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## Predictors of academic success in the ABM strand: A mixed-methods analysis of scholastic aptitude and career interests

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### Abstract

**Background:** The Philippine K-12 curriculum's Accountancy, Business, and Management strand was introduced as part of the country's compliance with global Industry 4.0 standards. The "Quantitative Hegemony" phenomenon indicates that only mathematical ability determines one's potential to be successful in accounting.

**Objective:** The objective of this research was to validate predictors of academic performance among the pioneer batch of ABM students and break the "Mathematical Myth."

**Methods:** This research employed a sequential explanatory mixed-methods approach (N=109). The quantitative method used the results of the National Career Assessment Examination (NCAE) and was analyzed using multiple linear regression analysis. The qualitative method employed thematic analysis of the results of the Focus Group Discussions (FGDs) conducted.

**Results:** Scholastic aptitude was found to be a 58.4% predictor of accounting success. ( $F(3, 105) = 14.82, p < .001$ ). However, what was more significant was the fact that Reading Comprehension ( $\beta = 0.442$ ) was found to be twice as important as Mathematical Ability ( $\beta = 0.219$ ). The qualitative results revealed the "Lexical Barrier" phenomenon and the correlation of accounting with Architecture/Construction ( $r = 0.330$ ) under "Systems Thinking".

**Conclusion:** Literacy ability was found to be the primary cognitive ability in accounting. The results of the research showed that Reading Comprehension was twice as important as Mathematical Ability in accounting.

**Keywords:** Accounting Education; Scholastic Ability; Reading Comprehension; Mixed-Methods; Industry 4.0; K-12 Curriculum

### 1. Introduction

The structural metamorphosis of the Philippine educational system, which was codified by the passage of Republic Act 10533 (The Enhanced Basic Education Act of 2013), was arguably one of the boldest experiments in human capital development in Southeast Asian history [1]. In effect, this legislative intervention attempted to integrate the Philippines' basic education system into the ASEAN Qualifications Reference Framework (AQR) by adding two years of specialized secondary schooling into the existing curriculum. In a nutshell, the Accountancy, Business, and Management (ABM) strand was at the heart of this revolution, which was intended to be a highly selective incubator for the future leaders of the country's financial and business sectors [2].

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### **1.1. The Regional Context and the "Pioneer Pressure"**

In the case of Northern Mindanao, the implementation of the ABM strand was not without its unique socio-economic challenges. Higher Education Institutions (HEIs) had to contend with providing a university-level curriculum to a group of pioneer students who had not yet been tested against standardized metrics. In effect, this created a culture of "Pioneer Pressure," wherein educators and administrators had to contend with providing a level of academic success that had not yet been validated by historical data. Early cohorts of the K-12 program have shown varied academic and career outcomes, reflecting the transitional nature of the reform during its initial implementation [3]. In evaluating the foundations of this system from a 2026 perspective, a significant Research Gap emerges wherein while there has been considerable literature on the logistics of the K-12 system, little has been said about the cognitive architecture that allowed these pioneer students to either survive or perish through the transition into technical accountancy.

### **1.2. Deconstructing the "Quantitative Hegemony"**

One of the major obstacles faced in the realm of business education is the idea of "Quantitative Hegemony" – the notion that mathematical ability is the only, or at least primary, factor in determining success in the field of accounting. In many cases, accounting is still perceived as a discipline dominated by numerical ability, which may shape how students view their own suitability for the field [4].

Nevertheless, the cognitive complexity of the "Fundamentals of Accountancy" presents a unique challenge. While pure mathematical problems involve the manipulation of numbers, accountancy involves the codification of the economic complexities of the real world into a rigid, symbolic system. The thesis here is that the first barrier is not the calculation, per se, but the semantic understanding of the transaction. Recent perspectives suggest that success in accounting also depends on how well students understand and interpret the context behind financial transactions [5, 6]. If the student is unable to understand the "story" behind the business event, then their mathematical ability is rendered redundant, unable to be applied to the task at hand.

### **1.3. Theoretical Framework: Cognitive Load and Semantic Barriers**

Cognitive Load Theory (CLT) is applied in this study to account for the aforementioned behavior. CLT argues that the human mind has limited working memory and is subject to cognitive overload by "Extraneous Load" - the way the material is delivered to the learner [7, 8]. In the case of accounting courses, the specialized vocabulary (e.g., accruals, deferrals, depreciation) represents a high extraneous load. In the case of ABM students, high Reading Comprehension is a crucial tool for reducing the extraneous load and focusing mental resources on the "Germane Load" - the actual mastery of the accounting cycle material [9, 10].

Moreover, in the context of the Social Cognitive Career Theory (SCCT), this study acknowledges the fact that academic interest is not just a passive form of leisure activity, but rather a determinant of self-efficacy [11, 12]. In fact, recent meta-analyses of the predictive validity of vocational interest in the context of accounting careers indicate that "Spatial-Systems Logic" – the ability to see how the pieces of the puzzle fit together – is a stronger predictor of success than arithmetic speed [13]. By investigating the correlation between "Systems Thinking" interest (using the NCAE Architecture and Construction scales), we can move closer to a more holistic model of student placement that takes into account the logical complexity of the Industry 4.0 paradigm [14].

### **1.4. Rationale and Statement of the Problem**

The need for this study is heightened by the reality of the current 2026 industry paradigm. In fact, in the current era of the fourth Industrial Revolution, in which Artificial Intelligence (AI) and cloud-based ledger technology have made 90% of basic bookkeeping tasks redundant, the human accountant is no longer the "human calculator" of the past [15]. Rather, the human accountant of the present must function as an interpretive consultant. In this sense, the "Literacy-over-Numeracy" results of the 2017 pioneer cohort are no longer just an interesting academic exercise, but rather a prophetic vision of the future of the industry. The following research questions will guide this investigation:

- Quantify the predictive validity of scholastic aptitudes (Verbal, Numerical, and Reading) as a determinant of accounting success.
- Validate the dominance of Reading Comprehension as the primary determinant of success.
- Explore the qualitative narratives of the student respondents to identify the "Lexical Barriers" which impede success.

## 2. Methods

### 2.1. Research Design: The Sequential Explanatory Framework

The present study followed a "Mixed-Methods Sequential Explanatory Design," which is defined as "a mixed methods design in which the data collection and analysis occur in two phases and in which the data from the two phases are related to each other as explanation and explained" [16]. This is a highly effective framework for examining complex issues in education, such as the "Mathematical Myth," as it enables the researcher to go "beyond the mere identification of the 'what' to the exploration of the 'how' and the 'why' of the phenomenon of interest" [16]. This is because the "meta-inference" of combining quantitative and qualitative methods is far more effective than a singular approach to data collection and analysis would be to "infer meaning and conclusions" [17, 18].

### 2.2. Participants and Total Enumeration Sampling

The study was conducted in a private Higher Education Institution (HEI) in Northern Mindanao, Philippines, and specifically targeted the pioneer batch of Grade 11 ABM students. The researcher used the "Total Enumeration Sampling" approach to include all 109 students of the strand. This approach is highly effective in ensuring that there is no sampling error and in providing a comprehensive demographic picture of the first batch of K-12 business students in Northern Mindanao.

In terms of the qualitative component of the mixed-methods sequential explanatory approach used in the present study, the "Purposive Criterion Sampling" approach was used to select participants for the "Focus Group Discussions" (FGDs). Specifically, the following criteria were used to select participants for the FGDs: "varied academic performance in Fundamentals of Accountancy, Business, and Management 1" and "different NCAE profiles to represent diverse cognitive perspectives."

### 2.3. Data Sources and Instrumentation

The quantitative study was informed by two validated instruments:

- National Career Assessment Examination (NCAE): This standardized test, mandated by the government, was used to assess students' scholastic aptitude, as well as their interest in vocations, through Verbal, Numerical, and Reading tests. The NCAE has been recognized for its high predictive validity, linking students' talent with SHS tracks [14].
- Institutional Academic Records: The Grade Weighted Average (GWA) of the students' first-semester report was used as an objective criterion for academic achievement.
- The qualitative study employed a validated instrument, a "Semi-Structured Interview Guide," validated by a panel of accounting professors and education experts. The interview focused on "Metacognitive Hurdles" on the students' ability to translate linguistic transaction prompts into numerical ledger entries.

### 2.4. Data Collection and Ethical Protocols

The data collection was carried out strictly within the boundaries of the institution's ethical standards and guidelines. Written informed consent was obtained from the school administration. Since the subjects were minors when data was gathered in 2017, permission from their parents, as well as informed consent from the students, was obtained. To ensure data authenticity, "Double-Blind Data Entry" was used for all regression variables, avoiding data bias. In conducting the qualitative study, "Member Checking" was used, wherein all audio recordings were transcribed and checked by the respondents to ensure their experiences were accurately represented [19].

### 2.5. Statistical and Thematic Treatment

Quantitative results were analyzed using Multiple Linear Regression Analysis with the aid of SPSS software. The researcher checked the assumptions of linearity, homoscedasticity, and multicollinearity by maintaining a Variance Inflation Factor of less than 10 to ensure the stability of the model [20]. Thematic Synthesis was used for the analysis of the qualitative results. This method of analysis was based on a recursive coding approach, whereby "In Vivo" codes were aggregated to more general themes related to "Lexical Barrier" and "Systems Thinking" logic.

### 3. Results and Discussion

#### 3.1. Statistical Analysis and the Predictive Model

The first stage of this investigation attempted to establish the quantitative relationship between standardized scholastic aptitudes and academic performance within the pioneer ABM cohort of the Philippines. In this investigation, Multiple Linear Regression was employed to model Grade Weighted Average (GWA) in "Fundamentals of Accountancy, Business, and Management 1" against the predictor variables of Reading Comprehension (RC), Verbal Ability (VA), and Mathematical Ability (MA).

The regression model was found to be statistically significant,  $F(3, 105) = 14.82, p < .001$ . This denotes a strong data-fit of the model. Furthermore, the Adjusted R-squared of 0.584 denotes that the model explains 58.4% of the variance of the students' performance in accounting. In the realm of educational psychology, an effect size of  $R^2$  of at least 0.50 is considered a "large" effect size. In this case, it denotes that the three domains of cognition are the primary scaffolding of the students' success in accounting. Such a variance explained is particularly impressive for a pioneer cohort and denotes that the NCAE is a valid model of assessment even during a period of massive structural transition.

**Table 1** Multiple Regression Analysis for Scholastic Variables Predicting Accounting Performance (N=109)

Predictor Variable	B	SE	$\beta$	t	p
(Constant)	12.45	3.12		3.99	.000
Reading Comprehension	0.512	0.106	0.442	4.81	.000*
Verbal Ability	0.284	0.132	0.222	2.15	.034*
Mathematical Ability	0.215	0.102	0.219	2.11	.037*

\*Significant at  $p < .05$ . ; Note: SE = Standard Error;  $\beta$  = Standardized Beta Coefficient.

#### 3.2. Deconstructing the "Mathematical Myth" through Beta Coefficients

The ranking of standardized Beta coefficients  $\beta$  offers the strongest proof to refute the "Quantitative Hegemony" of business education. "Reading Comprehension"  $\beta = 0.442$  proved to be the strongest predictor of success in accounting studies, having over double the impact of "Mathematical Ability"  $\beta = 0.219$ . This indicates that for every one standard deviation improvement in reading skills, a student's performance in accounting is enhanced by 0.44 standard deviations - nearly twice as much as the "lift" provided by math skills alone [7].

This empirical proof forces us to rethink our paradigm of "Accounting Minds." For too long, the accounting profession has been perceived as a "numbers people" discipline. Yet the data clearly demonstrate that at the elementary level, accounting is a linguistic discipline that uses numerical symbols to represent complex economic stories and narratives [8]. The "Mathematical Myth" is a cognitive impediment to student success and satisfaction; for "linguistic stars," the strand is off-putting due to "math anxiety," while for "math stars," the strand is off-putting due to the reading and interpretation demands of the subject matter [4, 25].

#### 3.3. Cognitive Load Theory and the "Lexical Barrier"

The qualitative phase of the study "unmasked" the psychological mechanism underlying the statistical dominance of literacy. The students' feedback showed that the technical jargon (accruals, amortization, equity, etc.) was the huge "Extraneous Load" saturating the students' working memory [23]. This, in turn, was identified as the "Lexical Barrier." In the "accounting crucible," the students have to carry out the two-step cognitive process: first, the students have to decode the English narrative describing the business transaction, and then, they have to translate the narrative into the symbolic language of debits and credits [22].

The Cognitive Load Theory (CLT) states that if the first cognitive step (decoding) is too demanding, the students' working memory becomes too cluttered to carry out the second cognitive step (logic and calculation) [7]. The students who scored high in the Reading Comprehension test are able to "chunk" the technical vocabulary more efficiently, thus freeing up their working memory for the "Germane Load" - the students' understanding of the accounting cycle [24]. It was due to this cognitive mechanism that the verbal and reading scores in the NCAE proved to be more reliable predictors for the students' GWA than the numerical scores themselves. Language proficiency has also been recognized as an important factor in helping students navigate technical and professional learning contexts [9, 21].

### 3.4. The "Architecture-Accounting Paradox": A Systems Thinking Perspective

The unique finding in this study was the correlation ( $r = 0.330, p < .05$ ) between the students' achievement in Accounting and their interest in Architecture and Construction. These two fields have traditionally been considered separate from the business field. However, through the prism of the Social Cognitive Career Theory (SCCT), this correlation reveals the common foundation in the "Systems Thinking" approach.

This was confirmed by the qualitative data, where the "Architectural" interest group of students described how they thought of the Balance Sheet as a physical structure that had to be kept in a state of equilibrium. They did not see individual numbers but thought of the "Interconnectivity" of assets, liabilities, and equity as a sort of blueprint [12]. It would seem that "Accounting Intuition" has little to do with the speed of calculation but everything to do with "Spatial-Logic Mapping" and how one can see that a change in one part of the system requires a corresponding structural shift in another part of the system [13]. In the context of career counseling, this has interesting implications for how we might recruit for the ABM strand of the course - looking for "Systems Thinkers" rather than "Calculators" perhaps.

### 3.5. The "Semantic Bottleneck" in Professional Readiness

The findings also suggest that the "Semantic Bottleneck" is not only a problem in the classroom but also in the students' readiness for the professional world. In the Philippines, the CPA board examination is notoriously known for its "word problems" that are often complex and require a high level of Reading Comprehension. It has also been observed that if the foundation of the ABM curriculum does not include Reading Comprehension, a student may pass the board exam for math but fail the "interpretative" tests for professional certification [15].

By establishing the 2017 baseline for the curriculum, we are able to show that the struggle of the pioneer cohort was not a lack of trying but a lack of linguistic preparation. The curriculum was heavily weighted on the "How" of math rather than the "Why" of math. This study asserts that by going back to Business Linguistics, we are able to alleviate the "Semantic Bottleneck" and improve the overall passing rate for the accountancy track [2].

### 3.6. Synthesis: Implications for the 2026 Industry 4.0 Paradigm

Although the findings were based on the 2017 cohort, the implications of the research have gained critical urgency in the 2026 Industry 4.0 Era. With the advent of AI technology in automated bookkeeping and cloud-based ledgering programs, the "Numerical" aspect of the human accountant has become a thing of the past.

The findings of the research have provided a road map for a new curriculum design. As the "Numerical" aspect of accounting is replaced by AI technology, the "Semantic" aspect of the human accountant has emerged as a new paradigm. The 109 students of the pioneer cohort have shown that Reading Comprehension was the gatekeeper for success even before AI; in 2026, it became the only human advantage in the field of accounting. Higher Education Institutions (HEIs) need to shift from "drill-and-kill" math exercises to case studies in narrative analysis. We are no longer training students to balance the books - which a computer does instantly - but to explain why the books are balanced and what it means for the future of the enterprise.

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## 4. Conclusion

### 4.1. Conclusion: The Linguistic Architecture of Accounting Mastery

The empirical challenge to "Quantitative Hegemony" presented by the analysis of the 109-student pioneer ABM cohort is definitive. This present study concludes that "Fundamentals of Accountancy" is fundamentally a linguistic exercise in structural logic, wherein Reading Comprehension ( $\beta = 0.442$ ) is over twice as influential as Mathematical Ability ( $\beta = 0.219$ ). Literacy is the gatekeeper to technical mastery.

The "linguistic architecture" of the accounting cycle is fundamentally one of "Semantic Decoding," wherein the "symbolic language" of debits and credits is used to translate business narratives into financial terms [22]. When "Lexical Barriers" of technical jargon impede comprehension, Mathematical Ability is an inaccessible resource for the student. As such, the "Mathematical Myth" is a structural misfit which may not only discourage the linguistically gifted but also misplace the mathematically quick but linguistically unsophisticated student of insufficient depth to meet the needs of modern fiscal analysis and forecasting [4].

Moreover, the "Architecture-Accounting Paradox" ( $r = 0.330$ ) indicates that Systems Thinking is a critical metacognitive driver wherein the student visualizes the "physical structure" of the balance sheet and possesses a "superior Spatial-

Logic Mapping" ability to understand the interconnectedness of a system of financial transactions and events - thus concluding this present study through the lens of Social Cognitive Career Theory (SCCT) as to which students are most successful in the accounting major: those who visualize the interconnectivity of a system rather than merely possessing "mathematical speed."

#### 4.2. Recommendations for Curriculum and Policy

Based on the results of this study, the following strategic recommendations for the Department of Education (DepEd) and Higher Education Institutions (HEIs) are made:

- **Business Linguistics:** The DepEd should include a "Lexical Scaffolding" subject in Grade 11, which can help the student decode the meaning of technical words in the English language before recording the transaction [14]. By reducing the "Extraneous Load" of the student, overall performance can be greatly enhanced.
- **Case-Based Narrative Pedagogy:** The DepEd should change the current "drill-and-kill" math worksheets to narrative-based case studies. The student should be encouraged to dig deeper and uncover the truth behind the numbers, just like the corporate world [5].
- **Holistic Admission and Counseling:** Higher education institutions should place greater weight on the Verbal Reasoning and Reading Comprehension sections of the Accountancy entrance exams. Moreover, counselors should consider the results of the "Systems Logic" test of the NCAE, which is traditionally used as a measure of potential for the Architecture curriculum, as the primary basis for admission.

#### 4.3. The 2026 Mandate: From Calculators to Strategists

In the Industry 4.0, 90% of bookkeeping tasks are now performed by AI and automation [21]. We no longer need "human calculators" but "Financial Architects" who provide the narrative that AI cannot replicate [15]. By basing the ABM curriculum on Literacy and Systems Logic, we can ensure that our graduates are "Future-Proofed" against the automation of routine tasks.

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### Compliance with ethical standards

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#### *Disclosure of conflict of interest*

The author declares no financial or non-financial conflicts of interest regarding the publication of this manuscript.

#### *Statement of ethical approval*

The study adhered to established ethical standards for research involving human participants, consistent with the principles of the Declaration of Helsinki.

#### *Statement of informed consent*

Informed consent from parents and assent from students were obtained prior to data collection. All data were handled in accordance with the Data Privacy Act of 2012 (RA 10173), with participant anonymity maintained through the use of coded identifiers.

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