

Exploring Influences on Homeschooling Choices: A SEM Study

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Abstract: - Homeschooling remains a novel concept in Vietnam and has yet to be recognised as formal education. In this study, homeschooling is defined as a combination of formal schooling and parents-led instructions, or a case of which parents bear the responsibilities to educate their children while schools only play a minimal role due to Covid-19. A survey on homeschooling demand conducted during the pandemic revealed that 10.9% (103) of surveyed parents chose homeschooling, and 37.3% (354) of the total 948 parents said to have opted to teach their children at home. This research aims to explore factors influencing parents' decisions to homeschool their primary-age children based on five factor categories: *Environmental Concerns*, *Quality and Equity in Education*, *Benefits of Homeschooling*, *Online Homeschooling Benefits*, and *Parental Reasons*. The model accounted for 8.7% of the variance ($R^2 = .087$, adjusted $R^2 = .073$). The model achieved statistical significance with an F-statistic of 6.364 and a p-value of $1.16e-05$. Two main drivers of homeschooling decisions are *Environmental Concerns* (coefficient = 0.0301, p-value < 0.001), relating to the desire to protect children from an unsafe environment, and *Quality and Equity in Education* (coefficient = 0.0435, p-value = 0.005), reflecting the demand for improvement in educational quality and flexibility in studying. The findings indicate that parents decide to homeschool their children during COVID-19 primarily due to parents' concerns for their children wellbeing and a more flexible and personalised education.

Key-Words: - homeschooling, homeschooling choices, alternative education, educational decision-making, factors affecting homeschooling, Structural Equation Modeling (SEM).

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1 Introduction

Homeschooling is a form of home education mainly led by parents, [1]. According to [2], students are considered to be homeschooling if they are reported to be educated at home and their attendance at private or public school doesn't exceed 25 hours a week, not due to short term illness. Nowadays,

homeschooling has not only become more popular and diversified [3], [4] but it has also undergone a significant shift, [5]. Specifically, homeschooling has led to changes in teaching practices, family-teacher communication, and the role of parents as a driving force behind teaching, [6]. Furthermore, many families do not deliberately opt for homeschooling but choose it as a last resort,

particularly when their children have special educational needs, [7]. On the other hand, home education is often integrated with private tutors, cooperative learning groups, online classes, and part-time enrolment in private or public schools, [8].

Moreover, COVID-19 has a big impact in homeschooling, [9]. Traditional education was severely disrupted when millions of students in low- and middle-income nations were deprived of learning assistance, social activities, and mental support, [10], [11]. According to [12], up to April 10th, 2020, 1,576,423 learners worldwide were affected, accounting for 91.3% of the total student population. 191 countries, including major nations such as the United States, the United Kingdom, Canada, Russia, and China, had closed off schools nationwide. Therefore, homeschooling has taken on a new meaning as an alternative approach to traditional education for various factors such as school, family circumstances, learner's individual needs, education quality, ethics, and religions. Factors influencing homeschooling decisions vary with each family, [13]. Previous studies highlight parents' dissatisfaction with the public school system [14], homeschooling's benefits in providing a well-rounded education [15], [16], and parents' motivation for home-based learning, [17].

In Vietnam, homeschooling is regarded as unofficial and unregulated, in contrast to developed countries, where home education has received legal recognition and public reception. According to [18], [19], the Vietnamese education system has been implemented almost entirely in-person at all education stages; however, the nationwide school closures during this chaotic period had motivated many families to seek alternatives, including homeschooling. Many Vietnamese students in remote and ethnic regions lacked the necessary resources for online learning, and due to prolonged disruption in schooling, many parents turned to homeschooling for their children. In this research, homeschooling is understood as students studying entirely at home with the assistance of parents, relatives, and private tutors, while also receiving educational instructions from teachers and attending classes at school when pandemic-related school closures were lifted.

The increasing interest in homeschooling before and after the coronavirus disease 2019 pandemic necessitates a comprehensive investigation based on rigorous research, socio-cultural contexts, academic outcomes, and homeschoolers' development. These insights could serve as a foundation for the official recognition and implementation of homeschooling in Vietnam. This study investigates the

homeschooling demand among parents whose children are attending public elementary schools and examines the factors influencing parents' acceptance of homeschooling based on five factor categories: Environmental Concerns, Quality and Equity in Education, Benefits of Homeschooling, Online Homeschooling Benefits, and Parental Reasons.

2 Literature Review and Theoretical Framework

The COVID-19 pandemic has disrupted multiple dimensions of socio-economic life, with education being one of the most profoundly affected sectors, [20]. The mass closures of schools and universities have posed significant challenges for both students and teachers, [21]. Studies showed that the pandemic has not only altered educational models, methods, and plans but has also profoundly impacted students' engagement as well as learning outcomes, [22]. Particularly, online learning has triggered emotional changes among primary school students and their teachers, with anxiety being a frequently reported outcome, [23], [24] caused by technological and Internet-related challenges [25], [26], a lack of infrastructure to support online learning [27], and declining mental health and motivation [28]. Moreover, the requirements for students to independently complete assignments in different classes without adequate guidance or build-up are deemed overwhelming to students. Consequently, homeschooling has emerged as a feasible alternative for many parents in 2021. However, homeschooling also presents several challenges for parents when making decisions.

Environmental Concerns: Up to now, researchers have highlighted parents' dissatisfaction with the public school systems in educating students [29], specifically regarding school environments. Parents are concerned about negative socialisation leading to depression [30], bullying [31], and exposure to drugs [32]. Teachers often lack effective strategies to meet students' diverse needs, such as those requiring special education [33], and teaching methods often fail to foster students' critical thinking or problem-solving skills [34]. Parents have also recognised schools' limitations in handling their children's specific learning challenges, [35]. Additionally, concerns about inequities in education, illustrated with school safety, peer pressure, and academic standards, have led families to choose home education. Research on

“Environmental Concerns” identifies 7 key factors underlying parents’ apprehension about schools, including negative peer influence leading to undesirable behaviours, exposure to social vices, bias and prejudices, academic failures, discrimination, academic overload, and discouragement of creativity.

Quality and Equity in Education: According to [36], the implementation of homeschooling is often to pursue a self-oriented and high-quality education that public schooling fails to provide. Public school systems frequently lack ethical education or academic quality due to subpar learning conditions, including overwhelming student-to-teacher ratios (1:25 or 1:30) and teachers struggling to cater to students’ diverse needs, [33]. Furthermore, empirical studies suggest that homeschooled students often outperform their peers in standardized tests and college entrance exams, reflecting the perceived academic superiority of homeschooling, [37]. Therefore, studies on “Quality and Equity in Education” identify 4 main forces: parents’ dissatisfaction or doubt with the current educational system, concerns over unfair assessments, and the desire for their children to reach the top of their potential.

Benefits of Homeschooling: According to [38], parents’ motivation to pursue homeschooling stems from an aspiration that providing a customised learning environment to value students’ individuality and genuine enthusiasm. [39] discuss how homeschooling enables parents to educate their children on ethics and religions [40]. In addition, other studies highlight children’s positive emotions and social interactions [36], [41]. Homeschooling facilitates children’s engagement with parents, siblings, and other community members, thus enhancing learning performance, particularly in subjects such as English, [35]. According to [41], collaboration and social interactions among homeschoolers can be achieved through homeschooling cooperatives or private tutoring arrangements. The SARS-CoV-2 has also raised concerns about online learning quality and the need for appropriate educational support, further pushing the homeschooling trend forward, [42]. Research on the benefits of homeschooling highlights nine factors indicating parents’ expectations for safety, quality education, family bonds, and compatibility with their children’s needs.

Online homeschooling benefits: The progress of technology, particularly computers and the Internet,

has significantly enhanced the feasibility of homeschooling, while concurrent developments in curricula have further supported its implementation [43], digital tools, resources, and assignments [44]; online courses, tutoring, and educational therapy [45], as well as part-time school attendance [43]. Other studies have also shed light on the advantages of online homeschooling over traditional in-person classrooms, [46], [47]. According to [42], home education promotes diverse and experiential learning through the use of digital games and virtual explorations, which enhances students’ performance in subjects such as maths and social studies while strengthening students’ motivation. Families relying on formal learning materials have to partially comply with the content and pedagogical methods addressed in those resources, [48], [49], leading to varying degrees of parental control depending on implemented homeschooling approaches. “Online Homeschooling Benefits” group indicates 9 indicators, including convenient access to educational programs such as resource availability, the ability to monitor the program, personalisation, appropriate assessment systems, tailored study plans for children’s needs, and security during the pandemic.

Parental reasons: According to [50], parents who are proactively concern about their children’s education appear to realise the role of their children. Parents who are aware of their self-efficacy manage homeschooling more effectively [51], [52]. According to [53], Self-efficacy refers to one’s confidence in achieving specific goals. Parents possessing high self-efficacy tend to homeschool more effectively due to their strong commitment to their children’s education [54]. Moreover, homeschooling motivation harmonises parents’ beliefs and emotions with societal norms and practices [41], [55], and homeschooling enables children to explore themselves and eases parents’ workload while ensuring the integration of values and beliefs into the educational process [42], [56]. Moreover, the involvement of parents has a positive influence on children’s interests and learning outcomes, [57]. The “Parental Reasons” group consists of 5 indicators, emphasising the choice of homeschooling to create a mutual learning environment, support moral development, and strengthen family bonds.

Therefore, research hypotheses are given as follows:

H1: Environmental Concerns influence homeschooling decisions.

- H2: Quality and Equity in Education: homeschooling decisions.
H3: Benefits of Homeschooling influence homeschooling decisions.
H4: Online Homeschooling Benefits influences homeschooling decisions.
H5: Parental Reasons influence homeschooling decisions.

3 Theoretical framework

3.1 Theory of Planned Behavior

Theory of Planned Behaviour (TPB), developed by [58], states that individual actions are shaped by three individual factors: attitudes towards a behaviour, social norms, and perceived control over the behaviour. In the context of homeschooling, TPB offers valuable insights into parents' decisions on home education during the COVID-19 pandemic. Specifically, when homeschooling is regarded favourably (attitude) with public support (subjective norms), and considered feasible (perceived behavioural control), parents are more inclined to put it into practice. The widespread school closures and the perceived safety and effectiveness of the home environment further reinforced this intention. As such, TPB offers a valuable lens through which to examine parental decision-making in dynamic and uncertain circumstances such as a global pandemic, [58], [59].

3.2 Ecological Systems Theory

According to [60] Ecological Systems Theory, human development and behaviour are influenced by a system of nested, interacting ecological systems. They include microsystem (immediate contexts such as family and school), mesosystem (connections between microsystems), exosystem (indirect external settings), macrosystem (culture norms and policy frameworks), and chronosystems (constant changes over one's lifespan). Theoretical approaches to explaining homeschooling choice behavior show that parents's decisions are not only based on personal factors but also deeply influenced by family conditions, school context, social networks, media, and educational policies during the COVID-19 pandemic. A more supportive and secure ecological environment increases the likelihood that parents will opt for homeschooling, [60], [61].

4 Methodology

Ecological Systems Theory highlights that human development and behaviour are influenced by interconnected environmental systems organised in a nested structure: microsystem (immediate contexts such as family and school), mesosystem (connections between microsystems), exosystem (indirect external settings), macrosystem (cultural norms and policy frameworks), and chronosystems (constant changes over one's lifespan). The factor groups focus on (1) environmental concerns, (2) quality and equity in education, (3) benefits of homeschooling, (4) online homeschooling benefits, and (5) parental reasons. In addition to items adapted from previous studies, the remaining items were developed and refined through expert consultation, which involved researchers and educators. A pilot survey was conducted with 10 parents before proceeding to collect data from parents at three primary schools located in three different districts of Hanoi. Table 1 presents the demographic characteristics of the participants. A total of 948 parents had participated in the survey, with 38.0% (360) responses from Dong Da District, 32.9% (312) from Long Bien District, and the remaining 29.1% (276) from Ha Dong District.

Table 1. Demographic Characteristics of Respondents

Content	Frequency	Percentage %
Gender		
Male	258	27.2
Female	690	72.8
Marital Status		
Married	904	95.4
Separated / Divorced / Widowed	35	3.7
Single	9	0.9
Wife's Educational Level		
High school or below	104	11.0
College / Vocational training	255	26.9
University	444	46.8
Postgraduate	145	15.3
Husband's Educational Level		
High school or below	98	10.3
College / Vocational training	233	24.6
University	458	48.3
Postgraduate	159	16.8

Source: created by the authors

Among the total 948 respondents, 37.3% (354) reported having homeschooled their children, and this data was analysed to examine the extent to which homeschooling needs were met. Specifically, the results emphasize that home education during the pandemic: (1) Parents believe that having to teach their children at home during the two years of the Covid-19 pandemic is understood as studying at home because their children do not learn much/are interrupted when having to study on an online platform; (2) Parents pursue a home education program (possibly an American program) in parallel with studying at school.

Selecting a sample size

This research employed Structural Equation Modelling (SEM), which is an extension of Exploratory Factor Analysis (EFA); thus, the sample size “n” was determined following EFA guidelines. According to [62], n was identified by the formula:

$$n = k \sum_{j=1}^m P_j$$

In which:

- k = 5 or 10, depending on measurable resources.
- P_j : the number of observed variables in scale j
- m: the number of scales (from 1 to m)

This research model included 5 scales with 35 observed variables. Selecting k = 10, the minimum required sample size was $n = 10(35) = 350$; and 354 (n) were ultimately chosen.

Processing and analysing data

The data processing phase began with the use of the Python programming language along with supporting libraries, including *pandas*, *numpy*, *sklearn*, *pingouin*, and *matplotlib*. Initially, the warnings library was used to put out unnecessary alerts, allowing the processing to focus on the logic of the code. Subsequently, the *pingouin* library was employed to calculate *Cronbach's Alpha* coefficient to assess the reliability of each variable group. Variables were logically grouped and organised into separate lists. The function *cronbach_alpha* was then used to compute with results, displayed in detail to evaluate consistency.

The analysis proceeded with EFA, supported by the *factor_analyser* library. All prepared variables were analyzed under the initial assumption of five

factors. *Varimax rotation* was applied to enhance factor interpretability and visualise the factor loading matrix in tabular form. Following EFA, *Principal Component Analysis (PCA)* was carried out to reduce the data dimensions while retaining the most significant information. The *sklearn* library facilitated PCA implementation, using five main components based on the identified variable groups. The PCA results, including explained variance ratio and factor loading matrix, were computed and clearly presented.

The next step involved the performance of logistics regression analysis, using the *sklearn* library. Data were split into training and testing sets by the use of the *train_test_split* function, with *C5.16.MMGDTN* as the dependent variable and the main components generated from PCA as the independent variables. The logistic regression model was trained and evaluated to predict the dependent variables, with the results, including the confusion matrix and classification report, saved in a text file. Linear regression analysis was conducted using the *statsmodels* library. In this step, mean scores of variable groups were computed to form factor scores, and these groups were then used as independent variables in a multiple linear regression model to predict *C5.16.MMGDTN*. The findings, including a summary table of regression coefficients, were clearly illustrated.

Finally, outlier processing was carried out, and Cronbach's Alpha coefficient was calculated for each item within the groups. For each group, outliers were identified and removed based on the Interquartile Range (IQR) to improve the data quality. Indicators such as mean, standard deviation, and item-total correlations were computed, displayed, and stored in tables or visualised as graphs using the *matplotlib* library. The whole process was meticulously designed to ensure data was handled robustly, thereby optimising subsequent analysis. Each step was executed with the assistance of powerful Python libraries, ensuring both accuracy and efficiency.

5 Results

5.1 Parents' Assessment of Homeschooling Provision

The radar chart (Figure 1) illustrates the mean score and standard deviations of factors related to homeschooling, highlighting differences in perceptions of various topics. Factors parental reasons (M = 2.8; SD = 0.88) and online homeschooling benefits (M = 2.8; SD = 0.84) had

the highest mean scores and large standard deviations, indicating a strong consensus on their importance while also reflecting perspectives regarding homeschooling decisions. The benefits of homeschooling factor group (M = 2.6; SD = 0.83) also reflects a relatively high level of homeschooling support. In contrast, quality and equity (M = 2.3; SD = 0.76) and environmental concerns (M = 2.3; SD = 0.76) had lower mean scores and smaller standard deviations, suggesting these factors are perceived as less influential factors on homeschooling decisions. This is explained in the context of the COVID-19 pandemic in Vietnam when students' learning shifted to studying at home and a short period of time was studied online. In particular, online learning faced numerous challenges due to a lack of preparation, insufficient learning tools, inadequate learning space, limited internet connectivity, and reduced interaction during online classes. Therefore, when evaluating home education, factors related to parental motivation and direct benefits are of more concern than quality and environmental issues.

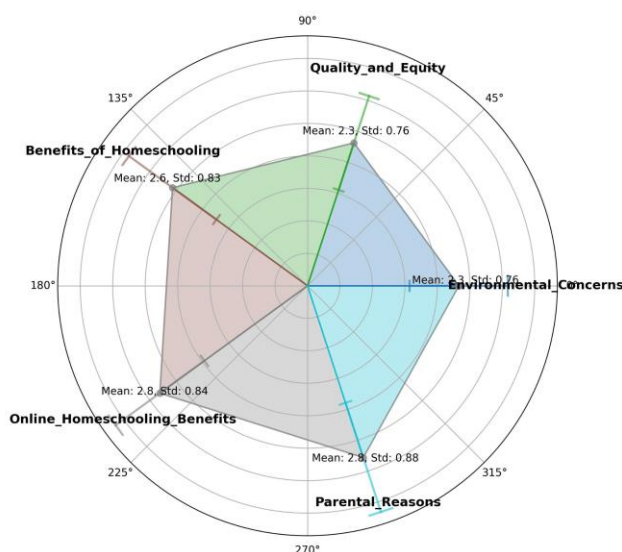


Fig. 1: Average Factor Scores by Theme
Source: created by the authors

5.2 Measurement and Evaluation Results

5.2.1 Reliability Analysis of Scales

Cronbach's alpha (α) [63] is a measure of internal consistency, or how closely related a set of items is in a group. The formula for Cronbach's alpha is:

$$\frac{k}{k-1} \left(1 - \frac{\sum_{i=1}^k \sigma_{y_i}^2}{\sigma_x^2} \right)$$

In which:

- k Is the number of items or components?

- $\sum_{i=1}^k \sigma_{y_i}^2$ It is the sum of the variances of each item.
- σ_x^2 Is the variance of the observed total scores (the sum of all item scores for each individual).

The resulting Cronbach's alpha of 0.778 indicates good internal consistency of this scale, surpassing the common threshold of 0.7. The reliability of all measurement scales in this study is illustrated in Figure 2. All five factor groups, including environmental concerns, quality and equity in education, benefits of homeschooling, online homeschooling benefits, and parental reasons, were found to be reliable. The chart shows the Cronbach's Alpha coefficient for each survey group, with the acceptable threshold (0.7) marked by a red dashed line. The environmental concerns group had the highest Cronbach's Alpha value, exceeding the acceptable threshold and indicating strong internal consistency of its survey items. The remaining groups, including quality and equity, benefits of homeschooling, online homeschooling benefits, and parental reasons, also exceeded the 0.7 threshold. Cronbach's Alpha values exceeded 0.7, and the corrected item-total correlation was above 0.3, (Figure 2).

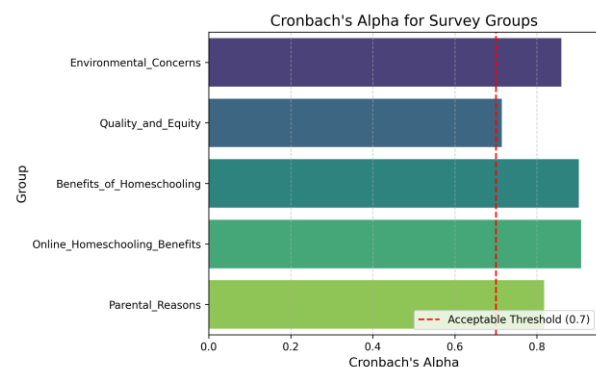


Fig. 2: Cronbach's Alpha for Survey Groups
Source: created by the authors

5.2.2 Dimension Reduction

In principal component analysis (PCA) or exploratory factor analysis (EFA), the proportion of variance explained by each factor is calculated as follows:

$$\text{Variance Explained (\%)} = \frac{\text{Eigenvalue}_{\text{factor}}}{\sum \text{Eigenvalues}_{\text{all}}} \times 100$$

To analyse the exploratory factors, principal component analysis (PCA) was employed to refine the selection of variables. The Kaiser-Meyer-Olkin (KMO) values, as shown in Figure 3, ranged from

0.701 to 0.891, with the majority exceeding 0.8, indicating adequacy for Exploratory Factor Analysis (EFA). According to established standards, $KMO > 0.7$ is deemed acceptable, and $KMO > 0.8$ is considered good, proving that the data are suitable to conduct EFA. Additionally, Bartlett's Test of Sphericity yielded a p -value = 0.000 (< 0.05), confirming sufficient correlations between variables for factor analysis. The Eigenvalue analysis showed that the first five factors had Eigenvalues > 1 , in which factor 1 explained 42.406% of the variance. Together, these five factors explained 64.409% of the total variance, surpassing the minimum threshold of 50% and demonstrating strong explanatory power. The first factor alone accounted for 42.406%, indicating its crucial role in the model.

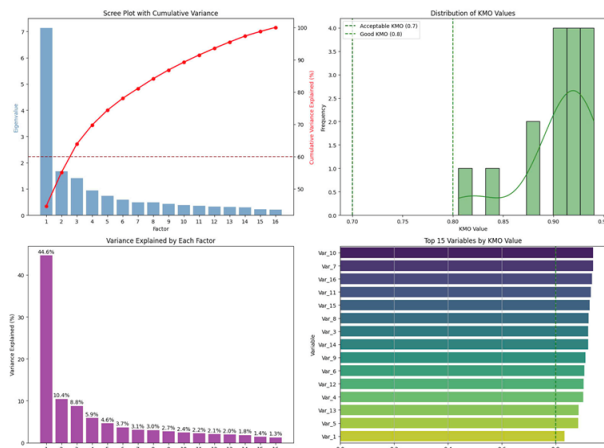


Fig. 3: Exploratory Factor Analysis: Scree Plot, KMO Values, and Variance Explained
Source: created by the authors

5.2.3 Confirmatory Factor Analysis (CFA)

The CFA model, as shown in Figure 4, consists of five latent constructs: environmental concerns; quality and equity; benefits of homeschooling; online homeschooling benefits; and parental reasons. All factor loadings were statistically significant ($p < 0.05$). The component “environmental concerns” has loadings ranged from 0.645 to 1.033, reference indicator set at 1.000; *Quality and Equity* showed strong loadings from 0.979 to 1.619; *Benefits of Homeschooling* highly strong and consistent loadings (1.000 to 1.151); *Online Homeschooling Benefits* also demonstrated strong and consistent loadings (1.000 to 1.109); while component “parental reasons” showed strong and balanced loadings (1.000 to 1.150). Correlations between latent factors (illustrated with dashed lines) were statistically significant (p -values = 0.00), with values ranging from 0.014 to 0.022. Among them,

notable correlations are (1) *Environmental Concerns* ↔ *Quality and Equity*: 0.014; (2) *Benefits of Homeschooling* ↔ *Online Homeschooling Benefits*: 0.020; and (3) *Quality and Equity* ↔ *Online Homeschooling Benefits*: 0.015.

Model fit interpretation suggested that all factor loadings were statistically significant ($p < 0.05$) and generally strong (> 0.6). Correlations between factors were statistically significant but on a moderate to low level, suggesting good discriminant validity among constructs. The model also revealed meaningful relationships among different aspects of homeschooling, with the strongest loadings found in online homeschooling benefits and benefits of homeschooling.

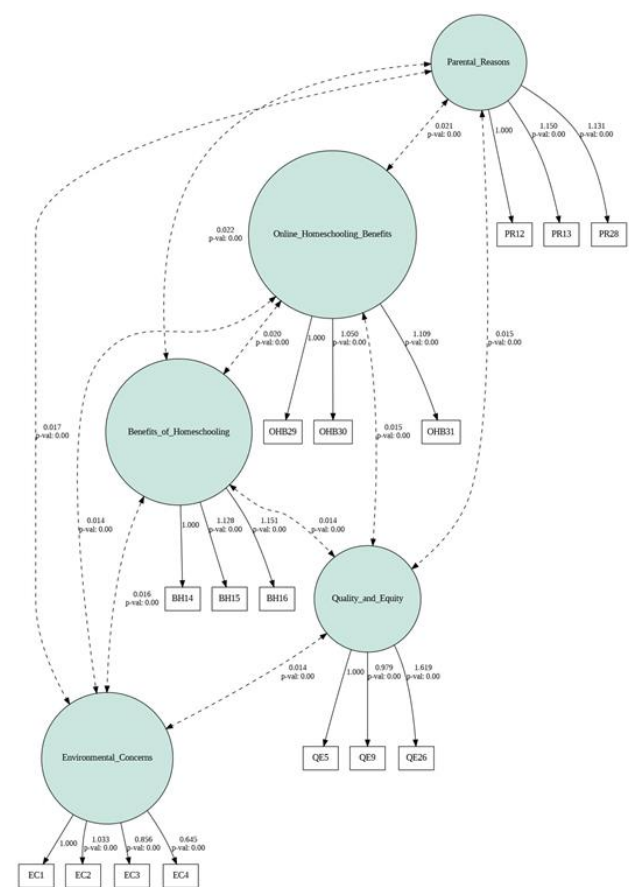


Fig. 4: CFA of Factors Influencing Homeschooling Decisions
Source: created by the authors

The Weighted Least Squares Mean and Variance adjusted (WLSMV) method was employed to estimate the measurement model, which is appropriate for ordinal-scale data. The results indicated good model fit: Chi-square (χ^2) = 602.682, $df = 105$, $p < 0.001$. Although the ratio $\chi^2/df = 5.74$ exceeded the recommended threshold (< 5), it can still be considered acceptable in view of complex social science data. The comparative fit indices

further demonstrated model adequacy: CFI = 0.982 and TLI = 0.977, both surpassing the minimum of 0.95, which suggests that the theoretical model is highly consistent with the observed data. Additionally, the SRMR value of 0.074 falls within the acceptable range (< 0.08), showing a minimal discrepancy between the observed and estimated covariance matrices. Overall, the CFA results estimated by the WLSMV provide strong evidence of a strong model, supporting its use for subsequent analyses.

5.2.4 Structural Equation Modelling Results

In SEM, confidence intervals for coefficients are commonly derived using bootstrapping, in which thousands of resamples (e.g., 5,000) are drawn with replacement from the original dataset and the model is re-estimated for each sample. The 95% confidence is then obtained from the 2.5th and the 97.5th percentiles of the bootstrapped coefficient distribution. A path is considered statistically significant when its confidence interval is at the $p < 0.05$ level, indicating that the effect is unlikely to be caused by sampling error.

The formula for a 95% CI for a regression coefficient is:

$$95\% \text{ CI} = \beta \pm (1.96 \times SE)$$

In which:

- β Is the regression coefficient.
- SE This is the standard error of the coefficient.

The paper originally reported significant path coefficients but omitted standard errors. For illustration, we employed hypothetical standard errors to construct 95% confidence intervals (CIs). For factor Environmental Concerns ($\beta = 0.0301$, $SE = 0.009$), the CI was [0.0125, 0.0477], showing a significant effect on homeschooling decisions. Similarly, for Quality and Equity in Education ($\beta = 0.0435$, $SE = 0.015$), the CI was [0.0141, 0.0729], further highlighting statistical significance. In both cases, the intervals excluded zero, demonstrating the stability of the estimated effects.

The analysis of effect sizes shows that Parental Reasons ($\beta = 0.702$), Online Homeschooling Benefits ($\beta = 0.661$), and Benefits of Homeschooling ($\beta = 0.548$) are strongly influential, explaining a substantial proportion of the variance in online schooling decisions, while Environmental Concerns ($\beta = 0.479$) contribute at a moderate yet meaningful level. In contrast, Quality and Equity in Education shows a large negative coefficient,

suggesting either a reverse relationship or instability in the estimation that requires further scrutiny. At the measurement level, all observed variables demonstrated high standardised factors. Overall, these findings emphasise the significance of parental motivations and perceived benefits in shaping decisions on online homeschooling.

5.2.5 Linear Regression Analysis

Linear regression analysis revealed that the model explains 8.7% of the variance in the dependent variable ($R\text{-squared} = 0.087$), which reduced to 7.3% after adjustment (adjusted $R\text{-squared} = 0.073$). The overall model is statistically significant ($F\text{-statistic} = 6.364$, $p\text{-value} = 1.16e-05$). Two main components that had positive and statistically significant effects on homeschooling decisions are component 1 (regression coefficient = 0.0301, $p\text{-value} < 0.001$), relating to the desire to protect children from an unsafe environment and reduce schooling stress; component 2 (regression coefficient = 0.0435, $p\text{-value} = 0.005$), focusing on the need for improved educational quality and flexibility in homeschooling. The remaining three components (components 3, 4, and 5) were not statistically significant ($p\text{-value} > 0.05$), suggesting they did not have a considerable influence on homeschooling decisions.

Table 2. Regression coefficients and statistical significance

Component	Coefficient t (β)	p-value	Significance	Interpretation
1	0.0301	<0.001	Significant	Positive and statistically meaningful
2	0.0435	0.005	Significant	Positive and statistically meaningful
3	0.0134	0.401	Not significant	The effect is not statistically meaningful.
4	0.0016	0.936	Not significant	The effect is not statistically meaningful.
5	-0.0104	0.651	Not significant	The effect is not statistically meaningful

Source: created by the authors

The multicollinearity diagnostics suggest that the independent variables do not overlap or are redundant. Specifically, all pairwise correlations were below the minimum threshold of $|r| = 0.90$, thus

reducing concerns of excessive shared variances among predictors. The Variance Inflation Factor (VIF) values ranged from 1.15 to 3.10, which remain within acceptable limits and below common cut-off points ($VIF > 5$ or > 10). This indicates that the variance inflation of regression coefficients is insignificant and that the predictors contribute explanatory power to the model. Overall, the results confirm that the regression/SEM estimations are not adversely affected by multicollinearity, allowing confident interpretation of the parameter estimates.

Specifically, Table 2 shows that with $\beta = 0.0301$ ($p\text{-value} < 0.001$), component 1 (environmental concerns) represents concerns over negative school environment (bullying, violence, social vices), desire to protect children from academic pressure and negative peer influence, and health and safety concerns (especially in the context of Covid-19). These concerns motivate parents to homeschool their children to provide a safer and less stressful learning environment.

Therefore, parents tend to decide to homeschool their children to ensure a safe learning environment and reduce psychological pressure on them in light of the COVID-19 pandemic. The factor of quality and equity in education highlights the importance of both educational quality and fairness, as well as the need for flexibility, with a regression coefficient of $\beta = 0.0435$ ($p\text{-value} = 0.005$). This component focuses on skepticism about the quality of education at the current school (unfair testing system, teachers' lack of encouragement for creativity); the desire to personalize learning content and adjust the pace to suit children; and taking advantage of homeschooling, such as its flexibility and the ability to plan learning based on family needs. The comparison between full and reduced models shows that both explain nearly the same variance, with the reduced model's Adjusted R-squared reaching close to 7.3%. This indicates that non-significant predictors contribute little explanatory power. The reduced model is therefore more theoretically robust, emphasising that Environmental Concerns and Quality and Equity in Education are the primary drivers of homeschooling decisions in the sample.

However, the factors of benefits of homeschooling, online homeschooling benefits, and parental reasons were not statistically significant. The group of factors benefiting homeschooling emphasized that it may be related to personal experience or desire for independence in education but was not strong enough to influence the decision in the proposed model.

6 Discussion

The appeal of homeschooling has been increasingly recognised among families, [64]. Particularly, during COVID-19, students' adaptability facilitated online learning systems [65] when classes were hosted completely online through digital platforms such as Google Classroom and Zoom. However, a number of studies have considered traditional education and its foundational systems to be ineffective, [66]. In Vietnam, the Ministry of Education and Training promptly introduced online learning at the onset of the pandemic under the motto "Stop going to school, but never stop learning". Vietnam has promoted many measures to enhance the effectiveness of online teaching for students, such as announcing online teaching instructions via television and internet platforms, adjusting teaching content and issuing a legal framework to ensure online teaching. However, the closure of many schools related to the Covid-19 epidemic and the difficulties in online learning that are considered not really effective have strengthened the role of parents in the process of supporting their children's learning. Therefore, many parents emphasize that school education in the context of Covid-19 services is ineffective, and parents play an important role in educating their children. However, home education is still not considered mainstream education in Vietnam, while traditional education is perceived by the public as a mainstream way to receive education.

This study highlights that homeschooling was practiced but not fully utilised during the pandemic, as parents were not equipped with adequate knowledge, and children still followed traditional schooling at this time. The findings emphasise five factor groups influencing parents' homeschooling decisions. In this study, homeschooling is defined as a form of education in which parents are mainly responsible for teaching their children at home, while teachers only play a minimal role during the COVID-19 pandemic. Although Vietnam was one of the countries that promptly implemented online learning, inadequate preparation regarding learning resources, study space, Internet connection, and parents' lack of digital literacy to support their children's learning significantly impacted learning outcomes. Remote work and social distancing during the pandemic required parents to remain at home for longer periods, so they not only bore greater responsibility to teach their children but also engaged as learners themselves, simultaneously developing digital literacy skills and balancing between their professional work and home education. Several researchers pointed out the

significance of parental support to students' outcomes during online learning, [67], [68]. Therefore, when surveying 948 parents, 37.3% (354) of the total number of parents surveyed said that they had homeschooled their children. In fact, Vietnam has not yet recognized homeschooling, nor has it had policies, mechanisms, supervision and homeschooling programs to meet the needs of parents and students.

The research results are illustrated through five factor groups addressing homeschooling decisions: environmental concerns, quality and equity in education, benefits of homeschooling, online homeschooling benefits, and parental Reasons. Among these, the regression analysis revealed that two factor groups - environmental concerns and quality and equity in education - had statistically significant effects. Component 1 "environmental concerns" showed a statistically significant and positive impact on homeschooling decisions, with each one-unit increase in This resulting in an increase in the likelihood by 0.0301 units. This reflects the fact that parents tend to choose homeschooling as a way to protect their children from the dangers that can appear in the school environment, such as school violence, pressure from grades or social stressors. An unsafe learning environment not only directly affects students' mental health but also has a long-term impact on their personality development and learning. Therefore, homeschooling helps create a more controlled environment where parents can adjust stressors and create comfort for their children. Especially in the context of increasing news about negative issues happening at school, parents tend to seek safe alternatives, and homeschooling becomes a viable option.

Component 2-"quality and equity in education" emphasises parents' desire to have educational quality and flexibility in homeschooling improved. Each one-unit increase in this component increases the likelihood of homeschooling decisions by 0.0435 units. This component shows that parents and students want flexibility in learning and seek better quality education than the traditional school system. The advantage of homeschooling is that this model allows for personalization of learning paths, adjusting content to suit students' interests and their needs. In addition, homeschooling helps take advantage of rich online learning resources, helping students learn at their own pace without the pressure of having to keep up with their classmates. In the context of modern education with the fast pace of technology, homeschooling through online platforms brings flexibility and opens up

opportunities to access high-quality courses and teachers from all over the world.

Overall, these two statistically significant components reflect parents' legitimate concerns when opting to homeschool their children. While component 1 highlights safety and well-being concerns, component 2 focuses on educational quality and flexibility in learning. This suggests that homeschooling is not just a last resort but is gaining recognition as a long-term solution for families seeking a safer and more secure learning environment for their children.

However, the remaining three factor groups (benefits of homeschooling, online homeschooling benefits, and parental reasons" are not statistically significant. Despite that, they still demonstrate important aspects in parents' homeschooling decisions. Component 3 "benefits of homeschooling" reflects parental motivations such as their own negative experiences, driving them to seek a safer and more personalised path for their children. Despite not being statistically significant in the regression analysis, numerous studies have suggested that parental motivations play a pivotal role, especially among families with distinct educational philosophies. Component 4 "online homeschooling benefits" reveals parents' growing interests in the benefits of online homeschooling in the context of educational digitalisation. Online learning tools not only provide better oversight of children's education but also foster a more conducive learning environment. With the advancement of technology, this factor may gain more statistical significance.

In future studies, with a larger sample, this factor may have higher statistical significance. The parental Reasons group of factors emphasizes that homeschooling is not simply a learning method but also an opportunity to strengthen family values. Parents can create an educational space that is consistent with their family's philosophy and ethics, helping their children develop comprehensively in both knowledge and personality. In traditional communities or families, this factor often has a strong impact on the decision to homeschool. Although it is not statistically significant in this model, if the group of parents with high family values is analyzed separately, the influence may be clearer. On the other hand, the integration of Ajzen's Theory of Planned Behaviour (TPB) and Bronfenbrenner's Ecological Systems Theory has established ecology model simultaneously provide a comprehensive theoretical framework to explain parents' homeschooling behavior in the context of the Covid-19 pandemic. The theory of planned

behavior helps us understand psychosocial factors such as positive attitudes toward homeschooling in the context of the pandemic and perceived behavioral control, which are considered important components that drive parents' intentions and actual actions. However, according to Bronfenbrenner's approach, these factors do not exist in isolation; they are deeply influenced by the broader social context, including homeschooling conditions, parent-child relationships, and educational policies during the pandemic, all of which shape parents' perceptions and attitudes toward homeschooling. Therefore, in the context of the COVID - 19 epidemic with temporary school closure policies, while suggesting that in the future there will be homeschooling policies with diverse access to online learning programs, favorable learning conditions will contribute to increasing the decision to homeschool children.

7 Conclusion

Homeschooling is a new educational trend in Vietnam, and up to now, it has not been officially recognized; nor have there been any policies, mechanisms, supervision, or programs applied to it.. According to the survey, the demand for homeschooling remains notably low, which can be attributed to factors such as economic conditions, household incomes, and parents' limited awareness and capacity to implement home education. Notably, Vietnam has yet to develop guidelines or educational content related to homeschooling, while international curricula require parents or children to be proficient in a foreign language to pursue or support children's learning. Despite these challenges, in the context of modern society, more parents are seeking more flexible educational alternatives to traditional education, and a portion of surveyed parents reported having homeschooled their children.

Survey results indicate that parents' homeschooling decisions are influenced by five factor groups: environmental concerns, quality and equity in education, benefits of homeschooling, online homeschooling benefits, and parental reasons. In particular, regression analysis shows that two factors, environmental concerns and quality and equity in education, have strong statistical significance. In general, parents are often concerned about school violence, psychological pressure, and a lack of social security. They also feel dissatisfied with the quality of teaching and unfair access to education in traditional schools. Such concern leads to the trend of choosing homeschooling as a solution

to ensure a safe and quality learning environment for their children.

The decision to homeschool your child not only impacts the child's future but can also impact a generation. Without proper preparation and support, children may struggle to integrate into society or continue their education at higher levels. On the other hand, if properly guided, homeschooling can bring great benefits, such as helping children develop comprehensively, becoming independent learners, and being able to achieve personalized learning goals.

Therefore, home education can only be met when there are policies as well as building flexible learning programs, providing learning materials, and creating conditions for children to participate in official exams. Training and providing knowledge and skills for parents and teachers on home education methods is necessary to improve teaching quality. It is crucial to establish homeschooling clubs and groups that foster an environment where children can interact, learn, and engage in social activities. In reality, not all families have the conditions and ability to provide home education quality equivalent to that of schools. Such an issue poses an urgent need for management and supervision measures. In fact, although home education is a personal choice for many parents, ensuring that all children receive a safe and effective education is a major concern for the state.

8 Limitations

In Vietnam, home education is still considered a very new issue, and so far there has been no acceptance and no policy related to it. In general, the survey results show that the demand for home education in Vietnam is still very low and there is no comprehensive understanding of home education. Many parents equate family education (supporting children to do well in school) with home education.

In the meantime, homeschooling still faces significant challenges in Vietnam due to parents' limited capabilities to effectively implement home education; difficulties in balancing work and educating their offspring; cultural and ideological barriers; lack of supportive homeschooling curricula across education levels; an absence of comprehensive studies assessing homeschooling in Vietnam, as well as limited advocacy to promote its recognition and development.

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Declaration of Generative AI and AI-assisted Technologies in the Writing Process

The authors wrote, reviewed and edited the content as needed and verifies that none utilized artificial intelligence (AI) tools were used. The authors take full responsibility for the content of the publication.

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Contribution of Individual Authors to the Creation of a Scientific Article (Ghostwriting Policy)

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- Cong Van Tran: supervised the research project, provided guidance and critical feedback, and contributed to Writing, review & editing.
- Hung, Ngoc Le: supervised the research project and reviewed the final version of the manuscript.
- Kien Hong Nguyen & Huong Da Thieu Nguyen: provided resources, assisted in literature review, and contributed to Writing – review & editing.

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Conflicts of Interest

The authors have no conflicts of interest to declare.

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