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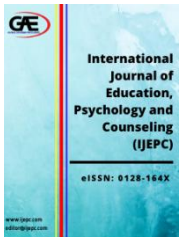

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INTERNAL FACTORS DRIVING LEARNING OUTCOMES IN BUSINESS EDUCATION SCALE: EXPLORATORY FACTOR ANALYSIS

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Abstract:

Understanding the internal factors that influence students' learning outcomes in business education is crucial and should be prioritized from the secondary school level to ensure the development of high-quality human resources. Currently, there are not many reliable ways to measure this. To address this need, the study aims to investigate the internal factors that affect students' learning performance in business subjects and to assess the construct validity and reliability of the measurement instruments using Exploratory Factor Analysis (EFA) and Cronbach's Alpha. Data were collected from 126 secondary school students in Miri, Sarawak, Malaysia, to refine and validate the measurement scale. Accordingly, the EFA results revealed well-defined underlying factors, while Cronbach's Alpha values indicated acceptable reliability levels, confirming the validity and consistency of the constructs. Overall, these findings provide a foundation for further empirical studies on the influence of these factors on students' learning outcomes in business education.

Keywords:

Internal Factors; Business Education; Exploratory Factor Analysis

Introduction

In the 21st-century learning era, business education plays a vital role in imparting foundational knowledge to students and in developing essential soft skills, such as creativity, innovation, leadership, and problem-solving, that are crucial in the modern world of entrepreneurship. It

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also helps to foster the readiness, skills, and attitude necessary for entrepreneurship in initiatives aimed at developing future human capital (Suparno et al., 2025; Talukder, Lakner, & Temesi, 2024).

However, education has become a global concern among educators due to students' learning performance. Notably, students' learning outcome is an important indicator in evaluating the quality of education worldwide, as the effectiveness of a country's education system is often measured through the academic achievement of its students. Following this, learning performance is one of the main ways for students to discover their abilities, talents, and skills at school. For instance, Usman, Ali and Ahmad (2023) stated that learning performance plays a critical role in determining a student's future development since good academic performance is essential for students who aim to pursue excellent and high-performing careers (Aljaffer et al., 2024).

To improve performance and learning outcomes, close gaps, and help students realize their full learning potential, educators, legislators, and institutions must have a thorough understanding of students' internal determinants (Syamsul, Musa, Akib, Najamuddin, & Rahmatullah, 2023) (Suleiman et al., 2024; Wang & Chen, 2024). According to earlier studies, students' learning outcomes are greatly influenced by both internal and external factors. Correspondingly, the key determinants of student learning success continue to be investigated to identify the relationships and contributing factors that influence learning outcomes. Notably, the study by Zafeer, Maqbool, Rong and Maqbool (2024) examined school-related factors to better understand how internal school elements influence science students' learning outcomes and to investigate the relationship between these internal factors and academic achievement. Similarly, peer and family support factors for learning have the strongest impact on students' learning performance (Hu, Jiang, & Bi, 2022). Only a few studies, however, have concurrently examined these elements in the context of Malaysian secondary schools, specifically in business education. In response, teachers and legislators can create interventions and curricula that improve student learning outcomes and experiences by better understanding these contributing factors.

Every student has internal factors such as interest, motivation, and self-concept that can impact their learning outcomes (Syamsul et al., 2023). Although the significance of internal factors for students is widely recognized at the university and diploma levels, research at the school level is lacking (Gunasaigaran & Sahid, 2024). Only a few studies have been published in the past five years. In line with this, there is a noticeable gap in the existing research on business learning at the secondary school level. Moreover, a limited amount of research is available on the most trusted databases in the academic world, such as Web of Science (WoS) and SCOPUS, which are frequently updated and contain the latest articles regarding business education, especially at the secondary school level. In addition, research in the field of business education remains limited since the subject was introduced in 2017 as a replacement for the commerce subject at secondary school in Malaysia. Nonetheless, secondary education is just as crucial as higher education in shaping a student from the very beginning for future academic success.

Different nations have employed distinct strategies to support entrepreneurship education and ecosystems within their respective global environments. With a successful ranking of 44th in the Global Innovation Index and 59th in the global startup ecosystem, Vietnam, for instance, has asserted its position as a leader in promoting creative dynamism in Southeast Asia,

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attributed to its proactive government policies and strategic initiatives (Ngo et al., 2025). On the other hand, Indonesia continues to encounter difficulties, as only 3.4% of its population has an entrepreneurial mentality (Wardana, Narmaditya, Wibowo, Saraswati, & Indriani, 2021). To address this issue, the Indonesian government launched a student entrepreneurship program that prioritizes accelerating startup enterprises, particularly those in the digital sector, building capacity, and providing funding (Iskandar & Said, 2021). Malaysia, on the other hand, is adopting a different strategy through the Ministry of Higher Education (MOHE), which encourages colleges to incorporate entrepreneurship into regular courses and extracurricular activities in addition to offering academic entrepreneurship programs. This endeavor is being conducted in accordance with the National Entrepreneurship Policy 2030 (MEDAC, 2023), placing a strong emphasis on young people developing an entrepreneurial attitude.

However, to foster innovative thinking, risk-taking, and an interest in business, entrepreneurship education should also be emphasized from the secondary school level. An emphasis at this level enables students to develop crucial soft skills such as leadership, communication, and problem-solving that are essential for success in today's entrepreneurial landscape. Essentially, students of commerce must demonstrate proficiency in applying their academic understanding to real-world problems, such as financial assessments, company scenarios, and case studies. According to this viewpoint, factual knowledge, critical thinking, and problem-solving abilities are all components of academic success (Vineeta, 2025).

Additionally, students who gain a strong entrepreneurial foundation during secondary education are better equipped to pursue this field at a higher level. Such early exposure ensures continuity of entrepreneurial aspirations and objectives from school to university, thus fostering a smoother transition to further studies. Moreover, this continuity increases the potential for self-employment after graduation, increasing the employability and marketability of business and entrepreneurship graduates, and ultimately contributing to the country's economic growth.

Prior research has integrated Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) with a focus on digital skills and 21st-century learning innovations, as well as the development of a comprehensive psychometric tool that examines the psychological components of entrepreneurship among postsecondary students. Concurrently, employing an entrepreneurial paradigm, the EFA instrument has been utilized to assess active learning techniques as well as internal and external elements of entrepreneurial student growth (Dirgatama, 2024; Farradinna, Syafitri, Herawati, & Jayanti, 2023; Rahman, Sahid, & Nasri, 2023; Saifuddin, Janudin, & Salleh, 2023). Each study indicates diversity in the construction and validation of instruments using EFA. Furthermore, foreign studies focus on university contexts (digital skills and psychology), while local studies focus on secondary schools and active learning approaches or entrepreneurial models.

A notable research gap is the absence of international instruments that directly incorporate internal factors, such as attitudes, motivation, and self-concept, at the secondary school level. This opens up new research space for the development of more comprehensive local instruments.

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Building on this, although existing instruments study several internal factor variables such as attitude, interest, motivation, and self-concept, they only examine their role separately. These factors must be combined to obtain a more comprehensive understanding of their impact on student performance in the context of business education. In addition, the availability of instruments is noticeably lacking, particularly for evaluating the internal factors of students in the context of business education at the secondary school level. Consequently, this gap underscores the need for a targeted, validated tool that assesses the internal factors of students in business education. Therefore, to address this gap, the present study aims to investigate the validity and reliability of the measurement instruments using EFA and Cronbach's Alpha in assessing the internal factors of students influencing the learning performance within the context of business education.

Literature Review

The literature review will cover four topics: student attitude, motivation, interest, and self-concept, which impact students in business courses.

Internal Factors

Student learning theory is built from traditional educational theories such as constructivism and Bandura's social learning theory. Internal factors of students can be linked to learning theories, as these theories explain how individual cognitive processes and behaviors are influenced by these internal factors in shaping learning outcomes. For example, constructivist theory emphasizes that students actively construct knowledge based on their own experiences and interests. Conversely, Bandura's social cognitive theory explains that self-efficacy and intrinsic motivation play a crucial role in determining the extent to which students are engaged and strive to achieve success. Therefore, internal factors of students become an important basis that influences the way they process information, adapt learning strategies, and subsequently determine the level of academic achievement. At the same time, student learning is significantly influenced by internal aspects of learning, such as motivation, interest in learning, and self-concept (Syamsul et al., 2023). When students are driven by internal factors such as attitude, interest in learning, motivation, and a positive self-concept, they will be able to improve their learning performance. Moreover, the internal factors that originate within the student are crucial elements in the learning process and can enhance student achievement. Therefore, this study utilizes the variables of attitude, interest, motivation, and self-concept to investigate the influence of internal factors on the learning performance of business students.

Student Attitude

A person's emotions and reactions to particular people, groups, things, or events are influenced by their attitudes, which are created by internal pressures, learned habits, and external influences. This is also true in the field of education, where specific conditions also have an impact. While attitudes can be formed through methods such as formal conversations, teaching ideals, participating in extracurricular activities, and adhering to school cultural norms, they can also be expressed through the imitation of models, sentiments, and experiences (Ismail, Ghazali, Latif, Maromar, & Man, 2020). In addition, a student's positive or negative view can influence their preferences for a physical activity. The study also reported that attitude factors influence students' academic learning outcomes, students' course engagement as they correlate with students' academic learning achievement ((Ernawati et al., 2022). Consistent with this, previous research has identified a significant and positive relationship between student attitudes and learning performance (Kaliappan & Abdul Jalil, 2023).

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Student Interest In Learning Business

Interest is a strong affection that comes from within a person. Students who exhibit enthusiasm in learning, as evidenced by enjoyment, curiosity, interest, and attentiveness, are more likely to desire participation in science classes, which is crucial for effective learning (Ernawati et al., 2022). Furthermore, research reveals that interest in learning strongly supports and influences the way teaching and learning are conducted in schools, ultimately contributing to the achievement of instructional objectives in a given subject. In the context of Business Studies, the factor of student interest warrants deeper investigation to ensure that teaching and learning objectives are successfully achieved in the classroom and beyond. This is particularly true when students are required to complete assignments independently at home or collaboratively with peers.

Motivation

Both internal and external motivation have a significant impact on students' learning engagement. For example, motivated students tend to perform better and are more resilient when faced with obstacles. The main source of their motivation is their desire to learn and achieve. Both perceived and real academic success are more likely to be attained by students who exhibit a high level of intellectual interest (Rožman, Vrečko, & Tominc, 2025). Moreover, high-achieving students were noted to be more motivated and socially supported than their peers (Aljaffer et al., 2024). Local studies have demonstrated that motivation is a crucial factor in determining student achievement in business subjects, particularly in secondary schools in Malaysia. Most discussions on business learning motivation are limited to college and middle school students, with a notable lack of studies on high school students (Jiao & Liang, 2022). Thus, this study is crucial to identify appropriate instruments to measure the motivation of business students in secondary schools.

Student's Self-Concept

According to Maalip et al. (2020), the development of self-concept among students is a growing concern. This is mainly due to the fact that students are often passive and have a low self-concept, which negatively impacts their academic achievement at school. Generally, students with high academic self-concept tend to achieve good academic performance. Good academic performance can contribute to a high academic self-concept (Roth, Conradty, & Bogner, 2022). Hence, a positive self-concept in students is crucial for academic achievement in school and for facing future educational challenges.

Methodology

To address the research objectives, this study employed a quantitative research design, complemented by appropriate data analysis methods. Descriptive statistical analysis was applied to provide an objective, outcome-based approach. This method also helps reduce the likelihood of bias and facilitates the direct interpretation of the collected data. Furthermore, to ensure the study's validity, face validity was reviewed by experts in business and entrepreneurship education, and content analysis was conducted to align the questionnaire items. A pilot study was also conducted to investigate internal factors affecting students in business subjects at secondary schools in Malaysia. The quantitative data were collected using a self-administered questionnaire, where students answered all questions independently without the researcher's presence (Hair, Black, Babin, & Anderson, 2019). Correspondingly, a total of 126 students aged 17 years old (60 male and 66 female students) were selected using proportionate stratified random sampling based on school type (urban and rural), followed by

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simple random sampling. This approach helped ensure balanced representation, which increased the validity and generalisability of the findings. Simultaneously, the ethical approval for the study was granted by the Educational Policy Planning and Research Division of the Ministry of Education Malaysia (KPM) (Approval Ref: KPM. 600-3/2/3-eras (22972). Additionally, the participants were informed of the right to withdraw from the study at any time without consequence.

The questionnaire is distributed through face-to-face distribution with the help of the subject teacher at the selected schools. However, only complete and valid responses were included in the analysis. Remarkably, all 32 items in the questionnaire were answered with no blank responses, allowing for the use of all items in the EFA. According to Krejcie and Morgan (1970), the sample size for factor analysis depends on the number of variables and the sample-to-variable ratio, which is usually 5:1 or 10:1. A minimum of 100 respondents is generally recommended. Since this pilot study involves four variables, a sample size of more than 100 is considered sufficient. Ultimately, a total of 130 questionnaires were distributed, and 126 valid responses were collected, which meets the required sample size.

Research Instrument

The main research instrument used in this study was a questionnaire with items adapted from previous studies. The internal factors were measured using 31 items adapted from previous studies (Abu Bakar, Mansor, Batmanathan, & Rashed, 2021; Isman, Inanc, & Cotok, 2023; Kaliappan & Abdul Jalil, 2023; Sellvaraju, 2018). In particular, a 7-point Likert scale was used in the questionnaire, where one represented 'strongly disagree' and seven represented 'strongly agree.' The questionnaire consisted of 31 items in total and was designed to examine internal factors influencing students' performance. The use of questionnaires helped simplify data collection, reduce bias, and enable the collection of demographic data (Part A), business subject performance (Part B), and internal factors such as attitude, interest, motivation, and self-concept (Part C). The researchers created these items based on expert judgments and theories for each of the research constructs. Table 1 presents more details about the 31 items.

Table 1: Items In The Questionnaire

Construct	Construct Code	Measurement	Source
Student's Attitude	CS1	I consistently pay close attention during the teacher's lessons.	
	CS2	I always strive to fully comprehend the topics delivered by the teacher.	
	CS3	I am able to understand the teacher's explanations more effectively when I stay focused.	
	CS4	I am mentally prepared to learn whenever the Business Studies teacher enters the classroom.	
	CS5	I ensure that I am well-prepared before any test begins.	
	CS6	I frequently ask the teacher questions in class regarding concepts I do not understand.	
	CS7	I revise on my own initiative even when the teacher does not assign revision tasks.	

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Construct	Construct Code	Measurement	Source
	CS8	I regularly complete additional exercises to enhance my academic performance in Business Studies.	
	CS9	I am diligent in completing Business Studies assignments either at school or at home.	
Students' Interest	CMi1	I enjoy the subject of Business Studies.	(Sellvaraju, 2018)
	CMi2	I have many reference books related to Business Studies.	
	CMi3	I like Business Studies classes because they include many enjoyable learning activities.	
	CMi4	I willingly participate in the lessons conducted by the teacher.	
	CMi5	I enjoy visiting the school resource center to find Business-related reading materials.	
	CMi6	I like doing additional exercises for each topic in Business Studies.	
	CMi7	I enjoy completing Business Studies assignments.	
Motivation	CMo1	I am always enthusiastic about learning Business Studies.	(Abu Bakar et al., 2021; Isman et al., 2023)
	CMo2	I am capable of mastering the subject of Business Studies.	
	CMo3	I will continue to study consistently to improve my performance.	
	CMo4	I feel highly motivated when the teacher uses interesting teaching aids.	
	CMo5	I complete every task assigned by the teacher with full commitment.	
	CMo6	I complete every task assigned by the teacher to enhance my understanding.	
	CMo7	I am highly motivated to study Business Studies diligently.	
	CMo8	I make an effort to understand new business-related facts.	
	CMo9	Failure often motivates me to try harder.	
Self-Concept	CK1	I consistently revise the subject of Business Studies.	(Kaliappan & Abdul Jalil, 2023)
	CK2	I will ask my classmates if I do not understand the assignments given in class.	
	CK3	I am confident to ask the teacher if I do not fully understand what is being taught.	
	CK4	I often have ideas or opinions that are different from others.	
	CK5	I often reflect on my own attitudes and behavior.	
	CK6	I do not feel confident in sharing my interests with others.	

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Expert Content Validation

Validity refers to the extent to which the items used in a questionnaire accurately measure the intended construct or variable and support the study's objectives. Instrument research was adapted from earlier studies. Therefore, pilot tests were conducted to confirm the changes in the instrumental studies and make them suitable for this research. Prior to conducting the pre-test, the researcher completed the content validation stage by employing the Content Validity Index (CVI) to assess the items used in exploring the internal factors affecting business students' learning performance. Accordingly, five experts, senior lecturers and teachers with skills and experience in the related field, were invited to evaluate how well the instruments cover all relevant parts of the variable and provide feedback. This confirms the appropriateness of items for exploring the internal factors affecting business students' learning performance. Additionally, the validity of the content is examined in terms of the language, structure, and a set of items sufficient to measure the study's arrangement and concepts. The expert also provided feedback on several questions that should be revised and rephrased to prevent two-tier questions. Following this phase, the researcher made adjustments to the items based on feedback provided by the expert panel.

Exploratory Factor Analysis

One popular statistical method in the social sciences is EFA. An EFA was conducted to obtain evidence regarding the measure's construction (Farradinna et al., 2023). Note that there are no inferential statistics in the exploratory design of EFA. It was created and remains best suited for investigating a set of data. CFA is the next step after developing an instrument with EFA and other methods. EFA is useful for exploring the underlying dimensions or components in this research. Researchers should apply the EFA method when adapting instruments from earlier studies and modifying statements to align with findings from current investigations. Moreover, it is typically employed in the early stages of scale development when the data structure has not yet been established. In this study, EFA has guided research on constructs such as interest, attitude, motivation, and self-concept. Therefore, EFA can uncover hidden dimensions and strengthen the measurement instruments' validity and reliability.

The present research utilized Statistical Package for Social Sciences (SPSS) version 29 for construct validation through a pilot study. Accordingly, EFA was conducted using SPSS software to identify underlying structures, followed by reliability testing through Cronbach's Alpha. This includes assessing a scale's ability to measure the desired dimensions and collect the necessary data for evaluation, which requires construct validity. Correspondingly, the information was analyzed using statistical techniques, including Cronbach's Alpha and EFA. The items used to evaluate the concepts in the research context were assessed for correctness and applicability using EFA (Ličen, Cassar, Filomeno, Yeratziotis, & Prosen, 2023). Prior to analyzing the EFA results, it is also crucial to evaluate the data using the Kaiser-Meyer-Olkin (KMO) test to examine whether the KMO value exceeds 0.6. Meanwhile, Bartlett's Test of Sphericity ensures a p-value below 0.05, confirming that it is appropriate to undertake EFA. Specifically, KMO and Bartlett's Test of Sphericity are used to determine the appropriateness of items for factor analysis. In essence, the KMO test is employed to assess if items are suitable for factor analysis. The goal of factor analysis in statistics is to identify underlying factors that explain the relationship between two or more variables. At the same time, the KMO test was also performed to ascertain the multicollinearity of the elements in this instrument. Notably, multicollinearity is a metric that assesses whether two or more elements that measure the same

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thing are related. The Bartlett test of Sphericity, on the other hand, determines whether there is a connection between items to assess the correlation between variables.

Factor loadings serve as the main EFA metric. Hair, Black, Babin and Anderson (2010) revealed that an item accurately represents the dimension or construct being measured when its factor loadings exceed the 0.5 criterion. According to Sekaran and Bougie (2016), internal consistency refers to the extent to which study items align with the designated concept. Following this, Cronbach's Alpha values, which range from 0 to 1, indicate higher reliability.

Results

Descriptive Statistics Of The Constructs

The descriptive findings of the questionnaire items measuring the constructs of students' attitude, interest, motivation, and self-concept are presented in Table 2. The mean for each item ranges from 4.05 to 6.16. The mean values are within the ranges for a Likert scale, indicating an adequate spread of responses across different items. Meanwhile, the standard deviation values, ranging from 0.766 to 1.548, are also within acceptable ranges, reflecting moderate variability among respondents' responses.

Table 2: Descriptive Statistics For The Items

Item	Statement	Mean	Standard Deviation
Student's Attitude			
CS1	I consistently pay close attention during the teacher's lessons.	5.74	0.973
CS2	I always strive to fully comprehend the topics delivered by the teacher.	5.83	1.026
CS3	I am able to understand the teacher's explanations more effectively when I stay focused.	5.84	1.189
CS4	I am mentally prepared to learn whenever the Business Studies teacher enters the classroom.	5.79	1.022
CS5	I ensure that I am well-prepared before any test begins.	5.45	1.025
CS6	I frequently ask the teacher questions in class regarding concepts I don't understand.	5.08	1.197
CS7	I take the initiative to revise even when the teacher does not assign revision tasks.	4.60	1.194
CS8	I regularly complete additional exercises to enhance my academic performance in Business Studies.	4.67	1.206
CS9	I am diligent in completing Business Studies assignments, whether at school or at home.	5.52	1.115
Students' Interest			
CMi1	I enjoy the subject of Business Studies.	5.94	1.090
CMi2	I have many reference books related to Business Studies.	4.29	1.283
CMi3	I like Business Studies classes because they include many enjoyable learning activities.	5.56	1.047
CMi4	I willingly participate in the lessons conducted by the teacher.	6.00	0.980

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Item	Statement	Mean	Standard Deviation
CMi5	I enjoy visiting the school resource center to find Business-related reading materials.	4.05	1.548
CMi6	I like doing additional exercises for each topic in Business Studies.	4.86	1.361
CMi7	I enjoy completing Business Studies assignments.	5.66	1.234
Motivation			
CMo1	I am always enthusiastic about learning Business Studies.	5.84	0.958
CMo2	I am capable of mastering the subject of Business Studies.	5.19	1.178
CMo3	I will continue to study consistently to improve my performance.	5.96	0.924
CMo4	I feel highly motivated when the teacher uses interesting teaching aids.	6.16	0.898
CMo5	I complete every task assigned by the teacher with full commitment.	5.51	1.064
CMo6	I complete every task assigned by the teacher to enhance my understanding.	5.74	1.021
CMo7	I am highly motivated to study Business Studies diligently.	5.48	1.129
CMo8	I make an effort to understand new business-related facts.	5.77	1.082
CMo9	Failure often motivates me to try harder.	5.90	1.094
Self-concept			
CK1	I consistently revise the subject of Business Studies.	5.19	1.134
CK2	I will ask my classmates if I don't understand the assignments given in class.	6.03	1.011
CK3	I am confident to ask the teacher if I don't fully understand what is being taught.	5.77	1.214
CK4	I often have ideas or opinions that are different from others.	4.97	1.400
CK5	I often reflect on my own attitudes and behavior.	5.90	1.365
CK6.1	I do not feel confident in sharing my interests with others.	5.26	0.766

Kaiser-Meyer Olkin (KMO) and Bartlett's Tests

The KMO and Bartlett's test results for the various factors in the study indicate that all factors have KMO values between 0.654 to 0.844. Specifically, the KMO values are as follows: 0.765 for students' attitude, 0.844 for students' interest, 0.813 for motivation, and 0.654 for self-concept. Table 3. Conversely, a KMO value between 0.70 and 0.79 is considered "middling," 0.80 and 0.89 is considered "meritorious," whereas a KMO value greater than 0.90 is considered "marvelous." Therefore, students' interest and motivation reach the "meritorious" level, except for the remaining two factors, such as students' attitude and self-concept, which fall into the "middling" category. Additionally, all Bartlett's test of sphericity significance (Sig.) values are 0, further indicating that the correlation matrix is suitable for factor analysis (Rahman et al., 2023). Overall, the findings suggest that there is sufficient data to proceed with

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reducing the data strategy. In other words, all items in the internal factors construct can be used as a data collection tool.

Table 3: Results Of Kaiser-Meyer Olkin And Bartlett's Tests

KMO and Bartlett's Tests	
Kaiser-Meyer-Olkin Measure of Sampling Adequacy (Student's Attitude)	0.765
Bartlett's Test of Sphericity (Approx. Chi-Square)	403.256
Df	36
Sig.	<0.001
Kaiser-Meyer-Olkin Measure of Sampling Adequacy (Student's Interest)	0.844
Bartlett's Test of Sphericity (Approx. Chi-Square)	359.473
Df	21
Sig.	<0.001
Kaiser-Meyer-Olkin Measure of Sampling Adequacy (Motivation)	0.813
Bartlett's Test of Sphericity (Approx. Chi-Square)	606.154
Df	36
Sig.	<0.001
Kaiser-Meyer-Olkin Measure of Sampling Adequacy (Self Concept)	0.654
Bartlett's Test of Sphericity (Approx. Chi-Square)	382.199
Df	15
Sig.	<.001

Reliability and validity analysis

In the factor analysis, the four components represent distinct constructs: Component 1 reflects students' attitude towards business subject learning, with high loadings from items such as CS4 (0.775) and CS5 (0.761). Meanwhile, Component 2 students' interest, indicated by high loadings from items such as CMi1 (0.800) and CMi4 (0.776). Moreover, Component 3 captures motivation with items such as CMo5 (0.795) and CMo6 (0.799). In addition, Component 4 relates to Self-concept, demonstrated by strong loadings from items such as CK3 (0.815) and CK6.1 (0.963). Every factor loading was greater than 0.50, indicating significant relationships between the factors and the retained items. The discriminant distinctiveness of each concept was confirmed by the fact that no item exhibited cross-loading above the 0.40 threshold. Based on the criteria for retaining items, items that differed from the preset facets were deleted, items with factor loadings below 0.6 were removed, and items with cross-loadings higher than 0.4 were also excluded (Hair et al., 2019).

Internal factors were divided into four critical dimensions: nine attitude items coded as (CS1-CS9), seven students' interest items coded as (CMi1-CMi7), nine motivation items (CMo1-CMo9), and six self-concept items coded as (CK1-CK6.1). The factor loading for all items is more than 0.50. The value of Cronbach's Alpha for all items is 0.956. Accordingly, the values for Cronbach's Alpha indicate high reliability for the four dimensions: attitude, students' interest, motivation, and self-concept. As such, Cronbach's Alpha value for the CS code is 0.814, followed by the CMi code with 0.851, the CMo code with 0.886, and the CK code with 0.790. Since all the Cronbach's Alpha values are within the discrimination power index that distinguishes $0.70 < r11 < 0.90$, all items in each dimension have a higher differentiating power. This indicates that each item has met the criteria and can be used as a data collection tool.

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Eigenvalues indicate how much of the total variance is explained by each factor. Generally, factors with eigenvalues greater than 1 are considered significant and are retained for further analysis. In this study, the eigenvalues for the eight factors are as follows: Component 1: 3.746, Component 2: 3.817, Component 3: 4.771, and Component 4: 3.218. Since all the eigenvalues are greater than 1, these factors should be retained. The cumulative total variance explained by these factors exceeds 50%, indicating that factor analysis is appropriate. The result of the EFA is summarized in Table 4 below:

Table 4: Exploratory Factor Analysis (EFA) And Reliability Analysis Results

	Exploratory Factor Analysis Result				Reliability Test
Item Code	Loading Factor (> 0.5)	Eigenvalues EV (> 1.00)	Total Variance TVE (%)	KMO MSA (> 0.5)	(Cronbach's Alpha > 0/70)
Factor 1: Student's Attitude					
CS1	0.546	3.746	41.61	0.765	0.814
CS2	0.531				
CS3	0.576				
CS4	0.775				
CS5	0.761				
CS6	0.453				
CS7	0.709				
CS8	0.629				
CS9	0.741				
Factor 2: Student's Interest					
CMi1	0.800	3.817	54.53	0.844	0.851
CMi2	0.689				
CMi3	0.772				
CMi4	0.776				
CMi5	0.719				
CMi6	0.650				
CMi7	0.751				
Factor 3: Motivation					
CMo1	0.703	4.771	53.01	0.813	0.886
CMo2	0.656				
CMo3	0.765				
CMo4	0.687				
CMo5	0.795				
CMo6	0.799				
CMo7	0.746				
CMo8	0.732				
CMo9	0.651				
Factor 4: Self-Concept					
CK1	0.641	3.218	53.63	0.654	0.790
CK2	0.591				
CK3	0.815				
CK4	0.660				
CK5	0.655				
CK6.1	0.963				

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Discussion

Various empirical studies have been conducted on factors influencing student learning performance in other subjects, such as economics, science, and mathematics (Kaliappan & Abdul Jalil, 2023; Zafeer et al., 2024). Still, there is a limited study focusing on the secondary school context. Therefore, assessing the internal factors of the business students' instrument tool is required for future study. Nevertheless, the findings of this study provide valuable insights into the validation and application of the internal factors affecting secondary students' business learning. In particular, the EFA confirms that the measurement tool employed captures distinct constructs associated with interest, motivation, and self-concept. Furthermore, it effectively identified clear underlying dimensions. Each identified factor demonstrates internal consistency, as indicated by the Cronbach's Alpha value, thus confirming the reliability and validity of the assessment scale (Hair et al., 2019). In addition, these findings underscore the significance and necessity of using empirically verified tools when evaluating educational factors, particularly in specialized fields such as business education. Moreover, the distinct separation of internal and external elements is consistent with theoretical assumptions, emphasizing the importance of simultaneously considering students' inherent qualities and external social and environmental factors (Ryan & Deci, 2000).

The emergence of factors such as self-concept and motivation theory as distinct yet interrelated dimensions supports existing educational theories, which highlight self-perception and internal drive as crucial influences. These early discoveries have practical implications for educators and legislators. As a result, improving business learning performance may require targeted interventions that address students' needs, including enhancing motivation, fostering positive attitudes, and improving students' self-concepts.

Nevertheless, the sample size and questionnaire distribution in this study have certain limitations. One drawback to consider is that the data was gathered from only one division of Sarawak, which may limit its applicability in other areas. Thus, a research suggestion for future researchers is to conduct the study in a broader context, involving secondary school business students throughout Sarawak. On a similar note, the involvement of respondents throughout Sarawak can ensure that the overall achievement is generalized to all business students in Malaysia. Furthermore, the results might be improved by incorporating qualitative research techniques or a mixed method. Lastly, the study relies on a small sample size due to its pilot nature. Hence, a larger and more varied sample should be the goal of future research.

Conclusion

This study aims to enhance the contribution of developing a measurement instrument for student factors in improving learning performance in business subjects. The research results have successfully developed 31 items that can measure the internal factor of business students in assessing their learning performance. Based on the findings obtained, it can be concluded that the internal factors of business students' instruments have been developed and can be used to determine the learning factors of business students. In addition, the results of the EFA analysis have also demonstrated that the four dimensions of student internal factors, comprising 31 items, meet the criteria for a good and reliable instrument and possess a high level of content validity. Meanwhile, the KMO values obtained in this study are also suitable according to their construct or dimension. The finding is also supported by the Cronbach's Alpha values of 0.956 for this instrument. At the same time, all internal factors, such as students' attitudes, interests, motivation, and self-concept, were reported to be strongly correlated with academic outcomes.

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This aligns with the opinions of Hair et al. (2010) and Pallant (2016), who indicated that the items for the research instrument in factor analysis should have a loading factor of 0.05. In conclusion, the findings of this study have identified internal factors affecting business student instruments, particularly in Malaysia. Nonetheless, future research should extend these findings through larger-scale quantitative studies for the validity and reliability survey through data analysis using CFA and Structural Equation Modeling (SEM) to provide a comprehensive study.

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