were included in the final analysis. These surveys exhibited acceptable reliability, as indicated by a Cronbach's Alpha measure of $\alpha = 0.877$ (McNeish, 2018). While the sample size is sufficient for statistical analysis, it is important to note that the convenience sampling approach and the exclusion criteria may limit the representativeness of the findings. Specifically, the sample primarily reflects the experiences of students at two large universities in the UAE, which may not fully capture the diversity of student populations in other regions or institutions. Consequently, the generalizability of the findings to broader contexts should be interpreted with caution. Future studies are encouraged to expand the sample size, include a wider range of institutions, and incorporate students from diverse academic and cultural backgrounds to enhance the external validity of the results.

Findings and discussion

Description of the study sample

This section provides an overview of the study sample as a unified group without distinguishing between STEM and PAM students, as demographic characteristics do not necessarily have analytical implications beyond sample description. Table 1 reveals that 77% of the undergraduate students are aged 19 to 22, with 21% between 23 and 26. Like most other majors, the majority of students (57%) are female, single (92%), hail from middle-class families (71%), and have both parents alive (98%). Furthermore, Table 1 indicates that most students (73%) come from families with 3–5 siblings, and around 69.5% have one parent employed.

Table 1 indicates that a significant proportion of students have educated parents, with 71.5% having a mother with a bachelor's degree and 75.6% having a father with the same degree. Perhaps due to their education, a higher percentage of parents (65%) appear to engage in discussions about academic life with their children, although about one-third (34.7%) of all students reported that their parents "rarely" discuss their academic life. Regarding parental involvement in major selection, approximately half of the students (48%) indicated that their parents did not interfere, while around a quarter indicated the opposite. Health issues emerge as a notable factor in students' university life, with about 41% reporting health concerns ranging from severe to moderate, while the majority (55%) did not express such concerns. A significant proportion of students (82%) did not have a disability, but around 17% reported some form of disability, ranging from a severe (4%) to a minimal (7%). Regarding mental health, approximately 42% of the students indicated experiencing mental health issues, with occurrences ranging from always (5%) to often (10%) and sometimes (27%), while the majority (57%) did not report anxiety, depression, or stress.

To compare the university experiences of PAM and STEM students, Table 2 substantiates proposition 3 of the study, revealing negligible and relatively minor differences in the attitudes of PAM and STEM students. For instance, among students who changed their major or university several times, 48% were PAM students and 52% were STEM students. Similarly, among those who never changed their major or university, 49% were PAM students, and 51% were STEM students. Notably, attitudes toward changing majors or dropping out were remarkably similar, with only slight variations between PAM and STEM students.

As proposed by the study (propositions 1 and 3), students in both major areas express very similar

Table 2. Indicators of intention to dropout among STEM and PAM students.

Question/Answers	PAM Students Number (%)	STEM Students Number (%)	Total within each response*
Have you changed your major or university?			
Several times	22 (11%)	24 (11.3%)	46
A few times	49 (24.5%)	55 (26%)	104
Never	129 (64.5%)	132 (62.5%)	261
Total within each major	200 (100%)	211	411
How often do you think about changing your current major?			
Very often	25 (12%)	28 (13.6%)	53
Sometimes	13 (6%)	15 (7%)	28
A few times	30 (14.5%)	32 (15.6%)	62
Rarely	64 (31%)	53 (25.8%)	117
Never	74 (36%)	77 (37.5%)	151
Total within each major	206 (100%)	205 (100%)	411
How often do you think about leaving the university or quitting your university study?			
Very often	37 (18.7%)	35 (16.3%)	72
Sometimes	24 (12%)	28 (13%)	52
A few times	35 (17.7%)	41 (19%)	76
Rarely	47 (12.8%)	51 (23.8%)	98
Never	54 (27.4%)	59 (27.5%)	113
Total within each major	197 (100%)	214 (100%)	411

*Rounding some fractions may result in percentages different than those reported. This table compares the intention to dropout among students in STEM (Science, Technology, Engineering, and Mathematics) and PAM (Public Administration and Management) programs.

attitudes. Analyzing each major group individually, Table 2 demonstrates that 27.4% of PAM students compared to 27.5% of STEM students never thought about dropping out. Moreover, 18.7% of PAM students, compared to 16.3% of STEM students, reported thinking very often about dropping out of the university. In terms of the intention to change the current major, 12% of PAM students compared to 13.6% of STEM students expressed such thoughts. Additionally, 36% of PAM students and 37.5% of STEM students reported never contemplating changing their current major. Even when asked about actually changing their major or university, 11% of PAM students and 11.3% of STEM students indicated having done so several times. Among those who never changed their major or university, 64.5% were PAM students compared to 62.5% of STEM students (see, Figures 2–4).

Based on the above findings and discussion, dropout and changing majors among all students did not vary significantly regardless of their major. These findings underscore the seriousness of dropout challenges for various stakeholders, indicating a lack of strong commitment among students to remain in their current major or university until graduation. Decision-makers in higher education should express concern about the percentages reported in Table 2, as the low percentages of students who never changed their majors, never contemplated changing their major, and never considered dropping out are alarming. These findings suggest a fragile and unstable academic situation for students. Notably, the high intentions to drop out warrant-specific policy attention, despite dropout being a global issue among students from various majors (Gallagher, 2019). However, further analysis is required to gain a deeper understanding of the dropout phenomenon.

Because the responses from both groups, PAM and STEM students, exhibited considerable similarity, it became necessary to treat both groups collectively and compute the aggregate mean values for all students' responses to the survey items (refer to Table 3). The students revealed numerous challenges during their university studies, providing insights into an unstable and problematic campus experience. Within these responses, some reflect push factors, while others indicate pull and falling factors. Notably, the majority of mean values surpassed 3.6, signifying agreement with the listed sentences (survey items). Consequently, we can infer that students generally concur with statements corresponding to pull, push, and falling factors. These findings align with existing literature emphasizing the intricate nature of dropout (Fourie, 2020; Hailat et al., 2022).

However, recognizing that these percentages may not offer a profound understanding of the data, we proceeded to conduct an Exploratory Factor Analysis (EFA). EFA facilitates the meaningful grouping of all survey items, providing a more nuanced perspective on the data (see Table 4).

Table 5 indicates that the Exploratory Factor Analysis (EFA) has identified six factors derived from the data (KMO and Bartlett's test = 73.62%, $p < 0.005$). Utilizing principal component analysis as the extraction method with varimax rotation, the results unveil that students'

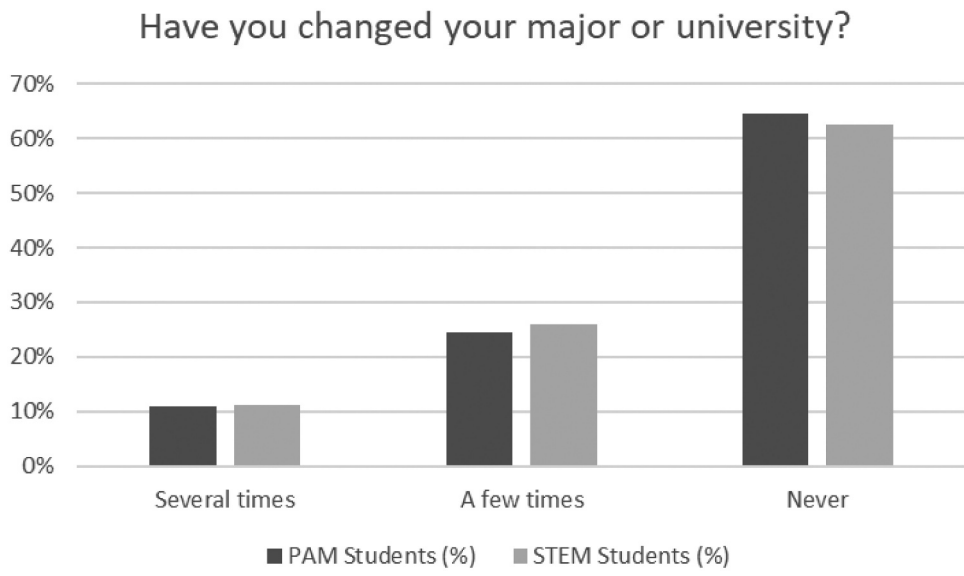

Figure 2. Changing majors and/or university.

dropout can be elucidated by six factors: societal expectations, economic factors, program requirements, institutional factors, students' academic performance, and students' personal attitudes. Collectively, these six factors account for 73% of the variance in the data (Field, 2018). These findings substantiate Study Proposition 2 and align with existing literature (see, for example, Al Abdulrazaq et al., 2022; Fortin et al., 2006; Razouki et al., 2019). However, delving into how STEM and PAM students experience dropout requires further exploration. To address this question, a two-way ANOVA analysis was conducted (refer to Table 6).

The results presented in Table 5 yield valuable insights. Among the six factors identified through Exploratory Factor Analysis (EFA), only one factor exhibits a significant difference between STEM and PAM students. Social expectations appear to influence students in both major groups (p-value <0.003, $\eta^2 = 0.12$), indicating that society expects STEM graduates to achieve or accomplish more (mean = 4.72, 95% CI = [4.65, 4.79], St. Dev. = 0.237) than what PAM students are expected to do (mean = 4.03, 95% CI = [3.97, 4.09], St. Dev. = 0.184). This finding challenges the common perception that STEM and social sciences (PAM) students undergo disparate experiences both within and outside the university (see, for example, Casanova et al., 2023; Mestan, 2016). Moreover, these results affirm the notion that university students, regardless of their majors, not only share the same geographical location but also seem to encounter similar economic, institutional, personal, and academic factors. For policymakers, these findings hold significance as they underscore the importance of approaching higher education reform uniformly across all majors, emphasizing enhancements in students' university experiences irrespective of major specificity. The effect sizes (η^2) for the remaining factors ranged from 0.07 to 0.11, indicating

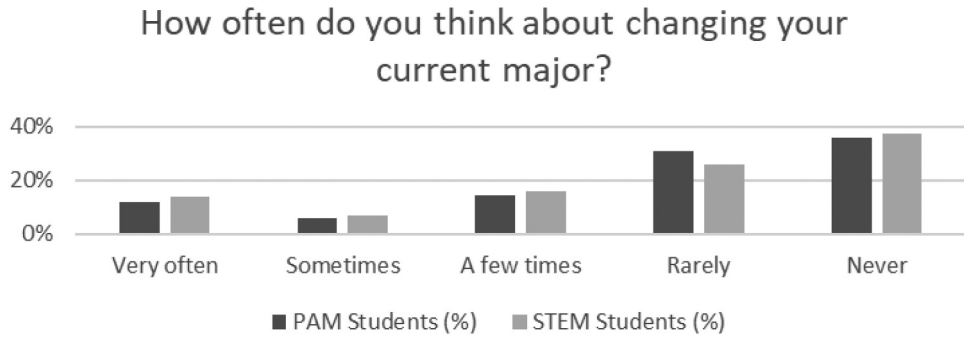

Figure 3. Frequency of changing majors and/or university.

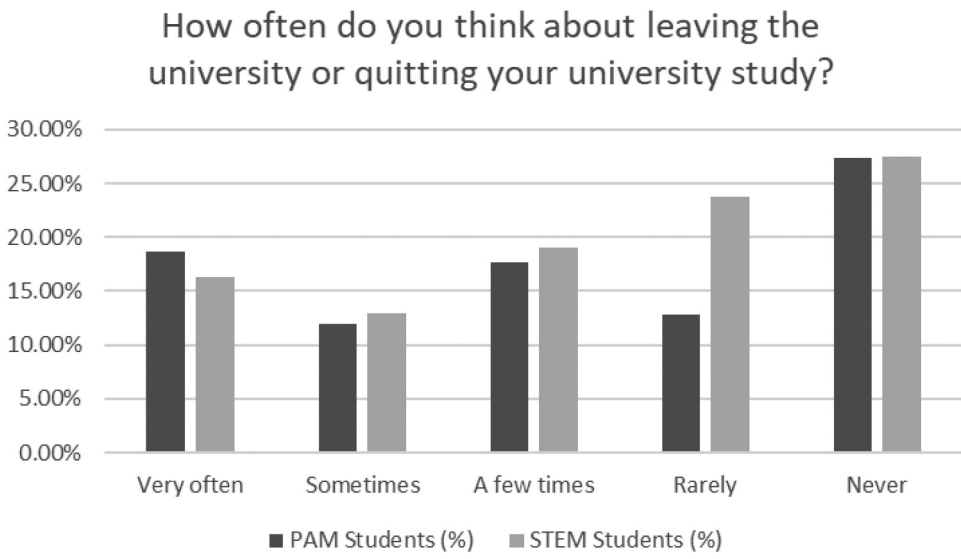

Figure 4. Frequency of thinking about quitting.

small-to-medium practical significance, while the confidence intervals provide a robust estimate of the true population means for each factor.

To present a comprehensive view of dropout, Table 5 provides the descriptive statistics of the survey items. According to Table 5, the mean scores of the survey items were above 2.5 out of 5.0, except for seven items, indicating that students generally agreed with the survey questions. This supports the argument that the intention to dropout is complex, with students facing multiple obstacles affecting their retention (Fourie, 2020; Hailat et al., 2022). However, mean values alone may not suffice to fully elucidate dropout and test the study's propositions. Hence, after confirming the dataset's suitability for advanced analysis, an Exploratory Factor Analysis (EFA) was conducted (see Table 4). The results from KMO and Bartlett's test (0.87 and $p < 0.001$, respectively) indicate that the data are suitable for EFA (Field, 2018). Following varimax rotation, the six extracted factors account for a cumulative percentage of variance of 78.5%, as indicated by the rotation sums of squared loadings.

The emerging factors in Table 4 reflect the survey items that are loaded on each factor, namely (1) family and society, (2) economic, (3) program and curriculum, (4) institutional, (5) academic performance of the student, and (6) personal attitude. These factors confirm the complex nature of the dropout phenomenon and also align with previous findings by several researchers, such as Hailat et al. (2022), Chaudhary (2013), Nicoletti (2019), and Mouton et al. (2020), who reported significant links between dropout and other factors.

While some researchers have emphasized the importance of STEM over other majors, this study provides evidence that STEM and PAM students experience similar university experiences. The only area that this study found a significant difference between the two groups is the expectations of their society. The findings offer empirical evidence concerning the role of pull, push, and falling out in shaping students' university experience (Doll et al., 2013). The six factors that were found influential indicate that policymakers cannot solve dropout by simply implementing one policy or looking at one aspect of the problem. Instead, they can implement several policies that address social, economic, personal, and institutional factors. To eradicate pull, push, and falling-out factors, there will be a need for a comprehensive approach in which various policies work simultaneously to reduce the negative impact of those factors.

Conclusion

The findings of this study reveal that dropout intentions among PAM and STEM students are influenced by a complex interplay of factors, aligning with the pull-push and falling-out theory (Doll et al., 2013). The negligible differences between PAM and STEM students challenge the common assumption that STEM students face unique challenges compared to their peers in social sciences (Casanova et al., 2023; Mestan, 2016). Instead, the results suggest that dropout factors are more universal, driven by broader institutional, societal, and personal pressures. The findings align with prior research highlighting the multifaceted nature of dropout. For instance, the role of economic challenges as a significant factor mirrors studies by Aina et al. (2013) and Hailat et al. (2022), who identified financial constraints as the

Table 3. Descriptive statistics for survey items.

Survey Item*	Mean out of 5 Points (SD)
1. Most of the days, I feel lonely	3.2 (1.17)
2. My family expects a lot from me	4.2 (0.43)
3. Nobody at home understands me	2.9 (0.88)
4. There are so many problems at home	3.3 (0.90)
5. I feel lost in my large family	2.4 (0.93)
6. The cost of my study is high	4.6 (0.94)
7. No scholarships are available	3.15 (1.03)
8. Little or no financial support programs	2.92 (0.73)
9. Educational expenses are above my capacity	4.55 (0.86)
10. Graduating with a degree does not make my future life any better	3.83 (0.71)
11. I am not sure how would my study help me achieve my career goals	4.33 (0.84)
12. My work responsibilities hinder my university study	3.76 (0.94)
13. Courses are too difficult for me	3.99 (1.08)
14. Courses are not interesting	3.52 (1.01)
15. Courses are irrelevant to my life outside the university	4.14 (0.96)
16. There are too many general courses and fewer courses from my major	4.11 (0.67)
17. I am not interested in academic activities that take place on campus	3.97 (1.21)
18. I am not interested in social activities that take place on campus	4.05 (2.07)
19. I have only a few friends at the university	3.86 (1.22)
20. I find little support from the advising unit	4.14 (0.93)
21. I rarely sit with my faculty advisor	3.25 (1.71)
22. I find academic advising useless	4.34 (0.95)
23. It is difficult to communicate with university employees	3.88 (2.05)
24. I generally have a bad university experience	3.98 (1.42)
25. I do not belong to this university	3.77 (1.33)
26. I do not belong to my major	3.62 (1.43)
27. I dislike this university	3.37 (1.27)
28. I dislike my major	3.88 (1.41)
29. Many of my current teachers are difficult to approach	3.01 (1.21)
30. Many of my current teachers are arrogant	4.11 (1.33)
31. Many of my current teachers are unhelpful	3.87 (1.27)
32. It is difficult to enjoy my major because courses are taught in English	4.76 (1.11)
33. Teaching is not inspiring	3.01 (1.32)
34. Classes are boring	4.17 (1.34)
35. Courses repeat each other	4.11 (1.26)
36. Teaching methods are ineffective	3.96 (1.31)
37. Many teachers use bad teaching methods	3.12 (1.22)
38. My major does not prepare me to work as a diplomat	3.26 (1.34)
39. I face difficulties registering for courses	3.17 (1.05)
40. Timetabling is inconvenient	3.73 (1.14)
41. Conditions on campus are not motivating	3.45 (0.83)
42. Teachers give me too much homework	4.14 (1.25)
43. Teachers' expectations are too high	4.27 (1.04)
44. Studying makes me nervous	4.33 (1.01)
45. Coming to classes makes me stressed	3.82 (0.78)
46. My GPA is less than 2.0 out of 4.0	3.49 (1.17)
47. I have at least one academic warning	3.63 (1.25)
48. I do not like studying	3.13 (1.89)
49. I have little motivation to study	3.89 (1.01)
50. I come to some classes late without an excuse	3.88 (1.12)
51. I repeatedly skip classes without an excuse	3.21 (1.14)
52. I was engaged in at least one fight at this university	2.77 (1.61)
53. I do not know why I study in my current major	3.17 (0.79)
54. Society expects too much from me	4.74 (0.87)
55. People around me expect me to become a diplomat	2.93 (1.37)
$N = 384$	

*All items were measured using a five-point Likert scale; strongly agree, agree, no opinion, disagree, and strongly disagree. A number above 2.5 indicates an agreement with the corresponding statement. This table presents the mean scores and standard deviations (SD) for 55 survey items measured on a five-point Likert scale (1 = strongly disagree, 5 = strongly agree). Items cover themes such as family expectations, financial challenges, academic difficulties, university experience, teaching quality, and motivation.

primary driver of dropout. Similarly, the importance of institutional support resonates with Casanova et al. (2021), who found that lack of academic advising and mentoring significantly impacts retention. However, this study extends the literature by demonstrating that these factors affect PAM and STEM students equally, challenging the notion that STEM students are uniquely vulnerable.

One notable finding is the significant role of societal expectations, particularly for STEM students, who reported higher pressure to achieve (mean = 4.72) compared to PAM students (mean = 4.03). This aligns with

Table 4. Factor affecting dropout.

Item/Factor	1: Society Expectations	2: Economic	3: Program Requirements	4: Institutional	5: Academic Performance	6: Personal Attitude
2	.711					
3	.648					
4	.816					
54	.792					
55	.840					
6		.771				
7		.789				
8		.694				
9		.801				
14			.777			
16			.831			
26			.762			
30			.704			
31			.811			
34			.809			
35			.793			
20				.837		
21				.729		
22				.804		
23				.882		
24				.807		
39				.783		
40				.814		
41				.869		
42					.807	
43					.799	
46					.811	
47					.863	
48					.903	
44						.901
45						.837
50						.789
51						.833

*Varimax rotation was used. Rotation Sums of Squared Loadings- Cumulative = 78.533; Kaiser-Meyer-Olkin Measure of Sampling Adequacy = 0.878; Approx, Chi-Square in Bartlett's Test of Sphericity = 986.697, df = 528, Sig. <0.001.This table presents the factor loadings from a principal component analysis (PCA) with Varimax rotation, identifying six key factors influencing dropout intentions: (1) Society Expectations, (2) Economic Challenges, (3) Program Requirements, (4) Institutional Factors, (5) Academic Performance, and (6) Personal Attitude.

Table 5. Two-way ANOVA results comparing STEM and PAM.

Factors Influencing Dropout*	Two Samples	Mean*	Std. Dev.	Effect Size (η^2)	95% Confidence Interval	p-value**
Society expectations	STEM	4.72	0.237	0.12	[4.65, 4.79]	0.003*
	PAM	4.03	0.184		[3.97, 4.09]	
Economic factors	STEM	4.33	0.062	0.08	[4.28, 4.38]	0.072
	PAM	4.41	0.102		[4.35, 4.47]	
Program requirements	STEM	4.36	0.601	0.10	[4.25, 4.47]	0.094
	PAM	4.11	0.283		[4.03, 4.19]	
Institutional factors	STEM	4.35	1.052	0.07	[4.20, 4.50]	0.160
	PAM	4.17	0.934		[4.03, 4.31]	
Academic performance	STEM	4.38	0.882	0.09	[4.25, 4.51]	0.103
	PAM	4.05	1.059		[3.90, 4.20]	
Personal attitude	STEM	4.35	1.003	0.11	[4.20, 4.50]	0.061
	PAM	4.87	0.852		[4.75, 4.99]	

$N = 411$. *Each factor is a construct of several survey items that were measured using a five-point Likert scale; strongly agree, agree, no opinion, disagree, and strongly disagree. A number above 2.5 indicates an agreement with the corresponding statement. **$p < 0.05$.

Ridge et al. (2013) and Patterson et al. (2021), who highlighted the cultural and societal pressures faced by students in the Gulf region. However, the lack of significant differences in other factors, such as economic challenges and institutional support, suggests that these issues are pervasive across disciplines. This reinforces the need for a holistic approach to dropout prevention, as proposed by Fortin et al. (2006), who argue that addressing dropout requires simultaneous interventions across multiple domains.

The findings have significant implications for policymakers and university administrators. First, the uniformity of dropout factors across majors suggests that higher education reforms should not be tailored to specific disciplines

but should instead focus on improving the overall student experience. For example, enhancing institutional support systems, such as academic advising and mental health services, could benefit all students regardless of their major. Second, the high societal expectations placed on STEM students highlight the need for targeted interventions to alleviate pressure and provide career guidance. Finally, the economic challenges faced by students, as evidenced by the high mean scores for items related to financial strain, underscore the importance of expanding scholarship programs and financial aid.

While this study provides valuable insights into dropout factors, it is not without limitations. The sample, though substantial, is limited to students from specific majors and institutions, which may affect the generalizability of the findings. Future research should aim to include a more diverse and representative sample of students from multiple institutions and regions. Additionally, longitudinal studies could provide deeper insights into how dropout intentions evolve over time and how interventions can be tailored to address these changes. Qualitative research could also complement the quantitative findings by exploring the lived experiences of students who consider dropping out, offering a more nuanced understanding of the factors at play.

An important finding is the role of universities in enhancing a welcoming and supportive environment for all students. Institutions need to invest more resources in understanding the challenges students face, such as difficulties with registration, payments, and attendance. Policies aimed at improving student engagement and mental health (Yaghi, 2022) should be prioritized, alongside curriculum revisions to enhance the learning experience. Researchers are encouraged to expand comparisons beyond STEM and PAM to include other majors and increase sample sizes, ensuring a more diverse and representative participant pool. Understanding how students perceive the personal gains of their chosen major is critical, as dropout decisions often involve a rational calculation of the benefits of obtaining a degree. Addressing these limitations and insights in the future research will provide a more comprehensive understanding of dropout factors and inform targeted interventions to improve student retention.

Author contributions

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