

The Dual Challenge of Work and Study: Identifying Distinct Dropout Profiles Among Part-Time Students in Business

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Abstract – This study examines dropout patterns among working students at a Czech private business university (n=2,034, 2017–2023), distinguishing employment-related from financial withdrawal factors. Employment factors affected twice as many students as financial pressures (65% vs. 32%), with time constraints (30%) and post-employment motivation loss (25–30%) as primary drivers. Financial barriers manifested mainly through family obligations (15–18%) rather than tuition costs. A negative correlation between time constraints and motivation loss ($p = -.400$) indicates independent mechanisms. Three distinct student profiles emerged, each requiring tailored interventions. Patterns remained stable across seven years, suggesting structural features of working populations rather than institutional deficiencies, and challenging assumptions about retention without fundamental program restructuring.

Keywords – Student dropout, working students, part-time education, employment factors, retention.

1. Introduction

Student dropout in higher education represents a persistent and multifaceted challenge confronting educational institutions globally. The phenomenon carries significant implications not only for individual students and their families but also for higher education institutions, labor markets, and national economies. As enrollment in tertiary education has expanded worldwide, understanding and addressing dropout has become increasingly critical for policymakers, institutional administrators, and researchers.

The complexity of student dropout has been well-documented across international contexts. As [1] emphasize, dropout requires broad conceptualization to be effectively addressed at both institutional and societal levels, as economic and academic factors significantly increase dropout risk, with the first two years of enrollment identified as particularly critical periods. This temporal pattern has been consistently documented, with multiple studies confirming that first-year students face the highest attrition risk [2], [3], [4].

While the literature has extensively examined academic, institutional, and psychosocial factors in student attrition, two dimensions have emerged as particularly critical yet contextually variable: Employment-related factors and financial constraints. These factors operate differently depending on national educational systems, institutional types, and student populations. In countries with tuition-free or low-cost public education systems, financial pressures may manifest differently than in systems requiring substantial tuition payments.

This study focuses on a private business university in the Czech Republic that has operated for over 25 years, specializing exclusively in business education with programs in management, economics, marketing, and human resources at both bachelor's and master's levels.

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The Czech educational context is distinctive in that public universities typically charge no tuition, and even private institutions remain relatively affordable for most students. This context allows for examination of how financial factors operate beyond direct tuition costs, including opportunity costs, family obligations, and living expenses.

The institution serves a substantial population of part-time and non-traditional students (74.4% of withdrawing students), making it particularly suitable for examining the intersection of employment and education. The predominance of working students in the withdrawal population suggests that employment-related factors may play an outsized role compared to traditional full-time student populations.

This study addresses the following research questions:

RQ1: *Which financial factors are the primary employment-related and contributing to student dropout at for part-time populations?*

RQ2: *How do these factors differ in their prevalence and impact over a seven-year period (2018-2024)?*

RQ3: *What relationships exist among employment and financial dropout factors?*

RQ4: *Do distinct profiles of withdrawing students emerge based on employment and financial factors?*

2. Theoretical Background

Student dropout is increasingly recognized as a dynamic and complex system rather than a simple binary outcome. Contemporary research employs multifactorial models acknowledging the interplay of individual, institutional, academic, socioeconomic, and psychosocial variables [5]. A cluster analysis of bachelor's degree students in Germany found that dropout decisions are based on a variety of reasons rather than a clear single motive, with the most important reasons related to interest and expectations concerning study programs as well as aspects associated with student performance [2].

An important conceptual shift has occurred in the literature since 2000, moving from institutional retention management toward student persistence [6]. This shift acknowledges students' agency in their educational development and decisions to continue studies, emphasizing strengthening links with universities rather than viewing dropout as permanent. This reconceptualization has profound implications for both measurement and intervention strategies.

According to [6], educational systems must assess efforts made by institutions to keep students enrolled until they progress academically and graduate, understanding that educational quality is linked to managing retention.

However, since 2000, there has been a greater focus on promoting actions for students to stay in school by acknowledging that they play a key role in their own educational development and deciding to continue their studies, thus highlighting the importance of strengthening links with the university and the educational system as a whole.

The concept of students dropping out of school is also being reconsidered, as studies have shown that many students do, in fact, return to school in the short and medium terms [6]. This finding complicates simple retention/dropout binaries and challenges the assumption that withdrawal represents a permanent exit from higher education. Rather than viewing dropout as institutional failure requiring correction, the persistence paradigm recognizes student decision-making within complex life contexts where temporary withdrawal may be a strategic response to competing life demands.

To further illuminate this complexity through their examination of student trajectories at a Brazilian public university [7], the analysis focused not only on dropout and completion but also mobility and retention. Their findings revealed that 6.9% of students managed to transfer to another graduation course at the same or another institution, demonstrating that apparent "dropout" from one program may represent strategic repositioning rather than complete educational abandonment. This pattern suggests that what institutions record as dropout may sometimes reflect students' active pursuit of better-fit educational opportunities.

The distinction between institutional dropout and system-level dropout becomes particularly important in this context. This issue was addressed by [8] while analyzing Swiss administrative data covering the entire higher education system, distinguishing between students who leave a particular institution and those who exit higher education entirely. Interestingly, they found that adding information on transfers to other Swiss universities hardly improved predictive performance of dropout models, suggesting that institutional and system-level dropout may operate through similar mechanisms. However, their models performed poorly in predicting transfers specifically, indicating that transfer behavior may be more idiosyncratic and less amenable to prediction than dropout itself.

This reconceptualization has important implications for intervention strategies. Rather than focusing exclusively on preventing departure, institutions might better serve students by maintaining connections that facilitate return, providing clear pathways for re-entry, and recognizing that temporary withdrawal, particularly among working adult students facing complex life circumstances, may represent responsible decision-making rather than failure. Interventions then focus on supporting student agency and removing barriers rather than imposing retention at all costs.

For working student populations in particular, this perspective becomes especially relevant. As [9] found, non-traditional students require comprehensive and differentiated approaches that respect their agency and life circumstances. Some students may strategically withdraw to address employment demands, family crises, or financial pressures, intending to return when circumstances permit. Institutions serving such populations should develop policies and support structures that facilitate stop-out and return patterns rather than treating all departures as permanent failures.

The persistence paradigm also shifts attention toward the quality and nature of students' connections with their institutions. Authors [10] found that cognitive-motivational variables including engagement, autonomous motivation, and academic satisfaction significantly differentiated between students who remained and those who dropped out. Students who withdrew in the third semester presented lower levels of these variables, suggesting that the intention to drop out, combined with deteriorating motivational indicators, may serve as a precursor to actual dropout. This finding underscores that dropout is better understood as a process involving evolving commitments and connections rather than as a discrete event, further supporting the shift from retention management to persistence support that acknowledges students' ongoing negotiation of their educational commitments within complex life contexts.

Time emerges as a critical dimension in dropout research. Also [1] confirmed that the first two years of enrolment are crucial for dropout likelihood, but extended time at the institution also increases risk. This non-monotonic relationship suggests different dropout mechanisms operating at different time points.

2.1. Financial Factors in Student Dropout

Financial constraints consistently emerge as a significant predictor of student withdrawal across diverse international contexts. However, the manifestation and impact of financial factors vary considerably by national context, institutional type, and student population. As found in Ecuador, economic factors contributed to an estimated dropout probability of 44.90%, with personal, familial, academic, and institutional factors all playing interconnected roles [5].

The relationship between financial support and retention has been examined through natural experiments. Authors in South African universities [11] analysed these issues during the COVID-19 pandemic, finding that students funded through the National Student Financial Aid Scheme (NSFAS) were typically less impacted by increased dropout rates than their unfunded peers.

This suggests that financial aid programs can serve as social safety nets during crisis periods.

However, financial aid alone may be insufficient without complementary supports. As examined by [12], scholarship withdrawal determinants in Peru's "Beca 18" program, identifying eight main factors including place of origin, indigenous mother tongue, age, intake year, degree subject, and type of university. Peruvian scholarship recipients from indigenous backgrounds, older ages, and studying at public universities showed higher withdrawal rates despite financial support, suggesting that cultural and institutional factors require attention beyond financial resources.

In developed economies, financial factors interact complexly with employment. Also, [13] found that at a U.S. for-profit institution, primary expected family contribution significantly impacted graduation odds, though its effect was modest compared to academic performance variables.

2.2. Employment and Work-Related Factors in Dropout

The intersection of employment and education creates particular vulnerabilities for student persistence, especially among non-traditional populations. Spanish research found that non-traditional students demonstrated high motivation, determination, and greater effort compared to traditional peers [9]. However, traditional pedagogy was not suited to their characteristics and created difficulties, with few teachers being truly flexible.

For institutions serving substantial part-time and working student populations, work-related reasons constitute a predominant category of withdrawal. Finding employment often reduces both available time and motivation for continued study. This dual mechanism, time constraints and motivational shifts, suggests that employment operates through multiple pathways to influence dropout decisions.

Age and life stage interact with employment factors in complex ways. German research in second chance education found that older students were more likely to drop out than younger students, irrespective of family background and despite better academic performance [14]. This pattern suggests that older students face distinctive challenges, possibly related to competing life responsibilities including employment, family obligations, and financial pressures.

Further, [15] identified work activity as one factor explaining educational abandonment, alongside identification with studies not meeting expectations, traditionalist methodologies, and economic difficulties. However, the relationship between employment acquisition and dropout appears multifaceted.

Employment may create time constraints that make continued study logistically difficult. Alternatively, employment may reduce motivation by providing immediate economic returns and professional identity, diminishing the perceived value of degree completion. Also, [3] found that dissatisfaction with professional choice, combined with too many theoretical classes and lack of new teaching methodologies, drove Brazilian dropouts. This suggests that misalignment between educational content and career aspirations may interact with employment experiences to influence dropout decisions.

2.3. Non-Traditional and Part-Time Students

Non-traditional students, including older, part-time, and working students, present unique retention challenges that differ from traditional full-time student populations. These students often combine education with employment, family responsibilities, and other life commitments, creating complex scheduling demands and competing priorities.

Authors [9] emphasized that traditional pedagogy often fails to accommodate non-traditional students' characteristics and needs. They called for comprehensive and personalized education adapted to non-traditional students' needs, as egalitarian rather than equitable approaches create barriers. Also, [7] observed in Brazil that men, non-white, and older students dropped out more frequently, while students receiving social support and those from rural areas showed higher completion rates. These demographic patterns suggest that part-time and working student populations face intersecting challenges related to social support systems, economic pressures, and life stage factors.

The temporal dimension of dropout has received increasing attention in recent literature. Multiple studies confirm that the first two years of enrollment represent the period of highest attrition risk [1], [2], [3], [4], [16].

Researchers [16] identified in Poland three main dropout types: Planned dropout, academic failure, and disappointed students, with problems originating in the program selection process. Planned dropout suggests that some students enter programs with conditional commitment, intending to withdraw if certain conditions are not met.

The COVID-19 pandemic created a natural experiment for examining how external shocks affect dropout patterns. Further, [11] found that student dropout increased in 2020 for students in years 3-5, with little evidence of change for those entering their second year of study. These aggregate findings masked significant differences across institutions, with historically disadvantaged institutions in rural areas experiencing greater increases.

2.4. Predictive Modeling and Institutional Responses

The application of data mining, machine learning, and statistical modeling to predict dropout has expanded dramatically in recent years. Multiple studies have demonstrated high predictive accuracy using various machine learning algorithms. As [17] compared Decision Tree C4.5, Random Forest, and Neural Networks algorithms on Brazilian university data, finding that Random Forest achieved the highest accuracy in identifying students at risk.

Most ambitiously, [18] evaluated Colombia's System for the Prevention and Analysis of School Dropouts (SPADIES), launched nationally in 2004. Using differences-in-differences analysis, the study found that SPADIES lowered dropout probabilities by 0.7 percentage points while increasing on-time graduation likelihood by 0.6 percentage points. From 2005-2017, the system cost USD 4.9 million (2025 prices), translating to USD 350 per student who avoided dropout.

Structured tutoring programs demonstrate promise for retention improvement. Notably, [19] documented that tutoring at the Technical University of Lisbon identified risks at academic and personal levels and offered strategies responding to obstacles during formation.

2.5. Research Gaps and Study Contributions

Despite substantial research on student dropout, several gaps remain:

First, most research on financial factors focuses on contexts where tuition costs represent substantial barriers. Less is known about how financial pressures operate in systems with minimal tuition costs, where economic factors may manifest through opportunity costs, family obligations, and living expenses.

Second, while employment has been identified as a dropout factor, the specific mechanisms through which employment influences withdrawal decisions remain underspecified. Do time constraints, motivational shifts, or experiential dissonance represent the primary pathways?

Third, the relationship between employment and financial factors requires further examination. These factors may operate independently, interactively, or as alternative pathways to withdrawal.

Fourth, longitudinal evidence spanning multiple years and encompassing significant external events (such as the COVID-19 pandemic) remains limited.

This study addresses these gaps by examining employment and financial factors in a Czech business university serving substantial part-time populations over a seven-year period (2018-2024).

3. Methodology

This longitudinal study employed a comprehensive survey methodology to examine student attrition patterns at a private business university in the Czech Republic over a seven-year period (2018-2024). The case institution has operated for over 25 years, specializing exclusively in business education with programs in management, economics, marketing, and human resources at both bachelor's and master's levels.

3.1. Sample and Data Collection

The study achieved a robust dataset of 2,034 complete responses from students who withdrew from their programs during the study period.

The sampling frame included all students who formally withdrew during this timeframe, ensuring representative coverage of dropout patterns.

Sample characteristics: Gender distribution: 57% female, 43% male; Program level: 82% undergraduate, 18% graduate; Study mode: 25.6% full-time, 74.4% part-time/non-traditional students.

Table 1 presents the demographic evolution of student withdrawals across the study period, showing shifts in enrollment patterns and student composition over time. The data reveal a notable increase in part-time student representation over the study period, rising from 68% in 2018 to 80% in 2024, alongside a corresponding decrease in full-time enrollment among withdrawing students.

Table 1. Demographic distribution of student withdrawals by year (%)

Category	2018	2019	2020	2021	2022	2023	2024
Graduate	24	18	19	15	14	17	18
Undergrad	76	82	81	85	86	83	82
Part-time	68	73	78	73	78	81	80
Full-time	32	27	22	27	22	19	20
Male	48	42	49	44	35	40	41
Female	52	58	51	56	65	60	59
(n)	266	177	156	194	271	377	457

3.2. Instrument Development

The survey instrument was developed through a rigorous process grounded in existing literature on student retention and attrition. The questionnaire focused on two primary dimensions identified as critical factors in student departure decisions: (1) Work and employment-related factors, and (2) Financial constraints and resources.

The instrument development process included: Literature review: Variables were derived from current theoretical frameworks and empirical studies on student retention and dropout behavior; Contextualization: Items were adapted to reflect the specific characteristics of the Czech higher education system and the private business school context, including considerations of affordability (public universities typically charge no tuition, and private institutions remain relatively affordable in the Czech environment); Pilot testing: The preliminary instrument was administered to a small group of respondents to assess comprehension, clarity, and content validity. Minor modifications were implemented based on pilot feedback

Open-ended responses: Respondents were provided with text boxes to elaborate on their circumstances, allowing for nuanced understanding beyond predetermined response categories.

3.3. Data Processing

Internal consistency of the survey scales was assessed using Cronbach's alpha, with all factor groupings achieving $\alpha \geq 0.80$, indicating acceptable to good reliability and supporting the internal consistency of the measurement instrument. Data analysis proceeded in two phases.

Phase 1: Descriptive analysis - Frequency distributions and percentages were calculated for all variables. Then, temporal trends were examined across the seven-year period. Finally, Chi-square tests were employed to assess differences in dropout reasons across years.

Phase 2: Correlation analysis – Spearman's rank correlation coefficient (ρ) was utilized due to the ordinal nature of survey data. Statistical significance was determined using $\alpha = 0.05$ as the threshold. Effect sizes were interpreted following conventional guidelines: weak ($\rho < 0.30$), moderate ($0.30 \leq \rho < 0.50$), strong ($\rho \geq 0.50$).

4. Results

Preliminary analysis examined whether dropout reason patterns varied significantly across the seven-year study period. Chi-square tests revealed no statistically significant differences in the distribution of work-related reasons ($\chi^2 = 0.000$, $p > 0.05$) or financial reasons ($\chi^2 = 0.000$, $p > 0.05$) across years.

Furthermore, year-to-year correlations for dropout reasons exceeded $\rho = 0.95$, indicating highly stable patterns over time.

This temporal consistency validates the aggregation of data across years for subsequent analyses. The stability of patterns is particularly noteworthy given that the study period encompasses the COVID-19 pandemic (2020-2021), which might have been expected to substantially alter dropout dynamics.

4.1. Financial Factors in Student Withdrawal

Table 2 presents the frequency and percentage of financially-motivated withdrawals across the study period. Financial constraints represented approximately one-third of all dropout cases throughout the study period.

The most frequently cited financial reason was the need to redirect resources toward family care obligations, consistently accounting for 15-18% of all withdrawals (excluding the atypical 2021 data point of 7.2%). Business-related financial difficulties represented the least common financial driver of withdrawal, affecting fewer than 2% of students in most years (Table 2).

An important contextual finding emerged when examining absolute numbers relative to institutional growth. While the absolute number of financially-motivated withdrawals increased from 84 (2018) to 147 (2024), the institution's total enrollment approximately doubled during this period, particularly following the COVID-19 pandemic. Consequently, the relative proportion of students withdrawing due to financial constraints remained stable or potentially declined when considered as a percentage of total enrollment.

Table 2. Financial reasons for student withdrawal by year

Financial Reason	2018		2019		2020		2021		2022		2023		2024	
	n	%	n	%	n	%	n	%	n	%	n	%	N	%
Lack of resources due to family care	48	17.8	21	11.9	25	16.0	14	7.2	43	15.9	63	16.7	68	14.9
Achieving financial independence	19	7.1	12	6.8	13	8.3	19	9.8	16	5.9	26	6.9	33	8.1
Lack of resources due to job loss	15	5.6	6	3.4	16	10.3	15	9.8	17	6.3	30	8.0	37	7.2
No sources due business ownership	2	0.8	0	0.0	3	1.9	4	2.1	5	1.8	5	1.3	9	2.0
Total financial reasons	84	31.3	39	22.1	57	36.5	52	26.9	81	29.9	124	32.9	147	32.2

4.2. Employment-Related Factors

Employment-related factors constituted the predominant category of withdrawal reasons (Table 3), accounting for approximately two-thirds of all dropout cases across the study period. This finding represents a central contribution of the study: Employment factors affected approximately twice as many students as financial factors (approximately 65% vs. 32%). Table 3 presents employment-related reasons for student withdrawal. The primary employment-related driver was insufficient time to continue studies after securing employment, affecting approximately 30% of withdrawing students annually.

Loss of motivation following employment represented a similarly substantial factor, impacting 25-30% of students. A noteworthy finding was that 8-11% of students withdrew due to perceived inability to apply acquired knowledge and skills in professional practice, with particularly elevated levels during 2020-2021 (10.9% and 11.3%).

The high prevalence of employment-related withdrawals aligns with the institution's demographic profile, where part-time and non-traditional students comprise over 74% of the withdrawal sample.

Table 3. Employment-related reasons for student withdrawal by year

Employment Reason	2018		2019		2020		2021		2022		2023		2024	
	n	%	n	%	n	%	n	%	n	%	n	%	N	%
Job acquisition - insufficient time	88	33.1	61	34.5	59	37.8	56	29.2	79	22.5	113	30.0	139	30.4
Job acquisition - reduced motivation	75	28.2	49	27.7	40	25.6	48	24.7	61	22.5	114	30.2	117	25.6
Inapplicability of knowledge	14	5.3	4	2.3	17	10.9	22	11.3	29	10.7	31	8.2	43	9.4
Total employment reasons	177	66.5	114	64.4	116	74.4	126	65.2	169	62.4	258	68.4	299	65.4

Note: Percentages calculated relative to total annual sample size. Individual reasons are not mutually exclusive.

4.3. Correlation Analysis of Dropout Factors

Spearman correlation analyses examined relationships among specific dropout reasons to understand potential interconnections between financial and employment factors. The analysis revealed several noteworthy patterns. First, students who achieved financial independence and subsequently lost motivation to continue their studies showed a positive correlation ($\rho = 0.205$, $p < 0.001$), suggesting that financial stability may reduce the perceived necessity of degree completion for some students.

Importantly, a moderate-to-strong negative correlation emerged between time constraints from employment and loss of motivation ($\rho = -0.400$, $p < 0.001$). This counterintuitive finding suggests these represent alternative rather than complementary pathways to withdrawal. Students who leave due to time pressures appear fundamentally different from those who lose academic motivation after employment, despite both groups citing job acquisition as a trigger.

Similarly, time constraints showed a weak-to-moderate negative correlation with perceived inapplicability of knowledge ($\rho = -0.204$, $p < 0.001$), further suggesting distinct student profiles among employment-related withdrawals.

The correlation patterns suggest at least three distinct profiles of withdrawing students:

Profile 1: Time-constrained working students - These students secure employment and face insufficient time to continue studies. They demonstrate negative correlations with motivation loss and knowledge inapplicability, suggesting they value their education but cannot logistically continue. This profile represents approximately 30% of annual withdrawals.

Profile 2: Post-employment motivation loss - These students lose motivation to continue studying after securing employment, possibly due to achieving financial independence or finding that employment provides sufficient professional development. They show weak positive correlations with financial independence achievement and negative correlations with time constraints. This profile represents approximately 25-30% of annual withdrawals.

Profile 3: Financial hardship - These students withdraw primarily due to financial constraints, particularly family care obligations. This profile shows weak correlations with employment factors and represents approximately 32% of annual withdrawals, with family care obligations being the predominant specific factor (15-18%).

The seven-year longitudinal analysis reveals three primary insights: (1) **Employment dominance**: Employment-related factors affected approximately twice as many students as financial factors (approximately 65% vs. 32%), with insufficient time emerging as the single most common withdrawal reasons; (2) **Stability of patterns**: Dropout reason distributions remained remarkably stable across the study period, with no significant year-to-year variations, suggesting consistent underlying mechanisms of student attrition; and (3) **Distinct dropout profiles**: Correlation patterns suggest at least three distinct profiles of withdrawing students operating through different mechanisms and requiring differentiated retention interventions.

5. Discussion

The finding that employment-related factors affect approximately twice as many students as financial factors represents a significant contribution to understanding dropout in institutions serving substantial part-time populations.

This pattern aligns with observation that non-traditional students face unique challenges when traditional pedagogy fails to accommodate their characteristics [9]. The temporal stability of employment factors across seven years, including COVID-19, suggests fundamental structural challenges rather than contextually variable phenomena. This is contrasting with pandemic-related increases found by [11] at South African universities where dropout increased significantly at historically disadvantaged institutions while NSFAS-funded students were typically less impacted.

The negative correlation between time constraints and motivation loss ($\rho = -0.400$) reveals that employment influences dropout through distinct mechanisms. Time-constrained students (30%) face practical impossibility of continuing education despite maintaining academic commitment, aligning with [14] findings that older German students dropped out despite superior academic performance due to competing life responsibilities. Research by [20] also confirmed that credits per month significantly affected MBA dropout rates, suggesting intensity matters for working students. Conversely, students losing motivation after employment (25-30%) question educational value after achieving financial security, with workplace experiences reshaping career trajectories as suggested by [16], [21].

Financial pressures manifest primarily through family care obligations (15-18%) rather than direct educational costs, contrasting with high-tuition contexts. According to [5], economic factors contributed to 44.90% dropout probability in Ecuador versus 32% in the Czech context, reflecting differences in economic stability and support systems. Similarly, [12] suggest that scholarship recipients still showed high withdrawal rates, suggesting financial literacy may be as important as direct assistance. The knowledge applicability gap (8-11%) represents quality judgments about curriculum-workplace alignment, paralleling [3] findings about dissatisfaction with theoretical classes and [15] observations about traditionalist methodologies not meeting expectations.

These patterns suggest three distinct profiles requiring differentiated interventions: Time-constrained working students needing structural accommodations rather than motivational enhancement. Second, post-employment motivation loss in students requiring value proposition clarification through career counseling and alumni success stories as suggested by [10] and [22]. And third, financially-stressed students needing comprehensive support addressing family obligations beyond tuition assistance as demonstrated by [11] and [7].

The remarkable temporal stability enables predictable planning, with [23] demonstrating ARIMA modeling for institutional forecasting and [18] showing Colombia's SPADIES system reduced dropout by 0.7 percentage points at USD 350 per prevented dropout. Advanced analytics increasingly enable early identification, with [17] achieving high accuracy using Random Forest algorithms, [24] developing Cox models predicting both whether and when dropout occurs, and [8] achieving 88% classification accuracy after four semesters using Swiss administrative data. Further, [25] found predictive models were exchangeable across contexts, particularly when incorporating academic performance data.

International comparisons illuminate contextual influences, with Latin American studies documenting stronger economic impacts [1], [26], [27] while European contexts emphasize quality and satisfaction [28], [29].

Several limitations qualify these findings: First, single-institution focus limiting generalizability as noted by [30]. Further, self-reported reasons potentially reflecting post-hoc rationalizations [10]. Limited demographic analysis missing subgroup variations are identified by [31] and [14]. Another limitation is the lack of comparison groups preventing identification of protective factors [32], cross-sectional design limiting causal inference and absence of intervention effectiveness evaluation requiring experimental validation [19]. Attention should be paid to conflation of institutional versus system-level dropout [8]. Future research should employ longitudinal designs, systematic qualitative analysis, and rigorous intervention assessment to advance understanding of working student retention.

6. Conclusion

This study advances understanding of working student dropout through four key contributions. First, it establishes a dual-mechanism employment model showing that time constraints and motivation loss operate as independent pathways rather than related manifestations. Their negative correlation reveals fundamentally different processes, logistical impossibility versus psychological reorientation, requiring distinct theoretical approaches. Second, the research demonstrates that financial pressures operate primarily through family obligations rather than direct educational costs, challenging frameworks focused on tuition affordability and suggesting economic models must incorporate family economic ecosystems. Third, three distinct profiles, time-constrained workers, motivation-challenged employees, and family-obligated students, support multifactorial theoretical approaches conceptualizing dropout as heterogeneous phenomena requiring matched interventions.

Finally, temporal stability across seven years, including COVID-19, suggests dropout patterns represent structural features of the employment-education intersection rather than remediable institutional deficiencies.

These insights translate into differentiated retention strategies. Institutions should develop multiple intervention tracks: Structural accommodations for time-constrained students, career counseling for motivation-challenged employees, and family support for financially-stressed students. Schedule flexibility represents fundamental retention infrastructure, not optional enhancement, particularly when 30% of withdrawals result from time constraints. Career counseling emphasizing long-term degree benefits should be integrated throughout programs to address the 25-30% experiencing post-employment motivation loss, helping students understand career trajectories beyond immediate employment satisfaction. Family support services, emergency childcare, eldercare resources, represent strategic retention investments when family obligations drive 15-18% of withdrawals. Finally, with 8-11% citing knowledge inapplicability, systematic curriculum review incorporating employed students' workplace insights ensures content relevance. These implications suggest that effective retention for working populations requires fundamental restructuring rather than incremental improvements, recognizing that employment-education tensions create structural challenges requiring matched, multifaceted institutional responses rather than uniform retention programs.

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