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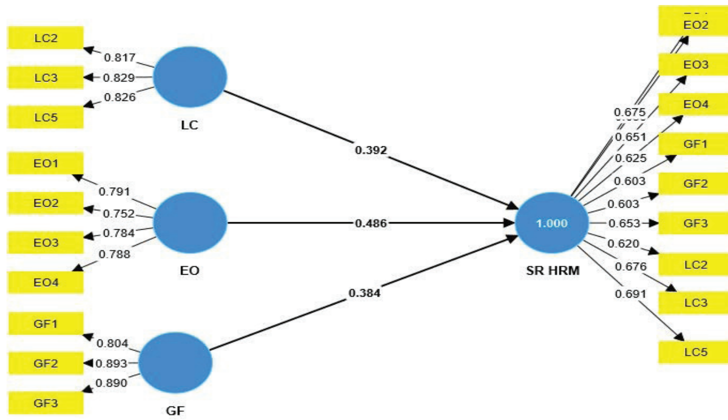

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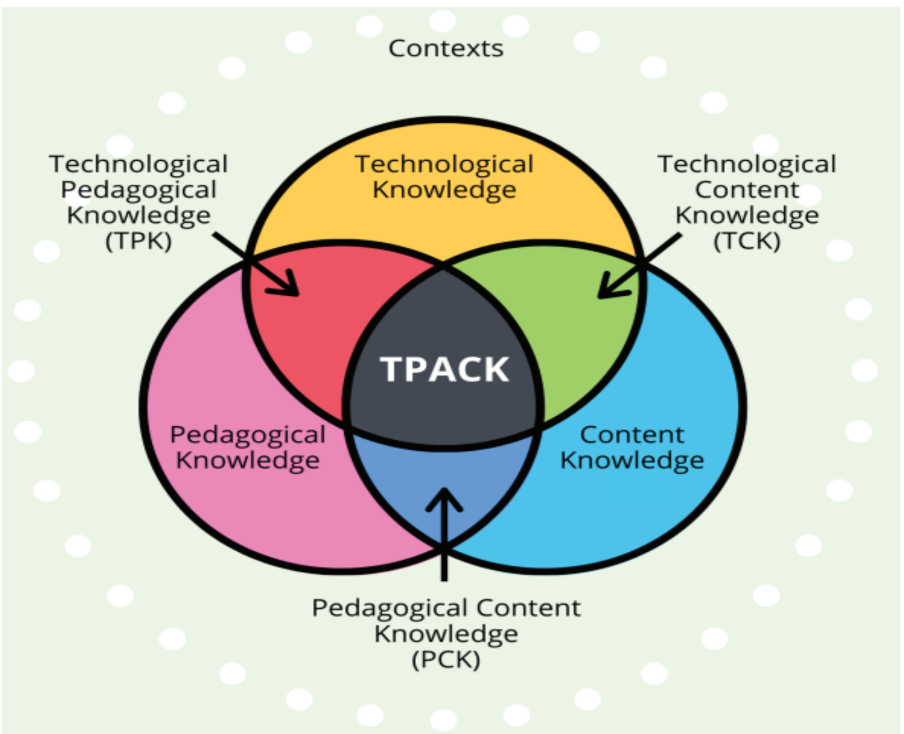

Post-COVID mental health of librarians in Vietnam

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Abstract:

This study aims to measure the mental well-being levels of librarians in Vietnam in the new normal context after the COVID-19 pandemic. The findings are expected to advocate for future policy interventions regarding mental health care for staff in Vietnam's libraries and information centres since the pandemic has made coping with crises globally recognised as an integral part of life. On this ground, a survey was designed and administered online for librarians across Vietnam to self-rate their psychological general well-being using the World Health Organization (WHO)-5 together with the Revised Life Orientation Test (LOT-R) and Strahan-Gerbasi's 1972 short version of the Marlow-Crowne Social Desirability Scale. The results show that despite the low mid-COVID mental health, there was a statistically significant increase in mental health scores in the new normal. Approximately two-thirds of the surveyed librarians were infected with COVID-19. In both mid- and post-COVID mental health scores, there were significant differences between the infected and uninfected groups, between different marital and parenthood statuses, and between different age groups, seniority levels, and types of positions.

Keywords: **COVID-19 pandemic, information professionals, librarians, mental health status/condition, mental well-being.**

Classification numbers: **1.2, 4.1**

1. Introduction

The COVID-19 pandemic has significantly impacted people's mental health (MH), with rates of depression and anxiety increasing by more than 25% in 2020 [1]. In the new normal, two Google searches for "post-COVID MH" and "new-normal stress" yielded an overwhelming number of results (i.e., 623,000,000 and 875,000,000, respectively) in less than half a second. Similar searches on Google Scholar returned 62,900 and 63,600 records within a third of a second.

Major sources from medical and social sciences databases (such as Scopus and PubMed) show that employment sectors researched for mid- and post-COVID MH include healthcare professionals and frontline workers (emergency responders, retail workers, and essential service providers) [2-4], education professionals and students [5-7], technology and information technology professionals [8, 9], social and community workers [10, 11], and small business owners and entrepreneurs [12-14]. Although library jobs were commonly identified as experiencing high levels of stress during the

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COVID-19 pandemic [15-19], the post-COVID mental health of librarians has not yet been investigated.

Library- and COVID-related literature from mid-2020 (when the library sector transitioned into the new normal) to mid-2022 only touched on issues such as rethinking the roles of libraries during the pandemic [20], coordinating responses to the pandemic [21-26], facilitating access to health information [27-31], documenting the pandemic [32-34], studying users' information behaviours during the pandemic [35-37], supporting users' mental health [38, 39], assessing the impact of the pandemic on certain services/areas of operation [40-46], and remodelling particular services/programmes to meet new demands [47-58].

Even in the IFLA Journal special issue on libraries and COVID-19 published in March 2022, there were no articles on the post-COVID-19 mental health of librarians but only stories that showed how the library profession evolved in the initial two years of the pandemic: challenges and opportunities in times of crisis [59, 60], adaptation of libraries on a national scale [19, 61-63], novel approaches to service delivery [64-70], and issues of information access and misinformation [71-75].

Like other highly stressful professions during the pandemic, the library and information sectors also need research evidence on MH for future policy interventions regarding MH care for library staff. The pandemic has made people realise that COVID-19 is "not a crisis which can be over, but a new era..." [76, 77], and coping with crises is now an integral part of life [78-80]. For this reason, it is essential to assess the impact of the pandemic on the MH of the library community. As the new normal has come, one way to assess such impact is to find evidence on the MH of librarians in the post-COVID period. However, the findings about librarians' current (post-COVID) MH status could be more significant if viewed as the result of changes since a noticeable and recent past time point, such as the mid-COVID period. To achieve this, data on librarians' mid-COVID MH should also be collected. Conducting this research is therefore more urgent than ever to avoid longer recall periods, which can induce recall errors due to memory decay.

This study was conducted within the library community in Vietnam because the research team could access the regional contact lists of libraries and information centres in Vietnam. As of 2017, Vietnam has 47,797 libraries (including 748 academic libraries, 18,098 public libraries, and 28,951 school libraries) [81]. Besides these three main types of libraries, this study also targeted museums, archives, special libraries, and private or community information centres to assess their librarians', staff members', information specialists', or professionals' mental well-being using the WHO-5 Well-being Index developed by the WHO in 1998 [82] and other established scales. All subjects will be hereafter referred to as librarians, libraries or information centres as libraries or the library community, and library careers or information professions as library careers.

2. Methodology

2.1. Study design

The study was designed as a cross-sectional survey using a self-administered questionnaire distributed via Google Forms to 780 email addresses randomly selected from three regional library contact lists (260 emails from each list). Considering the population size to be approximately 50,000 (47,797 libraries plus museums, archives, etc.), or 250,000 (estimating an average of five members per library or information centre), the minimum sample size required, with a 95% confidence interval and a ±5% margin of error, is 381 or 384, respectively [83]. From 20 July to 30 September 2022, when the survey was closed, 431 responses were received. Table 1 shows the demographics of the surveyed sample.

Ample empirical evidence suggests that people often undervalue MH [84-86] and are reluctant to share their MH status [87-89] due to misconceptions that low MH status equates to mental illness or a

Table 1. Characteristics of the surveyed sample.

		Frequency	Percent
Region	1 North	135	31.3
	2 Central	142	32.9
	3 South	154	35.7
Library type	1 public libraries	152	35.3
	2 school libraries	113	26.2
	3 academic libraries	150	34.8
	4 other	16	3.7
Library size	1 less than 5 staff	148	34.3
	2 5-10 staff	70	16.2
	3 11-20 staff	99	23.0
	4 more than 20 staff	114	26.5
Age	2 20-30 years old	37	8.6
	3 31-40 years old	238	55.2
	4 41-50 years old	138	32.0
	5 51-60 years old	18	4.2
Seniority	1 less than 5 years	30	7.0
	2 5-10 years	79	18.3
	3 11-15 years	156	36.2
	4 16-20 years	92	21.3
	5 more than 20 years	74	17.2
Position	1 staff	268	62.2
	2 manager	80	18.6
	3 director	83	19.3
Specialisation	1 administration	39	9.0
	2 information resource	109	25.3
	3 information service	97	22.5
	4 information technology	35	8.1
	5 other	151	35.0
Qualification	1 vocational school diploma	78	18.1
	2 junior college degree	88	20.4
	3 university degree	152	35.3
	4 postgraduate degree	113	26.2
Gender	1 male	158	36.7
	2 female	272	63.1
	3 other	1	.2
Marriage	1 married	376	87.2
	2 unmarried	55	12.8
Children	1 have children	348	80.7
	2 does not have children	83	19.3

Source: Authors' survey on "Post-COVID mental health of librarians in Vietnam" in 2022.

lack of MH literacy [90-92], as well as the stigma and discrimination associated with MH [93, 94]. This distinct perception towards MH and MH research, along with attitudinal barriers to MH promotion, necessitates addressing ethical concerns in any MH-related study [95-97]. Consequently, the goals, design, and tools used in the survey, along with any potential ethical concerns, were clearly communicated to the Research Management Board of the School of Social Sciences and Humanities at Can Tho University. These details were also explained to potential respondents. Informed consent was implied when respondents completed and submitted the survey. Additionally, the survey included information on the importance of MH care, the national scope of the survey, the reliability and use of the WHO-5 Well-being Index, the significance and confidential treatment of the data provided, and the time frames of the mid-COVID (1 April 2020 to 17 March 2022) and new normal (from 17 March 2022 - present) periods.

2.2. Survey questionnaire

Prior to official data collection, the survey questionnaire was piloted twice with the same 20 participants over three weeks to establish test-retest reliability. The questionnaire was also reworded where necessary to ensure ease of reading, comprehension, and response, with an estimated completion time of 5 to 10 minutes. Table 2 justifies the functions of all the questions included in the survey.

One way to make information about Vietnamese librarians' current MH status more significant is to explore how their mental well-being has changed from a noticeable past time point to the present. Therefore, the WHO-5 was used twice to collect data on their current (post-COVID) mental well-being and their mid-COVID MH status. These two data sets can then be compared using a paired-sample t-test, which can determine whether there is a statistically significant difference in the mean scores measured from the same person's response to two different but related questions using the same scale [101].

Table 2. Questions used for the survey.

Questions	Contents	Function/Use	Tools/Aids
1-8	Geographic location, library type and size, age, seniority, position, specialization, qualification, gender, marriage and children	To compare mid- and post-COVID MH across different demographic groups.	N/A
9	COVID-19 infection	The infection rate can show COVID influence on the library community in Vietnam. The uninfected and infected ones can be compared on mid- and post-COVID MH.	N/A
10	Self-assessed scores of mid-COVID mental well-being	The reported MH scores can depict Vietnamese librarians' MH then and now. The scores can be used in a number of analyses to support the recommendations on MH care.	The WHO-5 Well-being Index (6-point 5-item scale; the raw score ranges from 0 to 25, 0 representing the worst possible and 25 best possible quality of life).
12	Self-assessed scores of post-COVID mental well-being		
11	Concerns or worries during the COVID pandemic	The most commonly reported concerns will support the recommendations on MH care. The sum of concerns or worries can show a correlation with mid- and post-COVID MH.	The concerns, mental and work challenges, and MH care practices from the worldwide library community [17]. MH care practices are also consulted from the guidelines of the American Library Association [98].
13	Concerns or worries after the COVID pandemic		
14	MH care practices that are already or are not in place at the respondent's library	The most commonly reported solutions, either already in place or not, will support the recommendations on MH care. the sum of solutions can show a correlation with mid- and post-COVID MH	
15	Mental challenges as perceived by the respondent at present	The most commonly reported challenges will guide the recommendations on MH care. The sum of challenges can show a correlation with mid- and post-COVID MH.	
16	Work challenges as perceived by the respondent at present		
17	How important the respondent thinks (A) MH is to their own work and (B) MH care is to their or their manager's management practices	The percentage will help anticipate how easy or difficult it is to implement MH advocacy in the library community in Vietnam.	Two 5-point single-item scales
18	How optimistic the respondent feels about (A) the future of the library career and (B) the world's future	The scores will supplement those gained from Questions 10 and 12, and show how essential it is to improve optimism.	Two 5-point single-item scales
19	Measurement of the respondent's general optimism		The Revised Life Orientation Test (5-point 6-item scale; raw scores range from 1 to 30; scoring is kept continuous - no benchmark for being an optimist or pessimist) [99].
20	Measurement of the respondent's tendency towards socially desirable responding	The score will be used for partial correlation calculation to remove the influence of socially desirable responses in correlation analyses on MH.	Strahan-Gerbasi's 1972 short version of the Marlowe-Crowne Social Desirability Scale (dichotomous 10-item scale, raw scores range from 1 to 10, 10 representing the highest tendency to socially desirable responding) [100].

Source: Authors' survey on "Post-COVID mental health of librarians in Vietnam" in 2022.

2.3. Data analysis

The data collected were screened and cleaned before being analysed using IBM SPSS Statistics 20. There were no missing data as all questions were mandatory.

The MH status was analysed using various parametric statistical techniques such as correlation, partial correlation, T-tests, and ANOVA. Therefore, the assumptions for these techniques, including outliers, normality, linearity, and homoscedasticity, were all considered.

To determine the reliability of these variables, Cronbach's alpha coefficients were checked where applicable. Table 3 shows that most values range from acceptable to good and excellent internal consistency

Table 3. Cronbach's alpha values of the questions or scales used.

	Cronbach's alpha	N of items	Status	Scale name
Q10midcovidMHtotal	.922	5	validated scale	WHO-5 1998
Q12postcovidMHtotal	.922	5	validated scale	WHO-5 1998
Q19optimismtotal	.818	6	validated scale	LOT-R 1994
Q20sodesiretotal	.725	10	validated scale	Marlowe-Crowne Social Desirability 1972 Scale

Source: Authors' survey on "Post-COVID mental health of librarians in Vietnam" in 2022.

reliability (Excellent >.9, Good >.8, Acceptable >.7, Questionable >.6, Poor >.5, Unacceptable <.5) [102]. Additionally, correlations among the variables were calculated to investigate reliability at an inter-variable level (Table 4). The Pearson product-moment correlation coefficients obtained showed medium to strong correlations between these variables (small correlation: r=.10 to .29, medium correlation: r=.30 to .49, large correlation: r=.50 to 1.0) [103].

Table 4. Correlations among the variables.

		Q10midcovidMHtotal	Q12postcovidMHtotal	Notes
Q10midcovidMHtotal	Pearson correlation	1	**.749****	mid-COVID MH correlates with post-COVID MH
	Sig. (2-tailed)		.000	
	N	431	431	
Q11summidcause	Pearson correlation	**-.815****	-.592**	mid-COVID MH correlates with the number of concerns during the pandemic
	Sig. (2-tailed)	.000	.000	
	N	431	431	
Q13sumpostcause	Pearson correlation	-.644**	**-.802****	post-COVID MH correlates with the number of concerns after the pandemic
	Sig. (2-tailed)	.000	.000	
	N	431	431	
Q14sumsolution	Pearson correlation	**.803****	**.853****	mid- and post-COVID MH correlate with each library's total MH care solutions
	Sig. (2-tailed)	.000	.000	
	N	431	431	
Q15sumspichallenge	Pearson correlation	-.724**	**-.807****	post-COVID MH correlates with the number of mental challenges perceived
	Sig. (2-tailed)	.000	.000	
	N	431	431	
Q16sumwkchallenge	Pearson correlation	-.710**	**-.791****	post-COVID MH correlates with the number of work challenges perceived
	Sig. (2-tailed)	.000	.000	
	N	431	431	
Q18Alibfutureopti	Pearson correlation	.779**	**.866****	post-COVID MH correlates with optimism about the future of libraries
	Sig. (2-tailed)	.000	.000	
	N	431	431	
Q18Bworldfutureopti	Pearson correlation	.502**	**.584****	post-COVID MH correlates with optimism about the world future
	Sig. (2-tailed)	.000	.000	
	N	431	431	
Q19optimismtotal	Pearson correlation	.641**	**.841****	post-COVID MH correlates with general optimism
	Sig. (2-tailed)	.000	.000	
	N	431	431	
**. Correlation is significant at the 0.01 level (2-tailed).				

Source: Authors' survey on "Post-COVID mental health of librarians in Vietnam" in 2022.

3. Results

3.1. COVID-19 infection rate

Table 5 shows that approximately two-thirds of the surveyed librarians were infected with COVID-19. Among those infected, nearly one-fourth contracted the virus through their work and service. This number could be higher if all infected individuals could clearly identify their infection sources.

Table 5. COVID-19 infection rate among librarians across Vietnam.

		Frequency	Percent
Valid	1 Not infected yet	141	32.7
	2 Infected thru activities outside	136	31.6
	3 Infected thru servicing and working	64	14.8
	4 Unable to identify infection sources	90	20.9
	Total	431	100.0

Source: Authors' survey on "Post-COVID MH of librarians in Vietnam" in 2022.

3.2. Comparison of mid-COVID and post-COVID mental health

A paired-samples t-test was conducted to determine if there was a significant change in the librarians' MH from the mid-COVID period to the new normal. There was a statistically significant increase in MH scores from the mid-COVID period (M=10.37, SD=5.667) to the new normal (M=14.00, SD=5.805), t(430)=-18.497, p<.0005 (two-tailed) (Appendix 1). The mean increase in MH scores was -3.63, with a 95% confidence interval ranging from -4.007 to -3.237. The eta squared (.44) indicated a large effect size (.01 = small effect, .06 = moderate effect, .14 = large effect) [103].

3.3. Comparison of mid- and post-COVID mental health between the uninfected and infected ones

An independent samples t-test was conducted to compare the mid-COVID and post-COVID MH scores for the uninfected and infected groups (Appendix 2).

For mid-COVID MH, there was a statistically significant difference in scores between the uninfected (M=13.68, SD=6.34) and infected (M=8.77, SD=4.5) groups, t(210)=8.23, p<.0005 (two-tailed). The magnitude of the differences in the means (mean difference = 4.92, 95% CI: 3.74 to 6.09) was large (eta squared =.14).

For post-COVID MH, there was also a statistically significant difference in scores between the uninfected (M=15.98, SD=6.3) and infected (M=13.03, SD=5.3) groups, t(237)=4.78, p<.0005 (two-tailed). The magnitude of the differences in the means (mean difference =2.95, 95% CI: 1.73 to 4.16) was moderate (eta squared =.05).

3.4. Differences in mid- and post-COVID mental health across regions, library types, and sizes

Three one-way between-groups ANOVAs with Tukey HSD and Games-Howell post-hoc tests were conducted to explore differences in mid- and post-COVID MH across regions, library types, and sizes. Subjects were divided into three to four groups according to their geographical locations and the types and sizes of their libraries.

The results of either standard or Welch's ANOVA tests indicated no statistically significant difference in the mid- and post-COVID MH scores among the three regions, the four library types and sizes (Appendix 3).

3.5. Differences in mid- and post-COVID mental health across age and seniority levels, positions, specialisations, and qualifications

Five additional one-way between-groups ANOVAs with Tukey HSD and Games-Howell post-hoc tests were conducted to explore differences in mid- and post-COVID MH across age and seniority levels, positions, specialisations, and qualifications. Subjects were divided into three to five groups according to their age, seniority levels, positions, specialisations, and qualifications.

Of the five ANOVA tests on mid-COVID MH scores, only two showed statistically significant differences at the p≤.05 level. One was for the four age groups, F(3, 427)=4.8, p=.003, with a significant difference between the 31-40 and 41-50-year-old groups (mean difference=-2.275, ω^2=.03). The other was for the five seniority groups, F(4, 426)=3.3, p=.01, with the 5-10 years seniority group differing significantly from the over 20 years group (mean difference=-2.916, ω^2 = .02).

For the post-COVID MH scores, these five ANOVA tests show three statistically significant differences at the p≤.05 level. One was for the four age groups, F(3, 427)=3.8, p=.01, with a significant difference between the 31-40 and 41-50-year-old groups (mean difference=-2.061, ω^2=.02). Another was for the five seniority groups, F(4,426)=4.2, p=.002, with the less than 5 years seniority group differing significantly from the 5-10 years group (mean difference=4.133, ω^2=.03) and this group from the over 20 years group (mean difference=-2.930, ω^2=.03). The third was for the three position groups, Welch's F(2, 178.7)=3.2, p=.04, with the staff group differing significantly from the manager group (mean difference=-1.664, est. ω^2=.01).

3.6. Comparison of mid-COVID and post-COVID mental health between genders, marital and parenthood statuses

Three independent samples t-tests were conducted to compare the mid-COVID and post-COVID MH scores between genders, marital statuses, and parenthood statuses.

Of the three t-tests on mid-COVID MH, there was only one showing a statistically significant difference, which was between the married (M=10.16, SD=5.6) and unmarried groups (M=11.85, SD=6), t (429)=-2.083, p=.04 (two-tailed). The magnitude of the difference in the means (mean difference=-1.698, 95% CI:-3.299 to -.096) was small (eta squared=.01).

There was a statistically significant difference in post-COVID MH scores between the married group (M=13.72, SD=5.7) and the unmarried group (M=15.85, SD=6.0), t(429)=-2.56, p=.01 (two-tailed), and between those with children (M=13.73, SD=5.7) and those without children (M=15.12, SD=6.2), t(429)=-1.97, p=.05 (two-tailed). The magnitude of the differences in means for the former case (mean difference=-2.13, 95% CI:-3.77 to -.49) was small (eta squared=.02), and for the latter (mean difference =-1.39, 95% CI:-2.78 to-.004) was also small (eta squared=.01).

4. Discussion

4.1. The mid- to post-COVID change in librarians' mental health

There was a statistically significant increase in MH scores from the mid-COVID period (M=10.37, SD=5.667) to the new normal (M=14.00, SD=5.805), t(430)=-18.497, p<.0005 (two-tailed), with a large effect size (eta squared=.44). What does this mean in reality?

According to the WHO-5 1998 scale manual, a raw score below 13 indicates poor well-being and suggests testing for depression under the Depression (ICD-10) Inventory [104]. To monitor possible changes in mental well-being, the manual advises obtaining the percentage score by multiplying the raw score by 4, giving a score ranging from 0 to 100. A percentage score of 0 represents the worst possible, whereas a score of 100 represents the best possible quality of life. A 10% difference in the percentage score indicates a significant change in mental well-being [105]. In this case, the mean raw score of mid-COVID MH multiplied by 4 and subtracted from that of the post-COVID MH gives 14.52%. This is a significant change in MH among librarians in Vietnam from the mid-COVID period to the new normal.

This change is also reflected in the decreasing magnitude of difference in MH between the uninfected and infected groups. In the mid-COVID period, this difference is large (mean difference=4.92, t(210)=8.23, eta squared=.14). In the new normal, this difference is moderate (mean difference=2.95, t(237)=4.78, eta squared=.05).

4.2. No statistically significant difference in mid- and post-COVID MH between the three regions of Vietnam, the four library types and sizes

There was no statistically significant difference at the p≤.05 level found in mid- and post-COVID MH scores of librarians in the North, Central, and South of Vietnam, in the four library types (public, school, academic libraries, and others including museums, archives, information centres, etc.), and in the four library sizes (by the number of staff members). This finding is noteworthy for two reasons.

First, there has been no research investigating whether there are differences in COVID impacts or COVID-related MH scores between the three regions in general or between different organisations within a field or industry across the country. This is a significant research direction because it can shed light on the causes of such differences, whether administrative measures, geographical features, or biological traits.

Second, it is often assumed that public libraries and large libraries are under higher levels of stress and strain because they have more users to serve and more work to handle. Therefore, this finding helps librarians in different parts of the country, and different library types and sizes, see that they have been in a similar situation during and after the COVID pandemic. Research into whether there are differences in the types of challenges or sources of stress they have been facing can support this finding. Overall, this finding is understandable because in each region surveyed, there are all types and sizes of libraries, as shown in Table 6.

Table 6. Four library types and sizes across the three regions of Vietnam.

		Q1region			Total
		1 North	2 Central	3 South	
Q2libtype4	1 public lib	60	72	20	152
	2 school lib	14	39	60	113
	3 academic lib	57	22	71	150
	4 others	4	9	3	16
Total		135	142	154	431
Q3libsize	1 less than 5 staff	20	60	68	148
	2 5-10 staff	22	30	18	70
	3 11-20 staff	56	23	20	99
	4 more than20 staff	37	29	48	114
Total		135	142	154	431

Source: Authors' survey on "Post-COVID mental health of librarians in Vietnam" in 2022.

4.3. Statistically significant differences in mid- and post-COVID MH across age and seniority levels, and types of positions

For mid-COVID MH, the two age groups that differ significantly are the 31-40 and 41-50-year-old groups (M_{31-40}=9.53, M_{41-50}=11.80). The two seniority groups that differ significantly are the 5-10-year group and the over-20-year group (M_{5-10}=8.96, $M_{>20}$=11.88).

The significant difference in MH between the 31-40 and 41-50 age groups, which are adjacent age groups, should be especially noted in management since it indicates the point where MH varies significantly during a crisis like the COVID-19 pandemic.

Additionally, it is noteworthy that the 41-50 age group has the highest MH score compared to the other age groups. This finding aligns to some extent with previous studies [106-109], despite differing research contexts. The fact that the 41-50 age group scored highest in this study suggests that this age group remained the most resilient during the pandemic, least affected by it, or toughened up to handle the crisis.

The 5-10 year seniority group has the lowest MH score, mainly because this group is predominantly composed of those in the 31-40 age group, which has the lowest MH level. This also explains why the 11-15-year seniority group has the second-lowest MH score. The over-20-year seniority group's second highest MH score may come from those in the 41-50 age group, which has the highest MH level.

For post-COVID MH, in addition to the previously mentioned significant differences in the mid-COVID period, there are two new significant differences: one between the less than 5-year and the 5-10-year seniority groups ($M_{<5}$=16.50, M_{5-10}=12.37), and one between the staff and manager groups (M_{staff}=13.59, $M_{manager}$=15.25).

In the new normal, the youngest age group (primarily the less-than-5-year seniority group) recovered the most quickly (M_{mid}=12, M_{post}=16.5). This quick recovery increased the difference in MH with the 5-10 seniority group, who appeared to recover slowly (M_{mid}=8.96, M_{post}=12.37) because, as discussed above, this group includes those in the 31-40 age group, who are in the busiest part of their lives.

The absence of a statistically significant difference in mid-COVID MH between the three types of positions indicates that staff, managers, and directors experienced similar stress levels during the pandemic. However, in the new normal, the manager group has the highest MH scores ($M_{manager}$=15.25) compared with the director group ($M_{director}$=14.11) and the staff group (M_{staff}=13.59). This is already reflected in reality, where mid-management is often either the least or most stressed group within organisations.

4.4. Statistically significant differences in mid- and post-COVID MH between different marital and parenthood statuses

Three independent-samples t-tests on genders, marital, and parenthood statuses found statistically significant differences (with small effect sizes) in mid- and post-COVID MH scores between different marital and parenthood statuses.

In mid-COVID MH, the married group scored lower than the unmarried group ($M_{married}$=10.16, $M_{unmarried}$=11.85). This lower MH score is assumed to be due to the greater burdens the married individuals had to handle in their everyday lives, which were exacerbated during the pandemic. The mean number of causes for low mid-COVID MH for the married group ($M_{married}$=5.54) versus the unmarried group ($M_{unmarried}$=4.51) confirms this assumption. This difference is 3.89 versus 2.62 in the post-COVID period; both differences are statistically significant with small effect sizes (.01 and .02). However, some research findings suggest that the married group can cope better and are less likely to experience income reduction-induced MH problems during the pandemic, thanks to the protective effects of their marriage [110-112].

Although there was no statistically significant difference in MH between those with and without children during this period, the very small or negligible effect size in this case suggests that a statistically significant difference could be found in other samples and settings.

The small mean difference in MH scores (mean difference =-.36) between those without children and their counterparts suggests that the pandemic's impact on them was as severe. A study measuring parental well-being during COVID-19 in Germany by M. Huebener, et al. (2021) [113] used a difference-in-differences (DiD) design, which showed significant declines in well-being for individuals with children relative to those without dependent children. S.T. Strömmer, et al. (2022) [114] found that young people in the UK, upon the abrupt onset of lockdown, felt shocked, confused, and ignored by the government and media. According to J.J. Janssens, et al. (2021) [115] and H. Sabato, et al. (2021) [116], young people's MH was affected during the pandemic because they suddenly lost the freedom, balance, and social connections they had before the pandemic.

In the post-COVID MH, besides the statistically significant difference between the married and unmarried groups ($M_{married}$=13.72, $M_{unmarried}$=15.85), there is now a significant difference between those with and without children (M_{child}=13.73, $M_{nochild}$=15.12), as indicated by the effect size in the mid-COVID MH case.

5. Conclusions

This study has provided an overall picture of the mental well-being of librarians in Vietnam in the new normal context after the COVID-19 pandemic. In general, librarians' MH has increased significantly from a level considered poor during mid-COVID times. Some librarians contracted the virus through their service and work, confirming why library jobs faced higher stress levels during the pandemic. The difference in MH scores between infected and uninfected librarians has changed from large to moderate from mid- to post-COVID periods. Significant differences were also found in mid- and post-COVID MH scores between different marital and parenthood statuses, age groups, seniority levels, and types of positions. It is expected that these findings will be among the sources of evidence for any potential consideration or planning of providing MH care for staff in Vietnam's libraries and information centres, be it MH care in response to crises such as the COVID pandemic, or the daily MH care for staff who have learnt from the pandemic that "coping with crises is now an integral part of life" [78-80].

APPENDICES

Appendix 1. Paired-samples t-test on mid-COVID and post-COVID mental health.

Table 1. Paired samples statistics.

		Mean	N	Std. deviation	Std. error mean
Pair 1	Q10midcovidMHtotal	10.37	431	5.667	.273
	Q12postcovidMHtotal	14.00	431	5.805	.280

Source: Authors' survey on "Post-COVID mental health of librarians in Vietnam" in 2022.

Table 2. Paired samples test.

		Paired differences					t	df	Sig. (2-tailed)
					95% confidence interval of the difference				
		Mean	*Sd.deviation*	*Std. error mean*	*Lower*	*Upper*			
Pair 1	Q10midcovidMHtotal - Q12postcovidMHtotal	-3.622	4.065	.196	-4.007	-3.237	-18.497	430	.000

Source: Authors' survey on "Post-COVID mental health of librarians in Vietnam" in 2022.

Appendix 2. Independent samples t-test on mid- and post-COVID mental health between the uninfected and infected ones.

Table 1. Group statistics.

	Q9getcovid2group	N	Mean	Std. deviation	Std. error mean
Q10midcovidMHtotal	1 not infected yet	41	13.68	6.367	.536
	2 infected	90	8.77	4.496	.264
Q12postcovidMHtotal	1 not infected yet	41	15.98	6.334	.533
	2 infected	90	13.03	5.278	.310

Source: Authors' survey on "Post-COVID mental health of librarians in Vietnam" in 2022.

Table 2. Independent samples t-test.

		Levene's equality of variances		t-test for equality of means						
									95% confidence interval of the difference	
		F	*Sig.*	*t*	*df*	*Sig. (2-tailed)*	*Mean difference*	*Std. error difference*	*Lower*	*Upper*
Q10midcovidMHtotal	Equal variances assumed	24.348	000	9.240	429	000	4.915	.532	3.870	5.961
	Equal variances not assumed			8.225	210.141	000	4.915	.598	3.737	6.093
Q12postcovidMHtotal	Equal variances assumed	8.078	005	5.087	429	000	2.948	.579	1.809	4.087
	Equal variances not assumed			4.778	237.375	000	2.948	.617	1.732	4.163

Source: Authors' survey on "Post-COVID mental health of librarians in Vietnam" in 2022.

Appendix 3. One-way between-groups ANOVAs on mid- and post-COVID mental health across regions, library types, and sizes.

Table 1. Differences in mid-COVID mental health across regions, library types, and sizes.

		N	Mean	SD	Std. Error	Levene's test Sig.	df[a]	F[a]	Sig.[a]	Statistically significant difference in scores[b]	Magnitude of the difference (Omega Sqr[c])
Region	1 North	35	.84	.465	470						
	2 Central	42	0.61	.446	457	.082	2 428	881	415		- .0006
	3 South	54	0.62	.033	486						
	Total	31	0.37	.667	273					no	extremely small
Library type	1 public lib	52	0.44	.266	427						
	2 school lib	13	0.13	.158	579						
	3 academic lib	50	0.44	.481	448	.028	3 66.988	089	966		- .006
	4 others	6	0.81	.687	.922						
	Total	31	0.37	.667	273					no	very small
Library size	1 less than 5 staff	48	0.82	.229	512						
	2 5-10 staff	0	.17	.062	605						
	3 11-20 staff	9	.71	.189	521	.062	3 427	.484	060		.01
	4 more than 20 staff	14	1.11	.535	518						
	Total	31	0.37	.667	273					no	small

a. If Levene's test Sig.≤.05, df, F, and Sig. are Welch's ANOVA statistics.
b. If "yes", the Mean Difference (I-J) in Tukey HSD or Games-Howell post-hoc tests is provided for groups that differ significantly.
c. If Welch's ANOVA statistics are used, this is the estimated omega squared.
Source: Authors' survey on "Post-COVID mental health of librarians in Vietnam" in 2022.

Table 2. Differences in post-COVID mental health across regions, library types, and sizes.

		N	Mean	SD	Std. Error	Levene's test Sig.	df[a]	F[a]	Sig.[a]	Statistically significant difference in scores[b]	Magnitude of the difference (Omega Sqr[c])
Region	1 North	35	4.07	.649	486						
	2 Central	42	3.58	.643	474	.400	2 428	593	553		- .002
	3 South	54	4.31	.096	491						
	Total	31	4.00	.805	280					no	very small
Library type	1 public lib	52	4.31	.148	418						
	2 school lib	13	3.31	.349	597						
	3 academic lib	50	4.19	.864	479	.005	3 67.327	655	583		- .002
	4 others	6	4.06	.206	.802						
	Total	31	4.00	.805	280					no	very small
Library size	1 less than 5 staff	48	4.48	.538	537						
	2 5-10 staff	0	2.57	.537	662						
	3 11-20 staff	9	3.59	.429	546	.005	3 212.423	.505	060		.01
	4 more than 20 staff	14	4.60	.128	480						
	Total	31	4.00	.805	280					no	small

a. If Levene's test Sig. ≤ .05, df, F, and Sig. are Welch's ANOVA statistics.
b. If "yes", the mean difference (I-J) in Tukey HSD or Games-Howell post-hoc tests is provided for groups that differ significantly.
c. If Welch's ANOVA statistics are used, this is the estimated omega squared.
Source: Authors' survey on "Post-COVID mental health of librarians in Vietnam" in 2022.

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COMPETING INTERESTS

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Revolutionising agriculture and rural economy through digital transformation: Bridging theory with practice

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Abstract:

Digital transformation presents an avenue for fostering the sustainable growth of agriculture, rural economies, and the farming community. Findings from comprehensive desk research and field surveys conducted across three provinces - Son La, Nam Dinh, and Ninh Thuan in 2023 - indicate that the agricultural sector has initiated its journey towards digital transformation. The strategy for digital transformation prioritises the establishment of big data systems, digital infrastructure, and digital platforms, alongside initiatives aimed at modernising state governance and fostering e-commerce. The rural economy benefits from rapidly developing digital infrastructure, easy Internet access for people, digital technology platforms in business management, and expanding consumer markets through e-commerce. Nonetheless, digital transformation also presents numerous challenges. Drawing from theoretical frameworks and practical evaluations, proposed solutions entail the development of a comprehensive architecture for digital transformation within the agricultural sector. This includes the establishment of a national digital database for agriculture and rural economies, incentivising investments, deploying digital technologies, and enhancing the digital literacy of farmers through capacity-building initiatives.

Keywords: **agricultural development, digital transformation, rural economic development.**

Classification numbers: **2.1, 2.2, 4.1**

1. Introduction

Digital transformation in the era of the fourth industrial revolution is a global trend with significant implications for all industries and economies. The application of digital transformation in the agricultural sector will help farmers, cooperatives, and businesses improve productivity and quality, optimise resources in production and distribution activities, and address issues of sustainable development [1, 2]. The application of digital technology is also the "key" to unlocking modern agricultural development [3-5].

In Vietnam, rural dwellers account for 63% of the population, 66% of households, and 68% of workers. The value of the agricultural sector contributes 13.96% to GDP. The digital transformation of the agricultural sector will be an opportunity for Vietnam to overcome the current shortcomings of the agricultural sector, such as small production models, low productivity, lack of value chain links, and the impacts of climate change. Digital transformation creates opportunities to develop a more sustainable agricultural sector. Additionally, digital transformation induces significant changes in rural economic development and improves the lives and roles of farmers [6, 7].

Given the high expectations of digital transformation for national development, Decision No. 749/QD-TTg of the Prime Minister approved the "National digital transformation programme until 2025, orientation to 2030", which identifies agriculture as one of eight priority areas for digital transformation. The Ministry of Agriculture and Rural Development (MARD) has established a Digital Transformation Steering Committee to direct the implementation of digital transformation tasks under three pillars: digitalising state management of MARD, the digital agricultural economy, and digital farmers. Currently, digital transformation of the agricultural sector will focus on data digitisation to serve digital applications, helping

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farmers add value, increase production efficiency, and meet the needs of both domestic and international markets in terms of transparency in the production process and product traceability.

In fact, digital transformation is only in the beginning stages. Many opportunities are opening up, but they also come with many challenges and barriers. Therefore, appropriate and synchronous solutions are necessary for successful digital transformation in agricultural development, rural economy, and for improving farmers' ability to master digital technology. This article is based on document research and social survey results in three provinces - Son La, Nam Dinh, and Ninh Thuan in 2023. It focuses on building a theoretical basis for digital transformation, assessing the current status of digital transformation in agriculture and rural economy, and proposing solutions to promote digital transformation in the agricultural sector and rural development.

Digital transformation is still in its infancy, presenting numerous opportunities alongside significant challenges and hurdles. Hence, there is a pressing need for synchronised solutions to ensure successful digitalisation in agricultural development, rural economies, and the enhancement of farmers' digital literacy. This article draws upon document analysis and social surveys conducted in three provinces - Son La, Nam Dinh, and Ninh Thuan - during 2023. It primarily focuses on establishing a theoretical framework for digital transformation, evaluating its current practices in agriculture and rural development, and proposing strategies to advance digitalisation within these sectors.

2. Research methods

The research leverages both secondary data sourced from published documents and primary data. To collect primary data, we selected three provinces with a moderately high level of digital transformation (Nam Dinh), and an average level (Ninh Thuan, Son La) (Ministry of Information and Communications, 2023, cited from Nhan Dan Newspaper). Additionally, these three provinces represent different rural areas of Vietnam [8]: Nam Dinh represents the coastal plain, Son La represents the northern mountains, and Ninh Thuan represents the coastal mountains. Regarding data collection techniques, a mix of qualitative and quantitative methodologies was employed. This included in-depth interviews and group discussions with key stakeholders such as local government officials, managerial personnel, cooperative leaders, business leaders, alongside a household survey conducted through a semi-structured questionnaire.

For the household survey conducted in 2023, we applied a two-stage stratified random sampling method. Firstly, based on the assessment via in-depth interviews and focus group discussions of relevant stakeholders in the selected provinces about the level of digital transformation, we selected representative districts with an average level of transformation in each province (e.g, Giao Thuy, Hai Hau in Nam Dinh; Moc Chau, Mai Son, Bac Yen in Son La; Ninh Son, Ninh Phuoc, Ninh Hai in Ninh Thuan). In every district, we selected two representative communes. Then, using the systematic random sampling method, the surveyed sample of households was withdrawn from the household list of each commune. With a large sample size of 1,330 selected households, the confidence level is assured at over 95% [9, 10].

Regarding data processing and analysis, with data from document research, interviews, and discussions with relevant parties, we used the triangulation technique to verify the information's reliability. Particularly, initial results from document research were discussed in in-depth interviews and group discussions with relevant stakeholders including local government leaders and officers, agricultural extension staff, and private actors in the studied sites. Only consistent results from various information sources are synthesised into research findings. Additionally, key findings relating to the status of digital transformation in agriculture obtained from document research were included in the household survey to gain a new bottom-up perspective on digital transformation practices in agriculture. We used SPSS 22 to analyse quantitative data, measuring the central tendency of various aspects of farmers' digital transformation, including access to smart devices and the internet, knowledge and openness to digital transformation, and the use of digital platforms in communication, production, trade, and payment.

3. Research findings

3.1. Theory on digital transformation in agriculture and rural economy

3.1.1. Digital transformation

Digital transformation is the process of overall and comprehensive change of individuals and organisations in the way of living, working and production methods based on digital technologies. According to the Ministry of Information and Communications, digital transformation is the next development step of computerisation, achieved thanks to the outstanding progress of new technologies from the groundbreaking Industrial Revolution 4.0, especially digital technology with its main pillars being cloud computing technology, big data, artificial intelligence, internet of things, blockchain, and virtual reality [11]. From another approach, digital transformation is the process of change in the real digital environment about how to live and work with digital technologies. Change includes changes in the way of life of individuals and changes in the way of working of organisations, businesses, and countries [12].

Particularly in Vietnam, the national digital transformation programme aims to sharply increase labour productivity and create momentum for new economic growth. Digital transformation is defined as creating a digital environment and ecosystem, changing how all government agencies and businesses operate and all people's socio-economic practices based on technological innovations. Therefore, digital transformation is focused on three main pillars: digital government, digital economy, and digital society [12].

Challenges of digital transformation: Digital transformation offers abundant opportunities, yet it also presents numerous hurdles and challenges. The most significant obstacles pertain to shifting perceptions, human capabilities, institutional frameworks, and technological advancements. Firstly, the foremost challenge in digital transformation lies in altering perceptions. Transitioning to a fully digital environment necessitates changing habits, shifting worldviews, and transforming mindsets. Secondly, the institutional challenge involves adapting to the rapid change of digital technology, the real-digital environment and creating a suitable legal environment to support individuals, organisations, and businesses associated with digital technology and the digital environment. Thirdly, technological challenges relate to the ability to create and master digital technology. Distinct challenges revolve around managerial proficiency, data management, safeguarding information, investment in innovative development, crafting digital technologies, and nurturing digital technology talent [12].

3.1.2. Argument for agricultural and rural economic development

Digital transformation for agricultural development: The sustainable agricultural and rural development strategy for the period 2021-2030, with a vision to 2050, has been approved, in which "promoting digital transformation in the field of agriculture and rural development" is one of the core solutions to carry out this strategy. In line with this strategy, MARD has developed a digital transformation project for the agriculture sector for the period 2021-2025, oriented to 2030 with three main pillars: digital government, digital agricultural economy, digital rural areas, and digital farmers to achieve the goal of implementing agricultural digital transformation synchronously and effectively. The focus of digital transformation in Vietnamese agriculture is applying digital technology solutions to create products with higher value and more efficient production. Argument-shifting subjects include state agencies, businesses, cooperatives, and farmers. In particular, state agencies play the role of directing, orienting, managing, and promoting (digital government); businesses play a key pioneering role (digital economy); cooperatives and farmer households master the application of digital technology (digital society). Digital transformation orientation for agricultural development focuses on eight main goals:

- Develop strategies and plans to develop precision agriculture and smart agriculture.
- Build a big data system.
- Promote the development of digital farmers.
- Promote the application of digital technology.
- Automate production processes.
- Monitor product origin and supply chain.
- Develop e-commerce in the agricultural industry.
- Digital transformation in executive management.

In the current period, digital transformation efforts in agriculture aim to contribute to building a "transparent - responsible - sustainable" food system. In fact, MARD has prioritised livestock and crop sectors as a pioneering field in digital transformation. The first step is to digitise and build a digital database for the crop and livestock industry.

Digital transformation for a rural economy: Digital transformation in agricultural economics includes the application of digital technologies to all agricultural production and business activities from production to processing, distribution, and consumption. The key contents of digital transformation for rural economy development include: i) Traceability - Using digital technology (blockchain) to track origins and manage supply chains in agriculture; ii) Collect and analyse digitalised data - Apply big data technology; iii) Smart production: Using technology such as Internet of Things (IoT) and artificial intelligence (AI) to optimise and automate processes in the agricultural product value chain; iv) Managing production and logistics information: Applying digital technology to effectively manage production information and logistics; v) Multi-channel sales - Expanding sales channels through online platforms, for example through the company's official website, through social networking platforms (YouTube, Facebook, TikTok, etc.), e-commerce platforms, and vi) Providing information and support for connecting sellers/buyers - Creating a digital agricultural ecosystem to encourage people and businesses to participate in digital transformation.

Currently, in Vietnam, a number of smart farm/business models for agricultural production and business (smart farm/smart business) have emerged. These models have applied digital technology in production, processing, consumption, and even in management. However, these models are not complete and have not been widely applied in enterprises and production and business cooperatives in the agricultural industry [7].

Digitalising farmers: Farmers are the main subjects of digital transformation in agriculture and rural areas. Digital transformation for farmers means changing the traditional production mindset of farmers to a transparent and responsible agriculture. Farmers directly participate in building big data about agriculture such as crops, livestock, fisheries, and land. Farmers are provided with information about the environment, weather, and land quality so that they can make informed decisions regarding appropriate production and business directions. Thus, digital transformation for farmers can be summarised as the change of farmers in production processes and product consumption based on digital technology application software and extensive participation in e-commerce. Digital transformation creates "digital farmers", who are farmers that use digital technology in their agricultural production process. Farmers use digital devices and applications to improve performance, productivity, product quality and value, and actively engage in e-commerce. Currently, the trend of digital transformation serving farmers is focused on two main types of platforms: Digital agricultural database and Smart village. The smart village model is built on five main pillars: i) Smart institutions, ii) Smart infrastructure, iii) Smart production and business, iv) Smart services, and v) Intelligent resources [13].

3.2. Current practices of digital transformation for agricultural development and rural economy in Vietnam

This section analyses the current practices of digital transformation in agriculture in Vietnam. The content is scoped to digital transformation in state management of the agricultural sector (under the digital government pillar), digital transformation in the rural economy (under the digital economy pillar), and digital transformation for farmers (under the digital society pillar). The above digital transformation aspects are focused on content related to the agricultural industry.

3.2.1. State management of digital transformation for agricultural development

Strategy and plan for developing precision agriculture, smart agriculture, and infrastructure for digital transformation of the agricultural sector: MARD has developed the "Digital transformation project of the agriculture and rural development sector for the period 2021-2025, with a vision to 2030" as a basis for the entire sector to implement the transformation. This project aims to create new motivation for improving production efficiency; attract the participation of all components in the production chain from farmers, rural areas, businesses, and cooperatives to engage in the digital transformation process in the agricultural industry. The most important goal in the 2021-2025 period is to build a database of the agricultural sector at a national level and build digital technology application platforms in product traceability and information provision.

Particularly, MARD has promoted the formation of an agricultural digital data platform and developed e-commerce and digital agricultural services. In addition, Decision No. 150/QD-TTg of the Prime Minister approved the strategy for sustainable agricultural and rural development for the period 2021-2030, with a vision to 2050, sets the goal to "Develop and synchronise tools for digital transformation in the field of agriculture and rural areas including data creation, and standardisation of databases on agricultural land, crops, livestock, and fisheries, irrigation, natural disaster and epidemic prevention; connect and share these databases to serve the direction and administration of state agencies and the production and business of people and businesses."

Currently, MARD has focused on building and implementing the national database system on crop and livestock production. Regarding the crop database, the Department of crop production is assigned to be the leading unit to organise and coordinate with Vietnam Posts and Telecommunications Group (VNPT) Group to organise the implementation. This system has been in operation since August 2023, starting with managing the database and managing planting area codes. Up to this point, the information system, updated database, and management of planting area codes have been built on the website version and mobile application[1].

Regarding the development of the livestock production database, the Department of livestock production also coordinated with VNPT Group to develop and pilot information collection software to build a database on animal feed and a database on livestock facilities. To date, the software has been piloted in seven provinces and cities and 269 animal feed factories across the country; granted 600 accounts to update the database to factories, commune-level veterinary staff, and large farms and livestock enterprises[2].

MARD has also issued e-government architecture version 2.0. In particular, this Ministry has deployed applications and services to serve people and businesses such as: Electronic information portal; Online public service portal; Electronic one-stop system; Synchronise and publicise 241 administrative procedures on the national public service portal and 24 level 3 online public services provided on the customs single-window system. For electronic public services and online public service systems, MARD provides many online public services at levels 3 and 4[3].

Regarding building digital platforms, many digital platforms have been built and begun to operate. To date, there have been 50 digital platforms announced, including 18 platforms serving the digital government, 16 platforms serving the digital economy, and 16 platforms serving the digital society. There are 63/63 provinces that have been assigned the task of deploying and using at least one digital platform; 43/63 provinces have announced the selection of digital platforms to be deployed in 2022 integrated into the digital transformation plan.

However, digital application is still limited in the rural economy. By the end of 2021, only about 2,200/19,000 agricultural cooperatives had implemented digital transformation, with nearly 2% of the total number of farming households trained in digital technology[4]. Therefore, MARD needs to coordinate with the Ministry of Labour, War Invalids and Social Affairs to develop a training framework programme on digital technology and digital transformation for agricultural enterprises, agricultural cooperatives, and farmers. This will promote the application of digital technology in the rural economy.

Promoting the use of digital applications/platforms: Currently, MARD promotes the use of digital technology applications/platforms for the e-commerce of agricultural products. Supports focus on training on digital skills; instructions for registering an account on e-commerce platforms; instructions for registering an online payment account and implementing the packaging-connection-delivery process for agricultural producers. In addition, there is support for farmers to sell on online platforms (Facebook, Zalo, YouTube, etc.). By the end of 2021, more than 2 million agricultural households were trained in digital skills; nearly 50,000 agricultural products were launched on the e-commerce platform with thousands of transactions. Vietnamese e-commerce platforms such as Postmart and Voso are providing great support for agricultural products. Statistics from the Ministry of Information and Communications show that from August 2022 to June 2023, there were more than 5.4 million active accounts on the two e-commerce platforms: Voso (voso.vn of Viettel) and Postmart (postmart.vn of VNPT).

In addition, Vietnamese agricultural products have been available on many e-commerce platforms such as Shopee, Lazada, and Tiki. According to information from MARD, from 1 June 2022 to 1 June 2023, Vietnam's agricultural product revenues reached about 4.6 billion VND with more than 49,000 products sold, of which Shopee accounts for 95.2% of total revenues and 90.5% of output quantity, followed by Lazada and Tiki. For agricultural products, customer segments often buy mainly at prices of 100,000-200,000 VND per purchase[5].

3.2.2. Current status of digital transformation for rural economy development

Building digital infrastructure, access, and use of the Internet of rural people*:* Evidence shows that

[1]https://csdltrongtrot.mard.gov.vn/#/pages/home, accessed 2 December 2023 (in Vietnamese).

[2]https://csdlchannuoi.mard.gov.vn/#/pages/home, accessed 2 December 2023 (in Vietnamese).

[3]https://dichvucong.mard.gov.vn/portaldvc/Home/default.aspx, accessed 2 December 2023 (in Vietnamese).

[4]https://tmdt.mic.gov.vn/tin-tuc-hoat-dong/hoat-dong-chuong-trinh/chuyen-doi-so-nong-dan-viet-nam-tren-hanh-trinh-cong-listen-so-2442.html, accessed 2 December 2023 (in Vietnamese).

[5]https://www.mard.gov.vn/Pages/phat-trien-thuong-mai-dien-tu-cho-nong-san-tai-lam-dong.aspx, accessed 2 December 2023 (in Vietnamese).

digital infrastructure and the proportion of households connected to information technology infrastructure systems in rural areas have been improving rapidly over the past few years. Analysis results of the Vietnam rural report conducted by MMA Global (2021) [11] show that 60% of Vietnam's population still lives in rural areas and is increasingly transforming into a digital community. While traditional television usage has declined, the Internet, especially through smartphones, is growing strongly, especially since 2018 in rural areas. The results reported by the Ministry of Information and Communications also show that digital infrastructure in rural areas has developed rapidly in recent years. Telecommunications infrastructure has expanded throughout the country with more than 600,000 km of fibre optic cables, providing high access speeds (>27 Mbps). The number of fixed broadband subscribers has surpassed 13 million, of which more than 12 million use fibre optic cables with access speeds of more than 10 Mbps. Total international bandwidth reached more than 8.1 Tbps. The mobile network has a coverage rate of up to 99.7%, and the 5G mobile network has been licensed for testing, promising to bring a breakthrough in connection speed, especially as a foundation for IoT infrastructure in the process of digital transformation.

Table 1. Current status of internet access and use by rural citizens.

Or.	Access and use of internet	Proportion (%)
1	Internet usage rate in rural Vietnam	77
2	Daily internet access level	91
3	Percentage of rural citizens who shop online	70
4	Entertainment internet access rate	79
5	Percentage of internet access searching for information about health and education	76
6	Rate of searching and viewing videos on social networks	67

Source: MMA Global (2021) [11].

Additionally, smartphones are currently the most popular device for accessing the Internet in rural areas. Internet use in rural Vietnam is increasing, with 77% of the rural population having Internet access, of which 91% access it daily (Table 1). The Internet plays an important role in the daily lives of rural people, allowing them to access online resources to meet personal needs such as online shopping (70%), entertainment (79%), and health and education (76%). Rural people also frequently search and watch videos on social networks, with a weekly usage rate of up to 67%.

Within the framework of the national digital transformation programme, to promote rural people to connect and apply technology applications and digital platforms, support focuses mainly on communication and capacity building through various training courses. Along with that are training courses and peer-to-peer instructions on how to use these applications (Fig. 1). Survey results show that localities have mobilised local youth unions to propagate and support people in installing and using applications on smartphones. This is an innovative and cost-effective solution to implement digital transformation in rural communities.

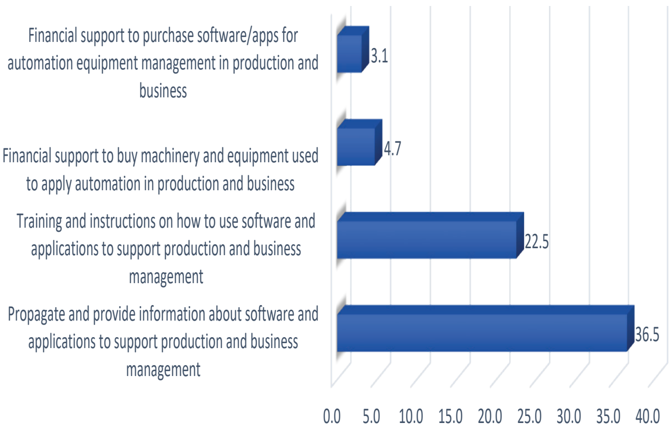

Fig. 1. Support received by rural households (%). Source: Summary of survey data in Son La, Nam Dinh, and Ninh Thuan (2023).

The development of rural economic organisations is associated with digital transformation: As of 1 July 2020, Vietnam has 9,123 thousand agriculture-forestry-fishery production units, of which the number of households is 9,108 thousand, the number of cooperatives is 7,418, and the number of enterprises is 7,471. Enterprises, including cooperatives in the agricultural sector, have begun to make rapid changes in the digital economy. Recent research results show that awareness of the importance of digital technology has improved significantly. However, according to the 2022 Digital transformation annual report, only 6.2% of businesses have completed determining digital transformation goals and 7.6% have gradually built a digital transformation plan[6].

[6]https://digital.business.gov.vn/thuc-trang-va-nhu-cau-ung-dung-cong-nghe-so-trong-nghiep-vu-hoat-dong-cua-mot-so-doanh-Vietnamese-American industry/, accessed 2 December 2023 (in Vietnamese).

Regarding the Digital transformation roadmap, there are still many shortcomings. Findings obtained from the survey in the three provinces of Son La, Nam Dinh, and Ninh Thuan show that only 35.3% of businesses have digitised data and built a digital transformation plan. Survey results also show that enterprises/cooperatives in the agricultural sector are mainly small-scale, applying scientific and technological advances in some stages and depending on the characteristics and field of activity. Most businesses and cooperatives have an Internet connection and have applied software for production management, warehousing, accounting, and electronic payment. However, there are very few businesses that carry out synchronous digital transformation, with a coherent digital transformation design and roadmap.

State-supported e-commerce and e-payments are the focus of many transformation support efforts from the government. However, this transformation of the rural economy sector is not as expected. Some businesses/cooperatives have launched products on e-commerce platforms, but these platforms have not been effective (increased costs for both sellers and buyers, transaction procedures, and payments are still slow). Instead, rural businesses/cooperatives choose other alternative online sales channels via YouTube, Zalo, Facebook, TikTok rather than using state-supported e-commerce platforms. Most cooperatives are still slow in digital transformation, unable to keep up with changes in technology, although they have also applied social networks and electronic payments in promotion, sales, and payment.

3.2.3. Current status of digitalising farmer

Vietnamese farmers are more interested in digitalisation than anywhere else in the ASEAN region. According to a survey by the Asian crop life association, in the first quarter of 2021, 42% of Vietnamese rice, vegetable, and fruit farmers polled said they wanted to apply digitalisation in agriculture. Compared to the three ASEAN countries in the same survey, Vietnam has the highest rate. In addition, the survey also showed that more than 89% of Vietnamese people use mobile phones and 68% of them use smartphones. This is a great opportunity for farmers to popularise and apply improved agricultural technologies. At the same time, this is also a great opportunity for partners in the agricultural and food production chain to continue to cooperate in promoting testing activities, applying new technology, and implementing training programmes so that farmers understand and use those technologies effectively and safely with the goal of ensuring access opportunities and increasing technology application rates for farmers.

Our household survey results confirm that smart devices have become popular and the proportion of households with internet connection is quite high (Table 2). Among smart devices, smartphones and smart TVs are the most popular devices in rural households, followed by laptops. These devices serve both communication needs and entertainment, learning, and internet connection needs. This has a huge role in connecting people to the world through applications and the internet. This is an important foundation to start digital transformation for farmers. For example, the percentage of households that reported having access to the internet is 83.6%, of which the broadband connection is 26.1% and the level of access to 3G/4G services is 58.8% (Fig. 2). However, compared to the goal of the national digital transformation programme, by 2025, the rate of broadband internet coverage will be 80% of households; this percentage of access to the internet in rural areas is still quite far away.

Table 2. Number of smart devices with internet connection per 100 households.

Device	Average number/100 households
Smart television	83
Computer	30
Smartphone	284
Tablet	9
Security camera	56

Source: Summary of survey data in Son La, Nam Dinh, and Ninh Thuan (2023).

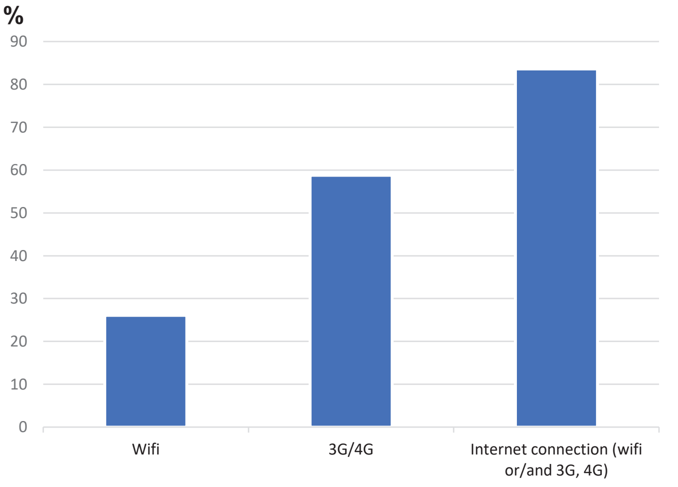

Fig. 2. The percentage of households who reported that they have access to the internet (%). Source: Summary of survey data in Son La, Nam Dinh, and Ninh Thuan (2023).

Table 3. Household's knowledge of digital transformation and digital technology.

Knowledge	Don't know	Have heard it before	Know but don't understand	Understand a little	Understand very well	Average score
Digital transformation	37.7	23.6	14.3	17.7	6.8	2.3
Digitisation	45.7	22.3	14.2	13.4	4.5	2.1
Digital technologies	60.1	20.4	10.1	6.9	2.6	1.7
Online public services	31.1	20.9	18.6	21.7	7.8	2.5
E-commerce (online market)	29.2	16.8	9.2	22.4	22.4	2.9
Electronic banking: Non-cash payment	31.8	19.5	9.7	18.1	20.9	2.8

Source: Summary of survey data in Son La, Nam Dinh, and Ninh Thuan (2023).

Regarding people's knowledge of digitalisation and digital transformation, the findings show that people's knowledge is still at a low level (Table 3). The concepts and terms of digitalisation, digital transformation, digital technology, or digital platforms that are available for application in production, business, and economic transactions are still new to them. Among the surveyed contents, e-commerce and e-banking are more familiar to rural households. This is understandable because these two fields have grown rapidly in popularity in the past three years due to the COVID-19 pandemic and social isolation, which has pushed businesses to develop e-commerce applications and platforms, digital banking, and they are relatively widely accepted and used by people.

Regarding skills in using digital applications, the applications that people have higher proficiency in relate to applications that are easy to use and aimed at meeting communication and entertainment needs like Zalo, Facebook, and Google. Applications serving production, business, and online payments require more advanced knowledge, so their level of mastery is relatively low, with the average score mostly around 2 on a 5-level Likert scale (Fig. 3).

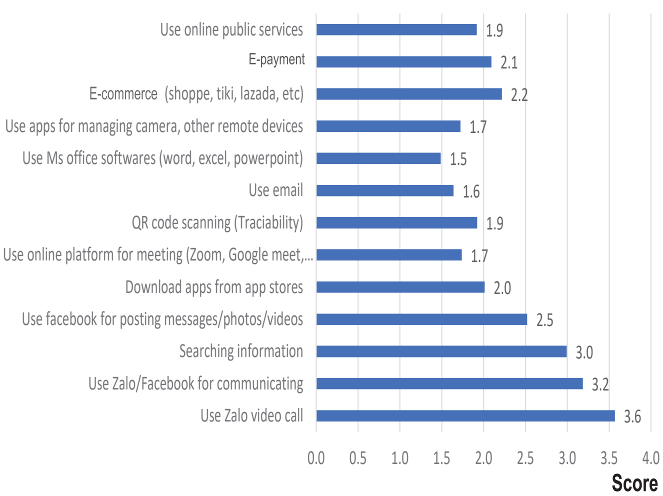

Fig. 3. Skills in using digital technology applications on smart devices. Source: Summary of survey data in Son La, Nam Dinh and Ninh Thuan (2023).

It is interesting that rural households show openness to accepting digital technologies and have a desire for digital transformation. According to the 5-level Likert scale, the average score that people rate on the necessity of digitalisation, digital transformation, application of digital technologies, and digital platforms is above 3.5 (Table 4). People's openness and support for digital technology are very favourable conditions for implementing digital transformation in agriculture and rural areas.

Table 4. Acceptance level of digital technology application and digital transformation.

	Completely unnecessary	Unnecessary	Normal	Necessary	Very necessary	Average score
Digitising	7.1	13.5	19.1	38.5	21.8	3.5
Digital transformation	6.5	14.9	18.2	40.1	20.3	3.5
Online public services	6.2	13.5	18.5	41.5	20.4	3.6
E-commerce	6.2	11.8	15.7	40.1	26.3	3.7
Electronic banking	6.5	11.4	14.8	36.7	30.6	3.7

Source: Summary of survey data in Son La, Nam Dinh, and Ninh Thuan (2023).

However, in practice, the adoption of applications and platforms for production, commerce, and trade remains relatively low. Survey findings indicate that fewer than 50% of households utilise smartphones for accessing digital platforms for production and business purposes, such as online shopping, cashless transactions, automated equipment control applications, and product origin traceability (Table 5).

Table 5. Usage level of digital applications and platforms for production and business.

No	Applications, platforms	Frequency of use				
		Absolutely no use	*Little use*	*Use occasionally*	*Frequent*	*Very often*
1	Scan QR code (traceability)	58.0	13.9	12.0	10.3	5.9
2	Use bookkeeping and production management software (Word, Excel, accounting software, etc.)	74.0	12.1	7.3	4.3	2.3
3	Using automatic machinery control applications in production: cameras, automatic irrigation machines, etc.	64.7	13.8	10.1	7.4	4.1
4	Buy and sell online (via trading floors: Shopee, Tiki, Sendo,...)	48.7	12.1	16.2	14.9	8.2
5	Cashless payment	54.8	10.4	13.6	12.9	8.3
6	Use of online public services: register birth and death, buy health insurance, etc.	52.6	17.8	18.3	7.5	3.7

Source: Summary of survey data in Son La, Nam Dinh, and Ninh Thuan (2023).

3.3. Shortcomings, challenges, and solutions to promote digital transformation for agricultural and rural development

Based on the aforementioned findings, it is evident that digital transformation for agricultural and rural development in Vietnam is still in its nascent phase. To leverage the benefits of digital technology, it is imperative to address existing shortcomings and challenges. The shortcomings can be summarised as follows: (i) The digital infrastructure in some places is limited, the database is underdeveloped, and connectivity is poor; (ii) There are still few digital technology applications and platforms suitable for farmers and small businesses; (iii) The understanding of digital technology is low; (iv) The majority of farming households, cooperatives and businesses are small-scale; and (v) There is a lack of young workers and financial resources in the agricultural sector. These difficulties hinder the speed of digital transformation in the fields of agriculture, rural areas, and farmers.

Regarding the challenges, it can be seen that the challenges posed in the digital transformation process include the rapid change of digital technology, leading to short technology life cycles, uncertainty, and high digital transformation costs. In addition, digital transformation also faces many risks related to network/data security, fraud, and crime in cyberspace. This is especially worrying in the context that rural people's knowledge of digital technology is limited and state management measures in this field are weak and incomplete.

Therefore, several solutions should be considered:

First, on a macro level, as part of the national digital transformation programme, the MARD should finalise and disseminate the comprehensive architectural blueprint for digital transformation within the agricultural sector and rural development. This entails synchronising the development of digital infrastructure, platforms, and data systems tailored for agricultural and rural progress.

Second, in terms of technical infrastructure and technology, there are still underserved areas lacking internet coverage. Therefore, efforts should be intensified to extend internet and mobile network accessibility to these disadvantaged villages and remote communes.

Third, regarding the agricultural digital database system and data analysis technology, the nascent agricultural database is yet to be fully interconnected and synchronised. Hence, there is a crucial need to prioritise the construction of an integrated agricultural database system leveraging big data analytics for real-time insights. This system will serve research, management, decision-making, and empower businesses, cooperatives, and farmers to make informed decisions and optimise their production and operations.

Fourth, along with building and strengthening sanctions to ensure network security, it is necessary to communicate and improve people's capacity for security, safe online transactions, and fraud prevention on online platforms.

Finally, to encourage the adoption of digital technology among cooperatives, agricultural businesses, and farmers, emphasis should be placed on enhancing their digital transformation capabilities through training programmes. This necessitates implementing promotional initiatives such as online training platforms dedicated to digital transformation. Furthermore, ongoing efforts should be made to facilitate the application of digital technologies and platforms by businesses, cooperatives, and individuals to enhance production efficiency. Specifically, the focus should be on leveraging digital platforms for traceability, e-commerce, and logistics to boost competitiveness and economic outcomes.

4. Conclusions

In theory, digital transformation is a strong driving force for the sustainable development of agriculture and the rural economy as the world enters the fourth industrial revolution. However, in reality, the Government's efforts to achieve rapid digital transformation while still lacking good infrastructure and quality human resources for digital transformation, application of digital technology in agriculture as well as the digital transformation process in the rural economy is facing many challenges. Therefore, to advance digital transformation, it is imperative to establish a comprehensive framework for digitalisation within the agricultural sector, with a key emphasis on constructing a nationwide digital database that is both synchronised and interconnected across various ministries and sectors. Furthermore, there ought to be policies aimed at incentivising the private sector to invest in digital technology development and applications and engage cooperatives, agricultural enterprises, and farmers in value chains actively. Lastly, during the present phase, there should be a concerted effort to prioritise the training and assistance of farmers, cooperatives, and businesses in navigating the digital transformation journey. Simultaneously, there is a need to encourage the adoption of existing digital technologies like automation, traceability, e-commerce, online payment, and digital logistics.

CRediT author statement

Nguyen Minh Duc: Conceptualisation, Methodology, Formal analysis, Investigation, Writing - Original draft preparation, Writing - Reviewing and Editing, Validation; Nguyen Huu Nhuan: Conceptualisation, Writing - Reviewing and Editing, Validation, Resources, Supervision; Tran Thi Thu Huong, Ngo Minh Hai: Conceptualisation, Methodology, Formal analysis, Investigation, Writing - Original draft preparation; Tran Duc Vien: Reviewing and Editing, Validation and Supervision.

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COMPETING INTERESTS

The authors declare that there is no conflict of interest regarding the publication of this article.

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Advantageous fruits in the North of Vietnam: Summarised issues on the study and production

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Abstract:

The Northern part of Vietnam has been considered as a big potential region in agriculture production generally and fruit development particularly. The diversified conditions in terms of land characterization and climatic meteorology especially light quality and temperature fluctuation between daytime and nighttime are regarded as decisive factors for the production of advantageous fruit crops. In the scope of the article, the main issues concerned with the study and production of some specified fruits in Northern provinces related to new policies and decisions issued and instructed by the Government and Ministry of Agriculture and Rural Development were accordingly summarised. It is obvious that fruit production in the North of Vietnam has had a lot of achievements in recent years and significantly contributed to the development of fruits in the whole country in which advantageous fruit crops played an important role which should be emphasized. What is more, the relationship among fruit growers represented by cooperatives, fruit processors represented by groups or companies and fruit consumers (businesses or supermarkets) was strongly formed and improved which made fruit conduction sustainably developed with time.

Keywords: **advantageous, fruit production chains, temperate fluctuation, temperate fruits.**

Classification number: **2.2**

1. Introduction

In recent years, the production of fruit crops in the whole country has developed remarkably as indicated by a rapidly continued increase in area under fruit cultivation, and productivity. This increase meets not only the domestic demand but also foreign export demands, resulting in a significant contribution to the growth of the Vietnamese agricultural sector and improving the living standard of Vietnamese farmers in various regions [1-3].

The specific ecological conditions in the Northern provinces of Vietnam characterized by the monsoon-affected tropical climate and variously changed topographies from location to location allow the development of different kinds of fruit crops including tropical fruits such as bananas, pineapple, mango… sub-tropical fruits such as oranges, pomelo, mandarin… and some temperate fruits, e.g. plum, peach, pear, persimmon, etc. [4].

As a matter of fact, some traditional locations of fruit production have been accordingly established and developed in the North of Vietnam, and fruit products of these regions were considered as locally specified ones that take an important role in the economic growth of the area. Pomelo in Hanoi ("Dien"

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cultivar particularly) and Hoa Binh, orange in Nghe An and Hoa Binh, king mandarin in Ha Giang and Tuyen Quang, bananas in Phu Tho and Hung Yen sugar apple in Lang Son and Quang Ninh, plum in Son La and Lao Cai, lychee in Bac Giang, etc. These fruits have all been traditionally cultivated on a large scale and attract consumers not only in Vietnam but also from abroad.

The total area under fruit cultivation in the North of Vietnam nowadays is estimated to be nearly 400,000 hectares, which accounts for approximately 40% in whole country. Provinces in the North Eastern zone is considered to have the biggest area (more than 150,000 hectares). There after ranks the second biggest one (the Mekong river delta), followed by the Red river delta zone with nearly 100,000 hectares and the North Western one (more than 70,000 hectares). The North of central cultivation zone ranks last in terms of area under fruit cultivation (about 69,000 hectares).

It is also mentioned that though fruit production in Northern provinces is hardly less developed compared to Mekong river delta production in terms of cultivating area and total production, some fruit crops are considered to be advantageous when grown in the North region because of specific conditions required by fruit varieties in which climate characteristics, atmosphere temperature, relative humidity and day-night temperature fluctuation are the key factors.

Some kinds of advantageous fruit crops available in the North of Vietnam which have been traditionally grown or effectively introduced from abroad should be included in this article in which some main issues related to the production and study are summarily focused.

2. Summarised issues concerned the study and production of advantageous fruit crops in the North in recent years

2.1. Lychee

Since lychee needs a sufficient quantity of low atmosphere temperature duration and relative humidity in winter for flower bud initiation (Table 1), the area under lychee cultivation in Vietnam is not as large as other fruit crops, mainly concentrated in the Northern provinces, especially in the Red river delta and North East region (account for more than 99% of litchi grown area and 15% fruit grown in the whole country) [4, 5].

Table 1. Relationship between lychee yield and some meteorological factors (calculated in 20 years for Phu Ho cultivar).

Items \ Months		XI	XII	I	II	III
Temp.	Impact Coefficient (B)	-121.7	-316.1	+258.1	-417.1	+19.9
	Correlative Coef. (rB)	-0.280	-0.822**	+0.149	-0.506	+0.215
Rainfall	Impact Coef. (C)	-71.5	-50.7	+77.8	+1.6	-1.1
	Correlative Coef. (rC)	-0.176	-0.661*	-0.462	+0.005	-0.081
Shunshine (hours)	Impact Coef. (D)	+7.13	+52.3	+17.3	+0.9	+221.0
	Correlative Coef. (rD)	+0.825**	+0.825**	+0.151	+0.171	+0.09
Humidity	Impact Coef. (E)	-351.1	-351.1	-37.0	-0.3	+16.9
	Correlative Coef. (rE)	-0.619*	-0.536	-0.377	-0.034	+0.179
Others	Impact Index (A)	+512.5	+17.1	-354.6	+135.1	+601.7

Proposed equation: S = A + BX + CY + DZ + E_i in which, S: Production (kg/3,000 m^2 orchard at fruit bearing period), A: Undefined factors, $r = dxdy/\sqrt{\sum d^2xd^2y}$, *p = 0.95, **p = 0.99, Source: Compiled by the authors.

As a matter of fact, the area used for lychee production was rapidly increased during the 1998-2005 period (estimated to be more than 90,000 hectares), and has decreased gradually from then on (to approximately 60,000 hectares at present). It is however, mentioned that the application of advanced technologies resulted from the studies obtained by scientific institutions (research institutes, centers, universities etc.) that the remarkably quick increase in lychee yield has been recorded.

Up to now, the biggest areas under lychee cultivation are reported in Bac Giang province, with more than 18,300 hectares that produced nearly 180,000 tons in 2022 of which about 60,000 tons harvested from early cultivars and 120,000 tons came from the main season ones. Hai Duong province ranks the second biggest area under litchi cultivation, the area is estimated to be about 9,000 hectares with 60,000 fruit tons were harvested and the percentage of production produced from early cultivars is a little bit higher than Bac Giang (25,000 tons of 60,000 tons in total in 2022).

Apart from domestic consumption, mainly in Hanoi and Ho Chi Minh city, lychee fruit was exported to various countries over the world in which China, South Korea, Hong Kong, Japan, the Netherlands, the United States, are reported as good potential markets. It should be emphasized that lychee export both in terms of quantity and value (currencies) has been increasing with time, e.g. from 600,000 USD in 2010 to 52.1 million USD in 2016. The quantity of lychee fruit exported in 2022 is estimated to be about 120,000 tons.

There are some reasons for the gradual continued increase of lychee yield and production in recent years, where results conducted from studies achieved from related scientific institutions, and the application of technical advances on a large scale should be considered as the main one.

Lychee production in the past was principally based on limited cultivars, namely the Thieu lychee, a traditional main season cultivar of lychee, harvested in June took a leading role, accounting for approximately 80 percent in terms of area under lychee cultivation within the whole country of Vietnam. A very small land area was used for the early cultivar, estimated to be less than 20 percent because of a limited number of early cultivar with high quality. In fact, the undiversified lychee variety gave a negative impact on the size of lychee production, presented by difficulties in harvesting lowering the quality of the product overall, and decreasing consumption.

Some early cultivars such as Binh Khe, Phuc Hoa, U Hong, U Trung, etc. were screened and selected by research institutions in collaboration with litchi growers and local authorities including agricultural services played an important part in expanding lychee production.

It must be realized that though the quality of early lychee cultivars is not as good as the main season ones in terms of sweetness as indicated by lower sugar contents, edible part percentage, and even flavor. The price of these cultivars products is usually remarkably higher (1.5 to nearly 2.0 times) than the Thieu Thanh Ha cultivar because of an early harvest (15 to 25 days earlier). The income given to lychee growers, therefore, is much better.

Moreover, ecological conditions, meteorological factors first required by early cultivars of lychee for flower initiation are not as serious as the main season ones. It means that the situation of irregular bearing phenomenon regarded as a decisive factor for lychee production generally and lychee main season cultivars particularly are not usually reported in early ones.

Of the early cultivars selected for production in the North of Vietnam, the PH40 cultivar has a lot of advantages in terms of the growth, yield, fruit quality and adaptability to the different ecological conditions. Some main characteristics of this cultivar related to its productivity and product quality are presented in Table 2 [5].

Table 2. Some main characteristics of the PH40 cultivar in different orchards in various locations.

Items orchards	Fruit setting ratio	No. of fruit/ a bunch	Mean of fruit weight (g)	No.of fruit bunch/ a tree	Yield (tons/ha)
1	0.51	5.4	52.1	141.1	15.9
2	0.71	6.1	52.8	139.2	17.9
3	0.72	6.8	53.0	142.0	20.5
4	0.72	7.1	53.1	140.9	21.3
5	0.48	5.1	46.2	146.8	13.8

Source: Compiled by the authors.

With the newly screened and selected from widely established germplasm of lychee on a large scale, the study has also focussed on the cultivating technologies to be introduced and applied in lychee production that significantly contributed to improving the yield and quality of the product.

Various results achieved from the research into lychee orchard management in terms of fertilizer application, training and pruning techniques, growth regulator utilization, IPM and ICM technologies, etc. have been introduced in production and gave impact not only in stabilizing lychee productivity but also in improving lychee quality as well.

Of the newly advanced technologies introduced and applied effectively in lychee production, the technique of branch girdling was regarded as a key practice to improve the flower bud differentiation of the lychee tree resulting in overcoming the phenomenon called "bearing irregular fruit" mentioned in the above part. It becomes more important in case of unsuitable climate condition for lychee flower bud initiation.

One of the results conducted from the study on a newly introduced cultivar of lychee named "PH40", it showed that the double application of the timely girdling technique (implemented in mid-October for the first and repeated in 15 days after the first) had changed the ratio of total carbohydrate and total nitrogen. The

Table 3. The impact of girdling technique at different levels on the C/N ratio in leaves and flowering ability of PH40 lychee cultivar.

Level of girdling	Total carbohydrate (%)	Total nitrogen (%)	C/N	Percentage of trees flowered (%)
Control (No girdling)	1.14±0.21	1.61±0.33	0.73±0.15	70.6
Slightly girdled*	1.45±0.31	1.58±0.30	0.95±0.29	80.2
Averagely girdled**	1.72±0.26	1.60±0.19	1.08±0.12	100.0
Heavily girdled***	1.81±0.24	1.63±0.19	1.13±0.26	100.0

*A small ring formed; **A 2-3 mm width ring formed; ***A 4-5 mm width ring formed. Source: Compiled by the authors.

value of approximately 1 of this ratio was considered to be appropriate for lycheeflower bud differentiation. By doing that, the situation of the flowering process of lychee was significantly improved, lychee trees could flower even in unsuitable climatic conditions.

Table 3 summarised the impact of girdling technology at different levels implemented on "PH40" lychee cultivar.

It is also emphasized that, the results achieved from different research institutions (institutes, universities, centers, companies) were then over-all combined and applied in large scale in the form of technical demonstrations of lychee production with the assistance of local authorities and extension services in particular. The demonstrations proved practically the achievements obtained from the studies from which lychee growers could come to see and learn new technologies which could be applied in their orchards.

Table 4 summarised the main successes of the lychee technical demonstration where advanced technologies were accordingly applied.

Results of the study also showed that the income obtained from the technical demonstration was much higher than normal orchards (553.03 million VND/ha compared to 330.40 million VND/ha). It proved that the application of overall advanced technologies gave a good impact to large scale of lychee production resulted in significantly improving living standard of the growers.

Table 4. Results reported from a technical demonstration of PH40 lychee cultivar in 2020.

No.	Items recorded	Normal orchard	Technical demonstration
1	Percentage of trees flowered (%)	60	100
2	Number of fruit bunches/a tree	180	185
3	Number of fruit/a bunch	5.8	6.5
4	Fruit weight (g)	51.0	53.2
5	Theoretical/Estimated yield (tons/ha)	15.97	19.19
6	Harvested yield (tons/ha)	15.65	18.90

Source: Compiled by the authors.

2.2. Temperate fruit crops

Lychee fruits that have been dealt with in the above-mentioned part, temperate fruit crops are considered as the advantageous fruits in the North of Vietnam whereas very limited area in central highland was used for temperate fruits development targeted for local consumption.

Temperate fruits with chilling requirement: It is understood that, the development of temperate fruits as commercial crops is closely related to ecological conditions in which lower atmosphere temperature in the late autumn to winter period calculated by chilling hours (CU) plays a very important role [3, 6-8] (Table 5).

Meteorological data were then presented in the form of a diagram (Fig. 1):

Development of temperate fruits in some Northern mountainous provinces in recent years: Aimed to understand the development of temperate fruit trees in relation to climatic conditions, several locations that

Table 5. Synthesis of chilling unit accumulation (CU) in some areas.

Locations	2001	2002	2003	2004	2005	2006	2007	2008	2009	Means
Moc Chau	167.1	303.1	350.8	253.0	280.6	220.9	340.2	316.3	395.0	291.9
Bac Yen	82.2	198.8	221.0	142.1	196.0	134.8	212.5	207.0	253.0	183.0
Phu Yen	-15.9	75.8	95.4	40.6	84.4	22.9	86.6	104.4	135.0	69.9
Co Noi	48.6	185.3	180.1	106.7	144.6	123.0	165.0	169.7	253.0	152.9
Sin Ho	309.7	650.7	463.7	430.5	406.6	398.9	503.4	410.5	588.8	462.5
Tam Duong	134.8	250.0	214.5	148.8	265.1	185.3	229.5	185.3	296.6	211.9
Sa Pa	485.5	662.1	741.4	628.3	633.9	601.4	974.0	650.7	915.0	699.1
Bac Ha	259.0	336.8	379.9	309.7	383.7	309.7	410.5	446.9	508.1	371.6
Yen Bai	28.7	99.9	120.6	118.2	142.1	56.8	140.0	188.0	177.4	119.1
Luc Yen	21.0	99.9	113.6	99.9	137.2	73.6	152.0	185.3	191.0	119.3
Mu Cang Chai	127.1	223.8	235.3	204.2	241.1	182.7	198.8	177.4	383.7	219.3
Nghia Lo	22.7	99.9	120.6	80.1	120.6	67.3	130.0	159.5	180.1	109.0
Ham Yen	28.6	82.2	109.0	95.4	132.4	54.8	125.3	174.8	190.7	110.4
Ha Giang	44.6	86.6	111.3	99.9	147.0	67.3	157.0	174.8	198.8	120.8
Bac Quang	26.8	93.2	111.3	95.4	120.6	58.9	139.7	174.8	177.4	110.9
Cao Bang	113.6	172/3	111.3	142.1	259.0	95.4	244.3	340.2	256.0	192.7
Trung Khanh	212.5	293.3	347.2	323.1	351.2	244.3	402.7	575.5	395.3	349.5
Bac Kan	61.0	113.6	157.0	137.2	172.3	84.4	170.0	232.4	215.3	149.2
Ngan Son	182.7	259.0	253.0	280.6	233.3	190.7	350.8	451.1	402.7	289.3
Bao Lac	15.7	118.2	149.5	104.4	159.5	75.8	193.3	209.7	212.5	152.9
Dinh Hoa	36.6	97.7	147.0	120.6	152.0	56.9	147.0	207.0	196.4	129.0
Lang Son	152.0	209.2	241.1	226.6	303.1	165.0	271.2	442.7	313.0	258.2
That Khe	123.0	164.6	221.0	188.0	274.3	128.0	247.8	383.7	265.1	221.7
Son Dong	146.6	99.9	95.4	84.4	137.2	73.6	113.6	209.7	177.4	126.4
Luc Ngan	34.6	93.2	139.7	113.3	149.5	58.9	125.3	232.4	177.4	124.9
Tien Yen	73.6	123.0	169.7	127.7	169.7	84.4	149.5	215.3	182.7	144.0
Da Lat	77.9	102.2	95.4	-55.0	109.0	67.2	75.8	77.9	147.0	77.5
Bao Loc	-60.0	-59.9	-59.9	-38.4	-48.5	-72.6	-58.3	-80.4	-58.3	-59.6

Using Prochill software, referred to George - Nissen formula: $Y = a+b/x^{½}$. Source: Compiled by the authors.

had sufficient chilling accumulation for flower initiation of several temperate fruit varieties were selected for sampling. The figures were summarised in Tables 6-8.

In all 3 locations, the area and total output tended to increase significantly in recent years, especially in Ha Giang province (Table 6) and districts such as Moc Chau (Table 7) and Bac Ha (Table 8), in which production of pear trees in all 3 locations, plum trees and peach trees in Ha Giang province has increased quite considerably in the last 3 or 4 years [9, 10].

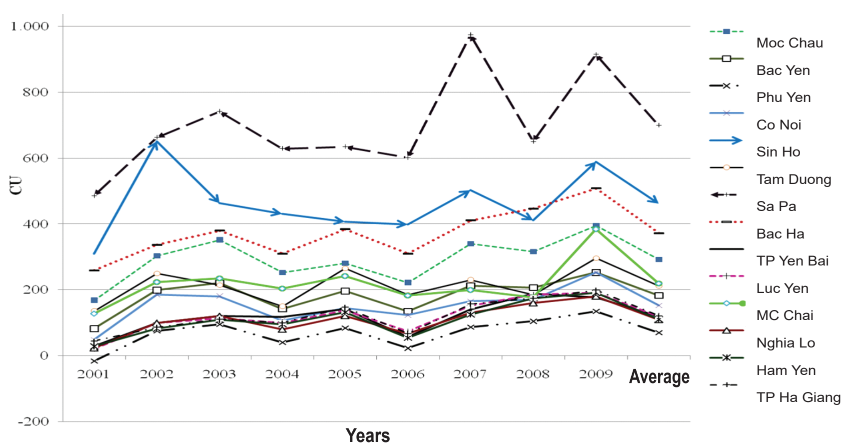

Fig. 1. Diagram of chilling unit presented by hour numbers in some locations in Northen mountainous provinces. Source: Compiled by the authors.

Table 6. Area and production of temperate fruits in Ha Giang province.

No.	Species	2016		2017		2018		2019	
		Area (ha)	*Total yield (ton)*	*Area (ha)*	*Total yield (ton)*	*Area (ha)*	*Total yield (ton)*	*Area (ha)*	*Total yield (ton)*
1	Pear	724.0	2,103.8	946.5	2,300.5	980.5	2,517.9	1,282.7	4,966.6
2	Plum, peach	1,148.9	1,973.8	1,147.9	1,839.4	1,183.8	2,044.0	1,920.1	4,561.5
3	Persimmon					445.9	523.2		

Source: Compiled by the authors.

Table 7. Area and production of temperate fruits in Moc Chau district, Son La province.

No.	Species	2016		2017		2018	
		Area (ha)	*Total yield (ton)*	*Area (ha)*	*Total yield (ton)*	*Area (ha)*	*Total yield (ton)*
1	Plum	1,413.0	13,273.0	1,439.0	11,299.0	1,951.0	16,700.0
2	Persimmon	19,0	465,0	41,0	442,0	45,0	464,0
3	Peach	42,0	175,0	48,0	184,0	58,0	197,0
4	Pear	133,0	822,0	115,0	693,0	105,0	499,0
	Sum	1,607.0	14,735.0	1,643.0	12,618.0	2,159.0	17,860.0

Source: Compiled by the authors.

Table 8. Area of some temperate fruits in Bac Ha district, Lao Cai province until 2019.

Year	Area of land (ha)	Area of temperate fruit trees (ha)	% in area of land	Temperate fruit species				
				Peach	*Persimmon*	*Pear*	*Plum*	*Others*
2010	-	685	-	60	23	95	477	30
2011	-	840	-	80	23	135	572	30
2012	-	916	-	93	23	185	585	30
2013	-	983	-	98	23	247	585	30
2014	-	1,008	-	98	23	272	585	30
2015	-	1,035	-	98	23	286	593	35
2016	-	1,042	-	98	23	286	600	35
2017	-	1,092	-	105	23	286	643	35
2018	-	1,167	-	115	23	300	693	36
2019	4,6126	1,207	67.5	120	23	315	712	37

Source: Compiled by the authors.

2.3. Chilling unit in relation to the issue of distribution and planning of temperate fruit cultivation

The map of the distribution of temperate fruit trees in the Northern mountainous region, as shown in Fig. 2 is made using the results of the survey conducted in 2019 and 2020, referencing documents from local management agencies.

Generally speaking, Northern mountainous provinces have big potential for the development of temperate fruits, which would be a good way to properly utilize the unemployed land availability in terms of limiting soil erosion and improving the living standard of local people, particularly poor farmers in remote locations. It is necessary to mention that the production of temperate fruits is firstly targeted

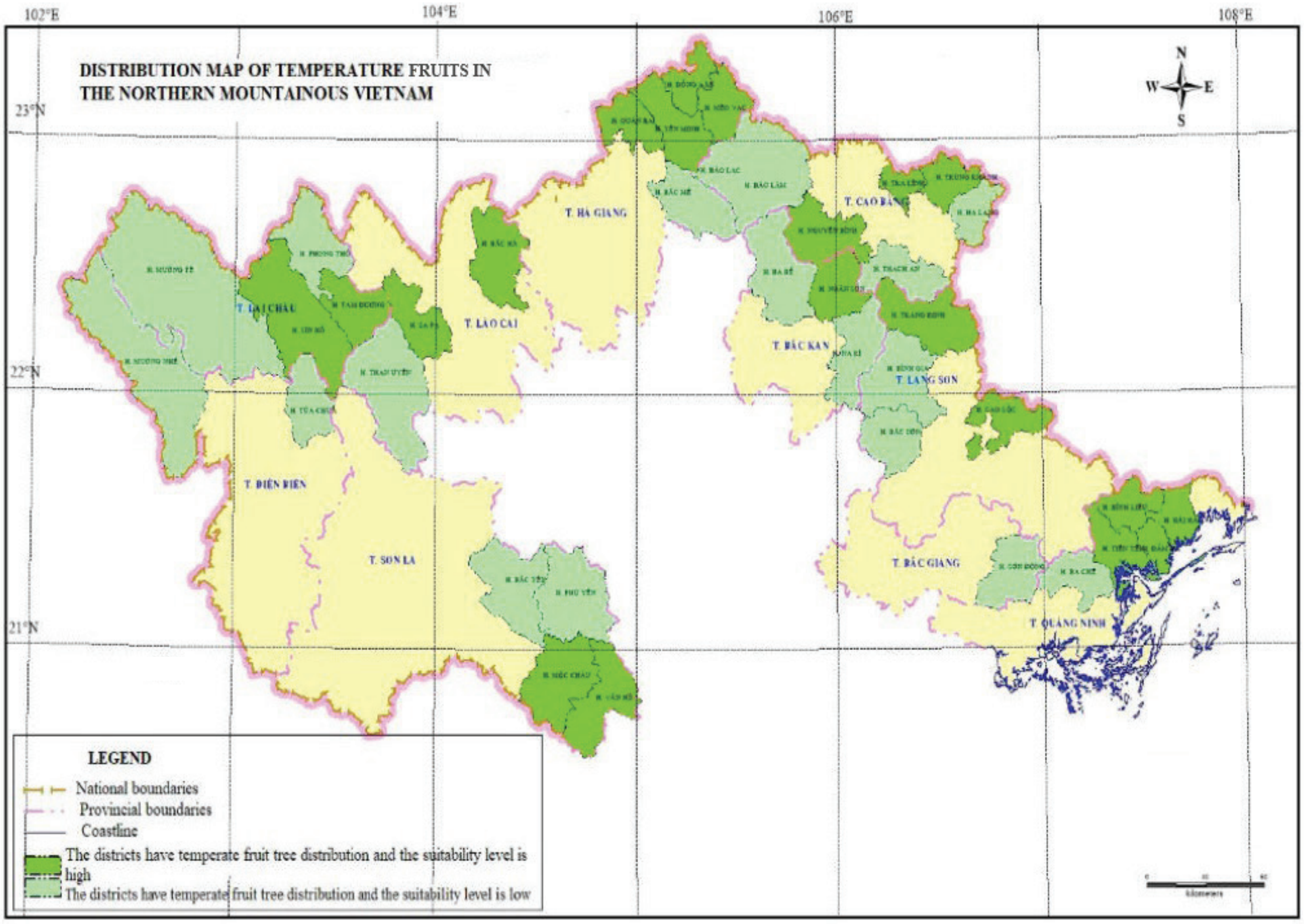

Fig. 2. Projection of temperate fruits development based on CU values calculated from various locations in the North of Vietnam. Source: Compiled by the authors.

to decrease fruit products, mainly temperate ones imported from abroad. This was estimated to be nearly one million USD annually. The study on temperate fruits aims to create and screen good varieties and cultivating technologies. Therefore, this topic should be paid more attention to in the near future.

2.4. Other fruit crops

Apart from lychee and temperate fruits discussed above, some other species of fruit crops such as bananas, oranges, pomelo, etc. are also considered to have some advantages when grown in the North of Vietnam in terms of product quality and the availability of land and labor for large scale fruit production.

Bananas: The land area under bananas cultivation in the North of Vietnam is estimated to be 66,000 hectares accounting for nearly 46% of the area and 52% of production in the whole country. The yield of bananas in the Northern provinces is about 32% higher than the Southern provinces. In addition, the quality of bananas especially cultivars belonging to the Cavendish group planted in the North is usually better than the same variety cultivated in the South indicated by good flavor, attractive appearances mainly because of light quality and the fluctuation of daytime and nighttime temperature.

One of the successes of the study on bananas is selecting a good cultivar from the Cavendish group named “Tieu Hong”, characterized by healthy growth, quite a high yield (45-50 tons/ha), well shaped bunch (cylinder form), attractive color (shine yellow fruit peel and flesh), good flavor. This meets all the standards for export, firstly exported to China. This banana cultivar when cultivated with advanced technologies conducted by research agencies such as fertilizer application, newly applied irrigation, IPM and ICM

Table 9. The situation of "Panama" disease observed on some main banana varieties cultivated in the North.

Banana cultivars	Place of origin	Locations observed*	Planting materials	Affected plant percentage (%)
Tieu* Hong	Ha Nam	Ba Vi - Hanoi	Suckers	29.33
Tieu* Quang Nam	Quang Nam	Dai Loc - Quang Nam	Suckers	33.33
Tieu* Lao Cai	China	Muong Khuong - Lao Cai	*In-vitro*	28.00
Tay** Hung Yen	Hung Yen	Khoai Chau - Hung Yen	*In-vitro*	44.67
Tay** Quang Tri	Quang Tri	Huong Hoa - Quang Tri	Suckers	40.67
Tay**Thai Lan	Thailand	Tu Ky - Hai Duong	Suckers	0,00

**M. cavendishii* Lamb (Cavendish group); ***M. sapientum* Lamb. Source: Compiled by the authors.

utilization, etc. produced good quality products that were easily consumed at a high price (compared to the other cultivars planted at the same time and same location). Good income is given to banana growers in different locations (estimated of 150 million - 180 million VND/ha) it is also regarded as one of the advantages of the cultivar.

The problem raised recently for banana production is the presence of the so-called "Panama wilt" with yellow wilt leaf symptoms caused by *Fusarium oxysporum* f. sp. Cubense (FOC) which has never been observed in the Cavendish bananas plantations in Vietnam before.

Although no official data resulted from the observation of this disease was officially reported, investigations done by research institutions showed that the disease was available in almost all traditional areas of the cavendish bananas cultivation in the North, says Phu Tho, Vinh Phuc, Ha Noi, Hung Yen to the South, e.g. Dong Nai, Binh Duong, Tien Giang, and seriously affected the growth and productivity of banana table (Table 9). It was also reported that affected banana plants could not grow well and almost no fruit bunch was harvested [11, 12].

With the big effort of scientists from differently related scientific fields, a newly released Cavendish banana cultivar coded GL3-5 was created by somaclonal variation method and introduced in a small scale banana production for evaluation. Results conducted from the study showed that GL3-5 when introduced in various locations combined accordingly with advanced technologies such as fertilizer application, irrigation, IPM utilization, etc. It was reported to be promising indicated by healthy growth, no yellow wilt symptoms, high yield (more than 40 tons/ha), attractive appearances, very slight affected by "Panama wilt" disease particularly. Data given in Table 10 was recorded in the technical demonstrations of GL3-5 cultivar, compared to the normal gardens where local Cavendish cultivars (Tieu Hong in Hung Yen, Tieu Quang Tri in Quang Tri) or introduced Cavendish cultivars (William cultivar in Lao Cai location) [11, 13].

Table 10. Percentage of Cavendish banana plants affected by bunchy top (BBTV) and yellow wilt (Panama) diseases in different plantations.

Locations	For BBTV		For Panama	
	2018	***2019***	***2018***	***2019***
Hung Yen				
- Normal gardens	1.8	2.5	21.4	20.2
- Tec. Demonstration	2.3	1.9	0	0
Lao Cai				
- Normal gardens	1.6	2.7	15.2	13.1
- Tec. Demonstration	2.1	1.9	0	0
Quang Tri				
- Normal gardens	2.5	3.1	0	0
- Tec. Demonstration	1.0	1.5	0	0

Source: Compiled by the authors.

Oranges and pomelo: The area used for oranges and pomelo production in the Northern provinces (54.5% for oranges and 48.9% for pomelo of the whole country) is equivalent to the South where some famous citrus cultivars had been traditionally

Table 11. Harvesting time periods of oranges and pomelo in the North of Vietnam.

Species	Early harvested*	Main season harvested**	Late harvested***
Oranges	CS1, BH, CT9, CT36	"Sanh", "Xa Doai", "Van Du"...	V2…
Pomelo	"Hong Quang Tien", "Phuc Trach", "Hoang", "Dao", "Chua dau tom", etc.	"Do" (red color), "Da Xanh", "Dai Minh", "Doan Hung"…	"Dien"

*Harvested from September to early October; **Harvested from mid-October to November; ***Harvested from December to next January. Source: Compiled by the authors.

cultivated, particularly the seedless varieties such as Da Xanh and Nam Roi cultivars (Table 11). Though oranges and pomelo production is mainly targeted for domestic consumption, lots of local citrus cultivars have advantages presented by good flavor and attractive appearances due to light quality and temperature fluctuation of day time and nighttime in growing locations. The main achievements conducted from the study on oranges and pomelo can be summarised as follows:

- A diversified set of promising citrus cultivars with different harvest time periods have been accordingly selected, from which elite trees of each cultivar were screened to be used as good planting material for multiplication.

- A numerous quantity of materials used for the breeding programme from different methods (crossing - including diploid and tetraploid combinations, mutation treatment, male sterility utilization) are now under evaluation and selection.

- Intensive cultivating technologies for oranges and pomelo orchard management have been continuously improved resulting in stably increasing the yield and product quality in the whole region generally.

Sugar apple/Sweet sop: Though the area cultivated with sugar apples in the North is quite limited, the quality of this fruit is highly appreciated by consumers, especially when grown in alkali affected soil and alpine soil in upland zones of Northern provinces such as Lang Son, Bac Giang, Quang Ninh, etc. [9]. Concerning the study on sugar apple, two main issues have been focussed and its results were successfully introduced and applied on a large scale.

Firstly, the utilization of training and pruning technologies focused mainly on time of practice and the length of shoots remained to produce off-season fruit harvest. By doing that, the harvest duration of sugar apple could be prolonged by 3 to 4 months instead of nearly 1 month, resulting in an increase income of growers was also recorded.

Secondly, the establishment of intensive demonstrations of sugar apple by applying technical advances resulting from different studies such as fertilizer application, training and pruning, supplemented pollination, fruit package, mulching, IPM utilization, etc. in sugar apple orchard management. Results showed that better situation of orchard growth and yield and more income earned by local growers was clearly recognised (Table 12).

3. Policies related and its impact on the development of fruit crops recently

The development and sustainability of fruit production in recent years resulted from various reasons, the policies issued by the Government and guided by the Ministry of Agriculture and Rural Development played an important role.

On the basis of the master plan of fruit, vegetable, flower and ornamental crops development approved by the government detailed in the agricultural crop

Table 12. Productivity of sugar apple technical demonstration.

Orchard types	Average No. of fruit/tree	Fruit weight (g)	Theoretic yield (kg/tree)	Yield harvested (kg/tree)	Comparison (%)
Demonstration	70.7	228.7	16.17	15.4	149.5
Normal orchard	58.0	193.8	11.24	10.3	100.0
CV %		12.3		8.2	
$LSD_{0.05}$		10.9		1.1	

Source: Compiled by the authors.

variety program, numerous decisions and guidance at ministerial levels have been issued and delivered in which fruit production was regarded as one of the key sectors for strengthening national economy in general and for exportation in particular.

In the scope of policies concerning, the problems faced by fruit production on a large scale were dealt with and proper solutions were also accordingly proposed in which land utilization, credit loans used for fruit development, the participation of business enterprises, the expenditure used for research, the improvement of grass rot conditions have been paid great attention to.

Concerning the study on fruit crops, various policies and orientations concerned had been delivered and guided by the Ministry of Agriculture and Rural Development in which the following issues were accordingly focused:

- The research into fruit varietal programs must be prioritized, of which, locally specific and advantageous fruit cultivars should be emphasized. Elite individual trees of fruit-promising cultivars would then be carefully evaluated and screened as good mothers for multi-propagation programs.

- Establishing the system of fruit seedling/newly grafted tree production with high quality and disease-free planting materials for new plantations and varietal replaced cultivars (Top-working technology).

- Strengthening the synchronized application of technical advances in large-scale fruit production with proper approaches:

+ Technical advances applied in each fruit crop should be accordingly grouped as a synchronized set of techniques (a technological KIT) and introduced in fruit production with two levels: high technology and advanced one suitably applied in local conditions.

+ Fruit research institutions (institutes, centers, universities, etc.) should be closely linked in fruit production chances and be responsible for technical transfer organization.

- The study and transfer of advanced technologies of leading fruit crops cultivated in concentrated areas under climate change circumstance should be prioritized in which cultivating techniques in sloped land, selecting proper rootstocks resistant to serious diseases and unsuitable conditions, training and pruning techniques utilizing organic fertilizers, off-season fruit production technologies… must be considered.

- Great attention and sufficient investment should be focused in the study on post-harvest including processing of fruits targeted in decreasing the pressure of the fresh fruit consumption, widening the markets and improving the quality and added value of the products.

In accordance with the master plan for fruit development approved by the Government, numerous decisions, resolutions, and circulars concerned had been delivered and instructed by the Ministry of Agriculture and Rural Development in which the following subjects were strongly focused:

- To strengthen the study on market forecast especially the world market from which fruit production should be accordingly adjusted.

- To widely disseminate newly advanced technologies for fruit cultivation, especially in the condition of climate changes into fruit growers and fruit production companies.

- To strongly promote the training courses of new technologies to fruit producers (farmers and processors) including training of trainer ones (TOT) in which high techniques aimed at improving fruit quality should be paid great attention to.

- To accordingly boost the solutions for mechanizing fruit production firstly targeted land preparation, product harvesting, equipment manufacturing used for fruit processing, etc.

- To reconsider national regulations and standards related to fruit production in accordance with international ones and suitably apply them to the conditions of Vietnam.

These above-mentioned policies issued by the Government and direction guided by the Ministry of Agriculture and Rural Development have promptly promoted fruit development in the whole country in general and the Northern provinces in particular in terms of total production, product quality and income benefited as well.

In some provinces, the area under fruit cultivation and fruit production remarkably increased, resulting in improved living standards for fruit growers and the local economy. Let’s take Son La province as an example, the area used for fruit production in 2022 was estimated to be about 85,000 hectares, and nearly doubled compared to 2017 and the total fruit production was 210.5% higher than in 2017. In addition, numerous locations where specific fruits were produced have been established and developed with time such as longan production in Song Ma district, sweet apple production in Yen Chau district, and plum production in Moc Chau one, etc. Some advantageous fruits produced in Son La province have been exported to China, the United States, the United Kingdom, Australia, and other EU countries with a value of about 20 thousand USD annually.

Under the newly issued policies and instructions, a lot of advanced technologies have been effectively applied in large-scale fruit production in various locations, significantly contributing to the improved fruit yield, quality and value of exportation as well.

Apart from new varieties and technical advantages introduced and applied successfully in fruit production, numerous results conducted in the studies on post-harvest and processing of fruit products were considered as one of the main factors for the rapid development of fruit production in which the utilization of naturally originated substances in retarding fruit ripening process, prolonging harvest time duration and decreasing fruit drop ratio and the use of MAP membrane in fruit packaging were applied.

CRediT author statement

Manh Hai Vu: Data collection, Writing; Quang Dang Bui, Quang Huy Nguyen, Van Dung Nguyen, Quoc Hung Nguyen, Ngoc Hung Tran, Dinh Ca Do, Van Nghiem Nguyen, Viet Hung Vu, Quang Thuong Ha, Thi Phuong Nguyen: Research guidance.

COMPETING INTERESTS

The authors declare that there is no conflict of interest regarding the publication of this article.

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The impact of sustainable human resource management on job performance: Considering the role of knowledge hiding

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Abstract:

Sustainable development is an irreversible trend today. Many countries have established trade barriers based on sustainability criteria. The wood processing industry plays an increasingly important role in Vietnam's economy. Hanoi city hosts approximately 3,000 businesses engaged in wood processing. Following the negative impact of the COVID-19 pandemic, businesses continue to confront intense price competition. This has resulted in heightened demand for improving job performance to reduce the overall cost of production. Within this context, sustainable human resource management (HRM) is considered a crucial solution for businesses to uphold sustainability criteria, thereby enhancing competitive capabilities in the market. Based on data collected from 255 office employees working in wood processing industry enterprises in July 2023 within the territory of Hanoi, this study showed that sustainable HRM positively affected job performance, negatively affected knowledge hiding, while knowledge hiding behaviour exerted a negative impact on employee job performance. Some recommendations are proposed to assist wood processing industry enterprises in bolstering the effectiveness of sustainable HRM activities while reducing knowledge hiding behaviour to elevate job performance.

Keywords: **Hanoi, job performance, knowledge hiding, sustainable human resource management.**

Classification number: **2.2**

1. Introduction

Humankind is facing increasingly serious problems such as food shortages, energy crises, environmental pollution, and rising social unrest [1]. Such issues have compelled humans to re-examine their place in the ecosystem and seek a new path towards sustainable existence and development [2]. Sustainable development is an irreversible trend today that compels businesses to implement. Many countries, especially developed ones, have established trade barriers based on sustainability criteria. For exporting goods to those markets, companies must meet the sustainable development requirements. In this context, sustainable HRM is emerging as a solution to help businesses ensure sustainability criteria, capture markets, and increase competitiveness. Sustainable HRM is defined as "the application of human resource strategies and practices that allow the attainment of financial, social, and ecological goals, with both inside and outside impacts of the organization over the long term while controlling any negative unintended side effects" [3].

Job performance refers to the outputs of employees in terms of quantity and quality when carrying out assigned tasks and functions [4]. It is an important topic for organizations due to its close association with achieving organizational missions, visions, and goals. Everyone with good job performance acts as a cog to help the organization achieve its set objectives. Through job performance, organizations evaluate whether a person is performing their job well, thereby making adjustments to improve job performance.

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Hiding knowledge is a deliberate effort by an individual to retain or conceal knowledge that has been requested by others [5]. This is detrimental to both the knowledge recipient and the organization. Firstly, hiding knowledge leads the knowledge recipient to misunderstand the issue, resulting in errors in job execution. Furthermore, hiding knowledge creates false knowledge, which can lead to systematic biases in the future. Therefore, it is evident that researching the influencing factors to reduce knowledge hiding is essential.

The wood processing industry plays an increasingly important role in Vietnam's economy. The industrial production index of the wood processing industry increased by an average of 3.4% per year in the 2016-2020 period. In 2020, the total export turnover of the wood and forestry products processing industry reached over USD 13.2 billion, up 16.9% compared to 2019, accounting for over 30% of the export value of the agriculture and rural development sector. Vietnam's wood products are exported to over 140 countries and territories, ranking first in Southeast Asia, second in Asia, and fifth globally, accounting for about 6% of the global wood product market share [6]. However, the wood processing industry is also facing many challenges from sustainable development requirements, as this is an industry with significant environmental impacts from sourcing wood materials, using chemicals in wood processing, etc.

Research on job performance has attracted scholars' attention in recent years. Studies have pointed out some factors that directly increase job performance, such as organizational culture [7], employee capabilities [8], sustainable HRM [4], and employee satisfaction [9]. Other factors indirectly (playing an intermediary or moderating role) increase job performance. For example, training positively moderates the relationship between sustainable HRM and job performance [4]. Job satisfaction positively mediates the relationship between employee competencies and job performance [9]. However, no study has examined the relationship between sustainable HRM and job performance through the mediating role of knowledge hiding in general. Studying knowledge hiding as an intermediary variable in the relationship between sustainable HRM and job performance outcomes contributes to a deeper understanding of the mechanisms at play. It can clarify whether sustainable HRM practices have an impact on reducing knowledge hiding behaviour. Therefore, this study aims to examine the direct impact of sustainable HRM on job performance. It also considers the intermediary role of knowledge hiding in the relationship between sustainable HRM practices and job performance, especially in the context of wood processing companies in Hanoi. The city hosts approximately 3,000 businesses engaged in wood processing, with around 199 enterprises and the rest consisting of individual businesses concentrated in craft villages. Following the significant impact of the COVID-19 pandemic, businesses continue to confront intense price competition with rivals from China and other regions. This has resulted in heightened demand for improving job performance to reduce the overall cost of production [10].

In addition to the introduction, the structure of the study also includes the theoretical basis, research methodology, research results, and finally, the discussion of results and recommendations.

2. Literature review, theoretical framework

2.1. Background theory

In order to elucidate the interactive behaviours among individuals in society, P.M. Blau (1964) [11]'s Social Exchange Theory (SET) posits that individuals engage with each other by seeking to maximise benefits and minimise costs. SET suggests that employees who value the benefits offered by their organisation, such as salary, bonuses, benefits, or working conditions, are inclined to reciprocate with positive work efforts. Conversely, when employees perceive an unfavourable work environment, their response tends towards negative work attitudes and behaviours. In this study, the author contends that sustainable HRM will yield various positive benefits for employees, such as being valued by the company, receiving respect, and feeling part of a socially responsible (SR) organisation. This, in turn, leads to active employee engagement, ultimately enhancing job performance outcomes. Sustainable HRM places significant emphasis on building employee trust. When employees witness the organisation prioritising their development and well-being, trust among colleagues tends to grow. With trust in place, employees are more inclined to share knowledge, thereby reducing knowledge hiding behaviour.

2.2. Sustainable human resource management

There exist various definitions of sustainable HRM. A widely accepted definition posits that "Sustainable HRM is the application of human resource strategies and practices that enable the attainment of financial, social, and ecological goals, with both internal and external impacts on the organisation over the long-term, while mitigating any negative unintended side effects" [3]. This definition unveils the three core dimensions of sustainable HRM, encompassing financial, social, and environmental aspects. Among these dimensions, the crux of HRM activities revolves around the efficient utilisation of human resources, specifically, the achievement of financial goals, integration of business social responsibility into HRM activities to realise social objectives, and the infusion of environmentally sustainable practices into HRM tasks to aid the business in accomplishing environmental goals.

In this article, the author approaches sustainable HRM from a social perspective, often referred to as SRHRM. This choice is driven by several reasons: (1) The expansive evolution of sustainable HRM beyond traditional views, such as corporate social responsibility and social performance, has led to the development of SRHRM [12]; (2) The collection of data on sustainable leadership aspects presents challenges; (3) While economic and environmental aspects have undergone extensive examination, the social responsibility-oriented sustainability dimension remains relatively unexplored; (4) Wood processing businesses, heavily reliant on labour, play a pivotal role in addressing social responsibility-related issues.

SRHRM encompasses three main components: legally compliant HRM (ensuring that human resource policies align with the country's laws, encompassing aspects like working hours, minimum wages, and transparency), employee-oriented HRM (catering to the needs of employees and their families through policies such as employee training and development and career advancement), and HRM supporting corporate social responsibility in general (guiding the development and implementation of human resource policies to facilitate businesses' participation in overall corporate social responsibility initiatives) [13]. SRHRM contributes to the alignment of an organisation with the framework of corporate social responsibility, fostering sustainable development [14].

2.3. Job performance

Job performance encompasses all job-related activities that contribute to the achievement of organisational goals [15]. It is assessed by comparing an employee's performance against the organisation's prescribed standards. Good job performance is indicative of productivity, efficiency, and the quality of work [16]. Job performance holds significant sway within an organisation, impacting HR decisions pertaining to compensation, benefits, promotions, employee retention, satisfaction, and motivation [17].

There are two prevalent perspectives for categorising job performance in research. The first perspective dissects job performance into task performance, contextual performance, and counterproductive work behaviour [18]. The second perspective perceives job performance as a comprehensive whole, without such divisions [19].

From the environmental perspective of sustainable HRM, S.F.P. Ragas, et al. (2017) [20] have asserted that sustainable HRM positively influences job performance. Considering the angle of social responsibility, T.V. Vu (2022) [14] has demonstrated that sustainable HRM also exerts a positive impact on job performance. SRHRM indirectly affects employees' work effectiveness [21].

Based on the aforementioned rationale, the author posits the following hypothesis:

H1: Sustainable HRM positively affects job performance.

2.4. Knowledge hiding

Knowledge hiding refers to the intentional effort made by an individual to withhold or conceal knowledge that has been requested by another person [5]. Employees may conceal their knowledge from colleagues (perhaps due to personal animosity) or from the organisation (possibly owing to perceptions of inadequate compensation leading to minimal effort). Knowledge hiding diminishes the effectiveness of knowledge exchange among team members, acts as a hindrance to creativity, and can erode trust [5], thereby heightening the risk of knowledge loss and stifling individual and team creativity, ultimately resulting in adverse responses [22]. Knowledge hiding tends to recede in environments marked by reciprocal social exchange [22] or pro-social motivation [23].

In line with SET [11], when employees perceive that the organisation provides benefits and values them (sustainable HRM offers employees benefits like job security, skills development, personal growth, and the psychological satisfaction of working for a socially and environmentally responsible entity), employees are more inclined to reciprocate towards the organisation. One form of this reciprocity is manifested through knowledge sharing behaviour (i.e., not hiding knowledge).

Based on this rationale, the author proposes the following hypothesis:

H2: Sustainable HRM negatively affects knowledge hiding.

Knowledge forms an intrinsic component of an employee's capability, and higher employee capabilities are correlated with better job performance outcomes [24]. This implies that when colleagues conceal knowledge, an employee's job performance outcomes are hindered. T.M. Nguyen, et al. (2022) [25] also suggest that knowledge hiding has an adverse impact on job performance outcomes. When individuals do not receive knowledge sharing from their colleagues, those seeking knowledge tend to respond by concealing knowledge in subsequent interactions, leading to suboptimal job performance outcomes and an upswing in counterproductive workplace behaviour [22].

Based on this rationale, the author proposes the following hypothesis:

H3: Knowledge hiding negatively affects job performance.

Based on the theoretical background and previous research, the research model proposed by the author is shown in Fig. 1.

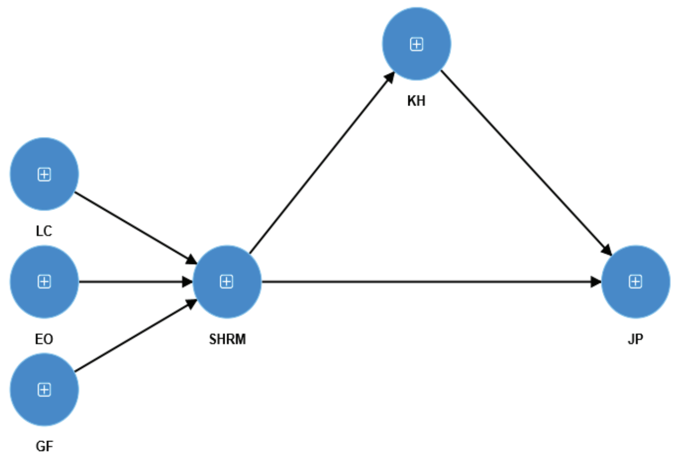


Fig. 1. The proposed research model.

3. Research methods

The study employed a quantitative approach to gather data through questionnaires, utilising a convenience sampling method. The questionnaires were distributed by the author via Zalo or completed using paper forms. The survey targeted office workers in wood processing industry businesses located in Hanoi, Vietnam (Office workers were chosen due to their typically higher educational qualifications and familiarity with the company's management policies [4]). Data collection took place in July 2023. A 5-point Likert scale, ranging from 1 - strongly disagree to 5 - strongly agree, was utilised to measure all variables except for respondents' demographics. A total of 255 valid responses were obtained. The minimum required sample size, calculated using the formula of the number of observed variables multiplied by 5 [26], is 115 observations. Thus, the 255 valid responses ensure an adequate sample size. Encoded data was analysed using SmartPLS software version 4.0.9.2.

To measure the latent variables of sustainable HRM, knowledge hiding, and job performance outcomes, established scales from J. Shen, et al. (2011) [13], T.M. Nguyen, et al. (2022) [25], and C.F. Chiang, et al. (2012) [27] were adopted. These scales are widely employed and have demonstrated reliability in numerous studies, aligning well with the conceptual definitions of the latent variables used in this study.

Sustainable HRM variable: Measured as a second-order construct, with SHRM as a formative construct consisting of three components: Legally compliant HR practices (LC) with six items, employee-oriented HR practices (EO) with four items, and CSR-facilitating HR practices with three items [13].

Knowledge hiding variable: Adapted from a four-item scale with modifications to suit the context. Sample items include "I withhold work-related information or knowledge from others" and "I keep useful information or knowledge from others" [25].

Job performance variable: Adapted from a six-item scale with contextual adjustments. A sample item is "Fulfilling the responsibilities specified in the job description". One item was reversed, i.e., "Meet formal performance requirements of the job" [27].

4. Results and discussion

4.1. Descriptive statistics

Table 1 presents the characteristics of the respondents, including gender, education, years of work experience, and age group. Notably, males constitute a significant proportion (66.67%), university education prevails (67.06%), a substantial percentage have less than 3 years of work experience (41.96%), and the majority are under 25 years old.

Table 1. Descriptive statistics of the sample (n=255).

	n	%		n	%
Gender			***Age***		
Female	85	33.33	Under 25 years old	154	60.39
Male	170	66.67	From 25 to 30 years old	80	31.37
Years of experience			From 31 to 35 years old	16	6.27
Less than 3 years	107	41.96	From 36 to 40 years old	5	1.96
From 3 to less than 5 years	79	30.98	***Educational level***		
5 years and above	69	27.06	Intermediate, College	45	17.65
			University	171	67.06
			Postgraduate	39	15.29

Source: Author's calculations.

4.2. Measurement model evaluation

A two-step approach was employed to handle the second-order variable of SRHRM with first-order variables for analysis. The composite reliability (CR) and average variance extracted (AVE) of the variables in the measurement model were used to assess its reliability [26]. The indicators' outer loadings should be greater than or equal to 0.708 to meet reliability requirements (if the outer loading falls below 0.708 but remains above 0.4, the indicator may be retained if the construct's composite reliability is greater than or equal to 0.5). The composite reliability should surpass or equal to 0.7 to achieve acceptable composite reliability [28]. The results are presented in Table 2.

Table 2. Summary table of indices.

	Outer loadings	Composite reliability (rho_c)	AVE
Employee-oriented HRM		0.861	0.607
EO1	0.791		
EO2	0.752		
EO3	0.784		
EO4	0.788		
General CSR facilitation HRM		0.898	0.745
GF1	0.804		
GF2	0.893		
GF3	0.89		
Legal compliance HRM		0.864	0.679
LC2	0.817		
LC3	0.829		
LC5	0.826		
Knowledge hiding		0.814	0.529
KH1	0.757		
KH2	0.718		
KH3	0.73		
KH4	0.706		
Job performance		0.818	0.53
JP1	0.87		
JP2	0.777		
JP5	0.637		
JP6	0.591		

Source: Author's calculations. HRM: human resource management; EO: employee-oriented; GF: general corporate social responsibility facilitation; LC: legal compliance; KH: knowledge hiding; JP: job performance.

To confirm convergence, the AVE coefficient must be equal to or greater than 0.5 [29]. Table 2 demonstrates satisfactory AVE values.

4.3. Structural model evaluation

Multicollinearity was examined, and VIF indices less than 5 indicate the absence of multicollinearity [30]. Table 3 indicates that the model does not exhibit multicollinearity.

Table 3. Variance inflation factor (VIF) scores.

	EO	GF	LC	KH1	KH2	KH3	KH4	JP1	JP2	JP5	JP6
VIF	1.462	1.237	1.5	1.315	1.378	1.395	1.316	1.747	1.585	1.227	1.205

Source: Author's calculations.

The PLS structural model was utilised to test the hypotheses. In this study, three hypotheses were proposed, with a significance level of 5% serving as the basis for accepting or rejecting the hypotheses. Table 4 reveals the direct impacts, indicating that all hypotheses were accepted.

Table 4. The results of direct effect testing.

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
SHRM -> JP	0.362	0.36	0.067	5.442	0.000
SHRM -> KH	-0.563	-0.551	0.106	5.323	0.000
KH -> JP	-0.487	-0.478	0.057	8.536	0.000

Source: Author's calculations.

R^2 values range from 0 to 1, with higher values indicating better predictive model accuracy. According to Table 5, the model explains 56.7% of the variance in job performance and 31.8% of the variance in knowledge hiding behaviour.

Table 5. The results of R^2.

	R^2	R^2 adjusted
R^2	R^2 adjusted	R^2
JP 0.567	0.563	JP 0.567

Source: Author's calculations.

As per S. Cohen, et al. (1988) [31], f^2 values of 0.02, 0.15, and 0.35 correspond to small, medium, and large impacts, respectively. Table 6 illustrates the impact levels of each factor.

Table 6. Results of f^2.

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
SHRM -> JP	0.206	0.214	0.075	2.76	0.006
SHRM -> KH	0.465	0.493	0.232	2.008	0.045
KH -> JP	0.373	0.369	0.106	3.508	0.000

Source: Author's calculations.

In summary, the path results are depicted in Fig. 2 below.

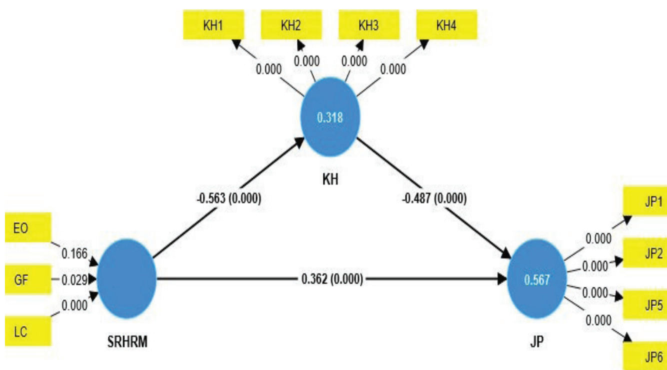


Fig. 2. The result model.

4.4. Discussion

This study aims to investigate the influence of sustainable HRM on employee job performance while examining the effect of knowledge hiding behaviour. In this research, sustainable HRM is analysed from the perspective of SRHRM activities. The findings reveal that sustainable HRM positively impacts job performance, in line with the results of F. Manzoor, et al. (2019) [4] and T.V. Vu (2022) [14]. Furthermore, sustainable HRM is found to have a reverse effect on knowledge hiding behaviour, consistent with the tenets of SET. Additionally, knowledge hiding behaviour is found to negatively impact job performance, in harmony with the research outcomes of T.M. Nguyen, et al. (2022) [25] and S.K. Singh (2019) [32].

A noteworthy contribution of this study, compared to prior research on sustainable HRM, is the identification of the inverse relationship between sustainable HRM and knowledge hiding behaviour, which aligns with P.M. Blau (1964) [11] SET. When employees perceive that the organisation values and benefits them, they are inclined to reciprocate this favourable treatment by reducing knowledge hiding behaviour, i.e., actively sharing knowledge with colleagues.

The significance of these research findings lies in the experimental evidence they provide, which further enriches the understanding of the role and significance of sustainable HRM. Based on these results, recommendations are proposed to assist wood processing industry businesses in their decisions regarding sustainable HRM activities. Furthermore, these findings fill a research gap in the realm of sustainable HRM in Vietnam, particularly within the wood processing industry.

5. Conclusions and recommendations

The research results indicate that sustainable HRM has a positive impact on employee job performance, exerts an inverse influence on knowledge hiding behaviour, and highlights the negative impact of knowledge hiding behaviour on job performance. Consequently, the author offers several recommendations for businesses to enhance employee job performance and mitigate knowledge hiding behaviour:

Firstly, businesses need to design human resource policies aimed at providing additional benefits to employees, such as flexible working hours and flexible working days. Employees should not be bound by rigid start and end times; they should only ensure the required amount of time and be able to choose any day for remote work without the need to come to the workplace. Consulting employees before making decisions is essential, as it helps employees feel respected and recognises the important role of individuals in making business decisions, thereby motivating efforts to improve job performance.

Secondly, businesses should continue to maintain and promote achievements in complying with HRM laws and regulations. This includes paying salaries as prescribed by law, ensuring maximum working hours, and prioritising occupational safety and health. Activities to ensure occupational safety and health should involve analysing and managing safety risks, providing training and guidance on labour safety, and periodically equipping personal protective equipment. It is crucial to build a culture of labour safety by encouraging everyone in the organisation to practice safety and prioritise safety. Creating an environment where compliance with safety regulations and measures is a natural part of everyday work life is essential.

Thirdly, businesses should increase activities that encourage employees to share knowledge instead of hiding it. This can be achieved by creating an open discussion and sharing environment, where an open and comfortable work environment is established, enabling people to feel free to exchange information and knowledge naturally. Promoting discussion, Q&A, and feedback will create opportunities for people to express and share their knowledge. Building a learning culture is also important, which involves encouraging continuous development and learning. This can be done by supporting employees to participate in courses, sharing experiences after each project, and regularly evaluating and improving work processes. Additionally, businesses should invest in information-sharing platforms, including tools and systems that allow people to easily share knowledge, such as online forums, knowledge management systems, or collaboration tools like internal wikis.

Limitations and future research directions: Firstly, due to limited time and financial resources, the author conducted research only on wood processing companies in Hanoi. Future research should expand the scope to cover the entire territory of Vietnam for a more comprehensive perspective. Secondly, job performance was considered in an aggregated manner. Future research could analyse the construct components such as task performance, contextual performance, and counterproductive work behaviour. Thirdly, the role of knowledge hiding can be further explored as a moderating variable to assess the impact level of sustainable HRM on job performance. Fourthly, the research sample was collected using a convenient method, so there are limitations in representativeness. Future studies should use longitudinal data collection methods to improve the reliability of research results.

APPENDICES

Table 1. Outer loadings.

	Outer loadings
Employee-oriented HRM	
EO1	0.791
EO2	0.752
EO3	0.784
EO4	0.788
General CSR facilitation HRM	
GF1	0.804
GF2	0.893
GF3	0.89
Legal compliance HRM	
LC2	0.817
LC3	0.829
LC5	0.826

Source: Author's calculations.

The indicators' outer loadings should be greater than or equal to 0.708 to meet reliability requirements. In cases where the outer loading is below 0.708 and above 0.4, the indicator can be retained if the construct's composite reliability is greater than or equal to 0.5 [30].

Table 2. Composite reliability and AVE.

	Composite reliability (rho_c)	Average variance extracted (AVE)
Employee-oriented HRM (EO)	0.861	0.607
General CSR facilitation HRM (GF)	0.898	0.745
Legal compliance HRM (LC)	0.864	0.679

Source: Author's calculations.

The composite reliability should be greater than or equal to 0.7 to achieve composite reliability [28].

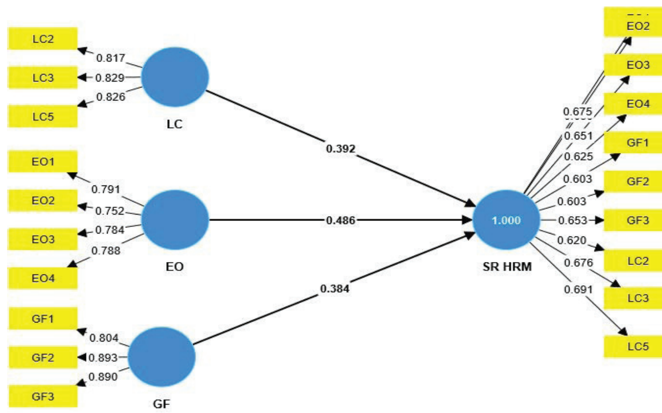
The AVE should be greater than or equal to 0.5 to confirm convergence C. Fornell, et al. (1981) [29].

Table 3. Heterotrait - monotrait (HTMT) matrix.

	EO	GF	LC
EO			
GF	0.457		
LC	0.69	0.494	

Source: Author's calculations.

HTMT values are all below 0.85, so discrimination between variables is guaranteed [29].



After completing Phase 1, the author moves on to Phase 2, and the variable sustainable HRM is the synthesis of component variables of Phase 1.

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COMPETING INTERESTS

The author declares that there is no conflict of interest regarding the publication of this article.

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Analysis of multi-factors affecting resource consumption efficiency in Vietnam

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Abstract:

The primary objective of this study is to delve into the factors potentially influencing resource utilisation efficiency at the provincial level in Vietnam. We leverage 185 data points gathered from 63 Vietnamese cities and provinces in the period 2020-2022, obtained from two key sources: the General Statistics Office of Vietnam and the Ministry of Information and Communications of Vietnam. The collected data was subjected to analysis using an empirical econometric model that incorporates time-series characteristics to explore the connections between these potential determinants of resource consumption efficiency. The analysis revealed a strong correlation between resource utilisation efficiency and the quality of digital transformation, logistics performance, and various aspects of public governance, including accountability to higher authorities, control of corruption, administrative procedures, and public service delivery. Additionally, the provincial competitiveness index, encompassing factors like entry costs, policy bias, and labour policy, also demonstrated a significant association. These findings highlight a clear link between effective public governance and efficient resource utilisation in Vietnamese provinces. This suggests that robust public governance systems, combined with advancements in digitalisation and logistics, can play a crucial role in optimising resource utilisation within Vietnamese provinces.

Keywords: **digital transformation, logistics, provincial competitiveness, public governance, resource consumption efficiency.**

Classification number: ***2.2***

1. Introduction

Human well-being relies heavily on renewable resources such as fish stocks, forests, groundwater, and rangelands. However, the unequal distribution of these resources often perpetuates socioeconomic disparities, particularly in developing regions [1]. Addressing these disparities requires not only conservation efforts but also equitable access to resource benefits and opportunities for local communities. Implementing inclusive policies and fostering international cooperation are vital steps towards achieving sustainable resource utilisation and promoting global well-being [2].

The interconnectedness between natural resource extraction and biodiversity has profound implications in the contemporary world [3], shaping strategies for income augmentation in nations [4]. Many renewable resources have undergone periods of unsustainable utilisation and degradation followed by recovery efforts. These resources serve as primary inputs for economic and social material production, pivotal in wealth accumulation and economic development [5]. Natural resource abundance plays a pivotal role in fostering industrial development [6], serving as a cornerstone for economic growth strategies. However, the renewed emphasis on economic expansion following the global COVID-19 pandemic has intensified pressures on natural resource reserves worldwide [7], raising concerns about sustainable resource management and environmental conservation.

The exploitation and development of mineral and oil resources have traditionally served as key drivers of economic strength. However, growing concerns over their environmental impact and sustainability

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have prompted scrutiny. As resource-rich economies continue to pursue growth, the efficient utilisation of natural resources becomes increasingly imperative. Achieving sustainable development poses a significant challenge for these economies, as they navigate the balance between economic advancement and environmental preservation [8]. Simultaneously, digital technologies play a crucial role in enhancing energy efficiency, facilitating the adoption of green production methods, and thereby mitigating resource and environmental pressures. This technological advancement contributes to the realisation of green, low-carbon development in both the economy and society [9]. Significant technological innovation, coupled with economic growth and financial transformations, holds the potential to redirect economies away from resource-centric growth models [10, 11]. This shift aligns with global growth strategies such as the Sustainable Development Goals, signalling a broader commitment to sustainable development.

S.A. Bawazir (2006) [12] defines sustainable growth as encompassing “the periods of ‘e’ hardware, software, service, and people”. In the digital age, authorities in both developed and emerging nations are leveraging Information and Communication Technologies (ICTs) to promote coordinated policies, enhance public services, and establish transparent institutions that contribute to a sustainable future [13]. Through the implementation of digital government initiatives, effective management of natural resources can be facilitated. Therefore, it is crucial to assess the role of digital technology in fostering the sustainability of natural resources.

The adoption of a circular economy framework and the pursuit of resource efficiency necessitates certain prerequisites, with logistics playing a central role among them. A. Zhang, et al. (2022) [14] characterise logistics as the wings of the circular economy, enhancing circular supply chains and environmental sustainability. P.K. Mallick, et al. (2023) [15] highlight the significance of efficient logistics within the circular economy, enabling faster circulation between producers and consumers, thus establishing a closed-loop economic mechanism with minimal waste and reduced environmental impacts. Digitising logistics or supply chains introduces a more innovative model that harnesses the potential of information and communication technologies to create more efficient and accessible channels for logistics management.

Efficient resource management practices facilitate sustainable service delivery by aligning with community objectives and carefully weighing the trade-offs between desired services and available resources. Nevertheless, numerous factors such as policy frameworks, financial constraints, and legislative requirements often present challenges in adopting management approaches that ensure the long-term sustainability of services [16, 17]. Several policy challenges persist in the renewable energy sector, including the absence of incentives, substantial subsidies allocated to fossil fuel consumption, inadequate environmental regulations, elevated costs, complex tariff structures, limited technological know-how, and numerous others. Additionally, it’s essential to recognise that various policy-related factors can either positively or negatively impact industrial and economic transitions. However, energy policymaking, particularly in determining a country’s energy mix to mitigate emissions, often becomes embroiled in politics, influenced by factors such as the rule of law, corruption, governance, and economic growth. Provincial Governance and Public Administration Performance Index (PAPI) is a tool used to monitor and evaluate the capacity of the government to manage and implement policies, as well as to provide public services in Vietnam. The PAPI covers all 63 provinces and cities in Vietnam, and the data and evidence it provides reflect eight key dimensions of government performance [18].

In addition to the aforementioned policy challenges, the Provincial Competitiveness Index (PCI) also plays a crucial role in shaping the landscape of efficient resource management. The PCI, which measures the ease of doing business and the investment environment at the provincial level, influences the allocation and utilisation of resources within a country [19]. However, despite its significance, there is a notable scarcity of research examining the relationship between the PCI and efficient resource management practices in Vietnam. Recognising this gap, our team aims to contribute to the existing literature by investigating the implications of the PCI on resource management efficiency within the Vietnamese context.

The objective of this study is to investigate the influence of various factors, including the PAPI, the PCI, the Digital Technology Index (DTI), and logistics, on the efficiency of natural resource consumption. Vietnam serves as the focal point for this research, providing a pertinent case study due to its dynamic economic landscape and significant reliance on natural resources for industrial and economic growth. Moreover, due to the lack of research within this sector in Vietnam, the research team decides to fill this gap. By examining these factors within the Vietnamese context, this research aims to shed light on the intricate relationship between governance, technological advancement, and logistical efficiency in shaping sustainable resource management practices.

The rest of this document is organised as follows: the subsequent section will conduct a literature review and establish the hypothesis. Following that, the research methodology will be outlined, and the analysis results will be discussed in the fourth section. Subsequently, the discussion section will present the study's findings and outline its limitations. Afterwards, the recommendation section will offer suggestions and proposals based on the research results. Lastly, the conclusions section will summarise the main findings of this study.

2. Literature review

The issue of resource consumption in the post-COVID era has become a contentious topic among businesses and countries. Y. Matiiuk, et al. (2023) [20] asserted that the COVID-19 pandemic altered people's perceptions of climate change and human responsibility, contributing to resource-consuming behaviour. Nations should focus on comprehensive multifaceted policies while addressing climate change issues. These strategies include protecting biodiversity, using natural resources sustainably, and investing in R&D on low-carbon technologies [21]. These will encourage sustainability and reduce countries' reliance on the production and use of natural resources.

A group of scholars has examined the relationship between digital transformation and the efficiency of natural resource deployment. W.U.H. Shah, et al. (2024) [22] underlined the significance of natural resources in developing prosperous economies, which can foster continued industrialisation, develop more export industries, and attract FDI. At a business level, F. Liao, et al. (2024) [23] demonstrated a significant and favourable association between the digitalisation of businesses and the enhancement of green supply chain efficiency, primarily involving the enhancement of green technology capacity, easing financial constraints, and thereby promoting greater efficiency in their supply chains. Additionally, J. Wang, et al. (2024) [24] found that digitalisation contributes to the improvement of enterprises' energy efficiency. Digital transformation has heterogeneous characteristics in different strategies, groups, and growth stages. Further discussion reveals that digital inclusive finance, government subsidies, intellectual property protection, and the opening of the service industry have positive regulatory effects on the energy efficiency improvements brought about by digital transformation. On a broader scale, digital transformation positively influences resource consumption effectiveness. Z. Wang, et al. (2024) [25] provided evidence that digital transformation significantly raises the efficiency of regional coal consumption. Furthermore, a thorough analysis of spatial effects reveals that the benefits of digital transformation extend beyond borders, enhancing the efficiency of coal consumption in neighbouring regions and promoting the sustainable growth of the region's coal resources as a whole. The moderating impact study emphasises how significantly the policy level of digital development contributes to the positive link between coal consumption efficiency and digital transformation. N.T. Hieu, et al. (2023) [26] state that there is a considerably positive connection between digitalisation and the development of environmental innovation, which contributes to resource utilisation in Vietnam. By offering a deeper explanation for the phenomenon, B. Lin, et al. (2024) [27] showed how digital transformation increases a company's green innovative output by improving the conversion efficiency of innovation resources. To foster green innovation efficiency, it is suggested that government support for a company's innovation initiatives can effectively amplify the positive influence of digital transformation on the efficient allocation of enterprise innovation resources. A few scholars have proposed that digital transformation will help increase emerging markets' performance. Specifically, N. Liu, et al. (2023) [28] concluded that digitalisation indicators such as the digital economy index, e-government, and ICT diffusion index would help increase fossil fuel resource efficiency in both the long and short term. The development of the green financing market and its promotion on the digital platform is an operational policy for emerging markets that will attract private sector capital to projects related to the efficiency of natural resources.

Public administration and governance need further improvement in Vietnam to promote the development of the economy, society, resources, environment, and ecology. M. Swilling, et al. (2017) [29] showed that the entrepreneurial role of state institutions would result in city-wide urban governance coalitions between government policymakers, knowledge networks, social entrepreneurs, innovators, investors, and civil society formations committed to innovations that result in greater resource efficiency. Similarly, N. Liu, et al. (2023) [28] proved a nonlinear relationship between government transparency and eco-efficiency performance. This will help prevent corruption, improve public participation, and enhance efficiency performance. D. Fadly (2020) [30] states that adopting environmental regulations and standards among SMEs is essential to gaining competitiveness and environmental sustainability in the context of Vietnam. According to K. Chen, et al. (2024) [31], the government's digital governance capacity significantly contributes to the improvement of natural resource management in urban areas. Rather than quantity, it is mainly green technology innovation, intellectual property protection, and the quality of green technology innovation that helps governance promote natural resource management. While examining the resource curse [32] - a well-known proposition that refers to the restriction of resources to economic growth and the economic growth rate of a resource-rich economy tending to be slower than that of a resource-poor economy, M. Tatar, et al. (2024) [33] and X. Li, et al. (2024) [34] reveal the association between good governance and natural resource management. Additionally, good governance indicators and green growth are identified as efficient tools to combat the resource curse phenomenon in developing Asian economies.

Another strand of literature has concentrated on logistics and its contribution to resource utilisation effectiveness. F.O. Tavares, et al. (2024) [35] proved the critical role of logistics in waste management, material recovery, energy efficiency, and resource sharing. Logistics is an important part of the transition to the circular economy, making business processes more sustainable and environmentally friendly. C. Ju, et al. (2023) [36] supports the above statement by revealing the participation of e-commerce, green logistics, green electricity generation, good governance, and ICT diffusion in advancing the sustainable development goals of developing and emerging Asian countries. For example, O. Ostapenko, et al. (2020) [37] illustrated the application of principles and goals of the concept of green logistics to raise the level of energy-economic efficiency in the energy sector of Ukraine. According to P.T. An, et al. (2023) [38], within Vietnamese enterprises, green logistics activities play a significantly important role in utilising natural resources. However, J. Wehner (2018) [39] offers an overview of the problem of low energy efficiency in logistics, which needs a holistic approach. S. Rossi, et al. (2013) [40] suggest that we lack the capabilities and tools to deploy a strategy for eco-efficiency, despite the many opportunities for LSPs to improve their approach to eco-efficiency as a source of competitive advantage.

The relationship between competitiveness and effective resource consumption has been examined by several scholars. For example, M. Alsaleh, et al. (2020) [41] and K. Tatić, et al. (2006) [42] reveal that the bioenergy industry is in direct proportion to the global competitiveness index. However, there is no study on the correlation between these two factors on a smaller scale. Therefore, in this paper, we will further explore the relationship between the PCI and resource efficiency.

3. Methodology

3.1. Research methodology flowchart

In this research, secondary data sources are collected from the General Statistics Office of Vietnam and the Ministry of Information and Communications. Data is gathered from 63 cities and provinces over the past three years (2020, 2021, and 2022), resulting in a dataset comprising 189 records. However, due to missing information from 3 cities (totalling 4 records), the final analysis is conducted using a refined dataset of 185 records. The analysis focuses on how the key components: PAPI, PCI, DTI, Logistics total factor productivity (LTFP), and GDP per capita impact resource consumption efficiency (RCE). The research employs an empirical econometric model to analyse the data and determine the coefficients of each variable. The results section delves into descriptive statistics, correlation analysis, and regression analysis, and outlines recommendations based on the findings. The procedure of the research methodology is described in the following Fig. 1.

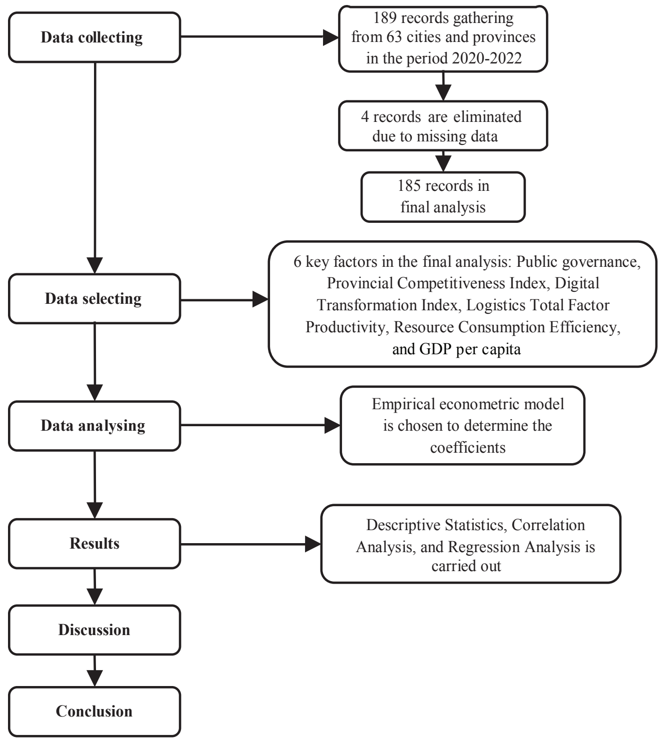

Fig. 1. Research methodology flowchart. Source: Authors' research.

3.2. Research model

In this paper, we measure the impacts of various factors (provincial competitiveness, digital transformation, public governance, logistics performance) on the efficiency of natural resource deployment and depletion in Vietnam. To this end, natural resource consumption efficiency is selected as the dependent variable. Furthermore, the digital transformation index, provincial competitiveness index, public governance index, and total factor productivity of logistics are determined as explanatory variables. In addition, GDP per capita is added to the model as the control variable. Lastly, to determine the coefficients, we examine the empirical econometric model incorporating time series features.

The research model below is developed based on the study by L. Zhao, et al. (2023) [43] on the components affecting resource consumption efficiency. This study differs by including the influencing factors of the PAPI and DTI indices. In the study by L. Zhao, et al. (2023) [43], they refer to the effects of the green growth index, natural resources activity coefficient, inflation rate, employment rate, and foreign direct investment.

$$RCE_t = \beta_0 + \beta_1 PAPI_i + \beta_2 PCI_i + \beta_3 DTI_i + \beta_4 LTFP_i + \beta_5 GDPPC_i + \varepsilon_t \quad (1)$$

where β_0, β_1, β_2, β_3, β_4, β_5 are six unknown constants that represent the regression slope; ε_t (epsilon) is the error term; i is region of the variable.

By incorporating the three main dimensions of the PCI and four main dimensions of PAPI in Equation (1), the final version of the estimation equation is as follows:

$$RCE_t = \beta_0 + \beta_1 PAPIVA_i + \beta_2 PAPICoC_i + \beta_3 PAPIAP_i + \beta_4 PAPIPSD_i + \beta_5 PCIEC_i + \beta_6 PCIPB_i + \beta_7 PCILP_i + \beta_8 DTI_i + \beta_9 LTFP_i + \beta_{10} GDPPC_i + \varepsilon_t \quad (2)$$

where β_0, β_1, β_2, β_3, β_4, β_5, β_6, β_7, β_8, β_9, β_{10} are eleven unknown constants that represent the regression slope; ε_t (epsilon) is the error term; i is region of the variable.

In Equation (2), RCE indicates resource consumption efficiency; PAPIVA, PAPICoC, PAPIAP, PAPIPSD indicate vertical accountability, control of corruption, administrative procedures, public service delivery, respectively. In addition, PCIEC, PCIPB, PCILP indicate entry costs, policy bias, and labour policy. Moreover, DTI indicates the digital transformation index, LTFP indicates logistics total factor productivity, and GDPPC as a control variable indicates GDP per capita. Table 1 describes the abbreviations, units, and sources of selected variables.

Table 1. List of variables to construct an empirical model (2020-2022).

Variable	Abbreviation	Unit	Source
Vertical accountability	PAPIVA	Index	Provincial Governance and Public Administration Performance Index
Control of corruption	PAPICoC	Index	
Administrative procedures	PAPIAP	Index	
Public service delivery	PAPIPSD	Index	
Entry costs	PCIEC	Index	Provincial Competitiveness Index
Policy bias	PCIPB	Index	
Labour policy	PCILP	Index	
Digital transformation index	DTI	Index	Ministry of Information and Communications, Vietnam
Logistics total factor productivity	LTFP	Index	Author's calculation
Resource consumption efficiency	RCE	Index	Calculated based on L. Zhao, et al. (2023) [43]
GDP per capita	GDPPC	Current thousand Vietnam Dong	General Statistics Office of Vietnam

4. Results and discussion

Table 2 shows the descriptive statistics of the research variables for all 185 records. Firstly, let's examine the parameters describing the RCE of 63 Vietnamese provinces and cities over a period of three years. The average score is 1.01, indicating that Vietnamese provinces have a low average risk of natural resource utilisation, with the lowest score being 0.94 and the highest 1.15, which demonstrates that resource consumption efficiency can operate more effectively.

Table 2. Descriptive statistics.

Variables	N	Minimum	Maximum	Mean	Std. Deviation
PAPIVA	185	3.84	5.82	4.50	0.38
PAPICoC	185	0.00	8.29	6.78	0.69
PAPIAP	185	0.00	7.84	7.22	0.58
PAPIPSD	185	6.34	8.46	7.42	0.48
PCIEC	185	5.17	9.14	7.19	0.66
PCIPB	185	3.72	8.81	6.24	0.85
PCILP	185	3.73	8.41	5.98	0.84
DTI	185	0.21	0.80	0.43	0.13
LTFP	185	0.96	1.09	1.00	0.02
GDPPC	185	1.74	8.08	3.78	1.14
RCE	185	0.94	1.15	1.01	0.06

Source: Authors' research.

Table 3 reveals that the correlation coefficients among independent variables are generally weak, and variance inflation factors remain below 0.5. This suggests a minimal risk of multicollinearity significantly impacting the results [44]. Furthermore, the correlation matrix between inputs and outputs indicates a strong positive association between resource consumption efficiency and all input variables.

The econometric analysis, conducted using SPSS software, explored the connection between the RCE and its potential influencing factors. The findings presented in Table 4 indicate a statistically significant positive association between RCE and both logistics performance and the degree of digital transformation at the provincial level. Furthermore, the t-statistics and p-values confirm that all ten variables considered - Vertical Accountability, Control of Corruption, Administrative Procedures, Public Service Delivery, Entry Costs, Policy Bias, Labour Policy, Digital Transformation Index, Logistics Total Factor Productivity, and GDP Per Capita - exert a statistically significant influence on resource consumption efficiency. As hypothesised, the analysis revealed a mix of positive and negative significant relationships between provincial performance in various sectors, encompassing competitiveness, digitalisation, governance, logistics, and resource consumption efficiency. Notably, the results suggest that the explanatory variables account for approximately 95.3% of the variation observed in resource consumption

Table 3. Correlation analysis.

	PAPIVA	PAPICoC	PAPIAP	PAPIPSD	PCIEC	PCIPB	PCILP	DTI	LTFP	GDPPC	RCE
PAPIVA	1										
PAPICoC		1									
PAPIAP	0.557	0.62	1								
PAPIPSD	-0.335			1							
PCIEC	0.358	0.16		-0.344	1						
PCIPB				-0.160	0.176	1					
PCILP	0.262				0.210	0.260	1				
DTI	-0.321		-0.25		-0.213	-0.147	-0.223	1			
LTFP	-0.451		-0.191	0.397	-0.348				1		
GDPPC				0.260			0.401	0.249	0.412	1	
RCE	-0.532	-0.166	-0.24	0.329	-0.424	-0.286	-0.384	0.887	0.837	0.203	1

Source: Authors' research.

efficiency. This implies a strong explanatory power of the chosen model. Additionally, Table 4 shows that all Tolerance coefficients are greater than 0.1 and all VIF values are less than 2. Therefore, it can be concluded that there is no multicollinearity in the model.

Our regression analysis, presented in Table 4, reveals that the Digital Transformation Index exerts a substantial positive influence on resource consumption efficiency with a path coefficient of 0.232. Similarly, Logistics Total Factor Productivity demonstrates a significant positive impact on resource consumption efficiency as reflected by a path coefficient of 0.636. Turning to public governance aspects, Vertical Accountability (PAPIVA) exhibits a significant negative association with resource consumption efficiency, indicated by a path coefficient of -0.197. Conversely, Control of Corruption (PAPICoC) and Public Service Delivery (PAPIPSD) show a significant positive effect, with path coefficients of 0.142 and 0.091, respectively. Administrative Procedures (PAPIAP) also have a significant negative impact, as evidenced by a path coefficient of -0.102. The remaining provincial competitiveness indices - Entry Costs (PCIEC), Policy Bias (PCIPB), and Labour Policy (PCILP) - indicate moderate negative associations with resource consumption efficiency, reflected by path coefficients of -0.079, -0.070, and -0.105, respectively. In this research, the impact of entry cost, policy bias, and labour policy are agreeable. The effect of the labour policy on resource consumption efficiency has a positive effect. The results showed that digital transformation and logistics productivity caused the highest impacts on resource consumption efficiency, much higher than factors of PAPI and PCI.

From the obtained results, digital transformation and logistics productivity are strongly correlated with resource consumption efficiency in Vietnam. Firstly, the transformation of information and communication technology improves and optimises the management of natural resources by promoting transparency and improving resource accumulation, utilisation, and allocation. The findings align with L. Agnusdei, et al. (2023) [45], W. Guan, et al. (2024) [46], and Y. Shao, et al. (2024) [47] who found the critical role of digitalisation in resource consumption efficiency and the circular economy. Also, the results show the positive and significant impact of logistics productivity on the effectiveness of natural resource consumption, similar to how A. Xu, et al. (2023) [48] express that total factor productivity of logistics accelerates the expansion of the circular economy. Nevertheless, all subcategories of PCI show a negative pattern of Provincial Competitiveness towards the effectiveness of natural resource consumption. It was found that in Vietnam, the two dimensions Vertical Accountability and Administrative Procedures of PAPI have a negative correlation with resource utilisation, while the two other dimensions Control of Corruption and

Table 4. Regression analysis.

	Unstandardised coefficients		Standardised coefficients	t	Sig.	Collinearity statistics	
	B	*Std. Error*	*Beta*			*Tolerance*	*VIF*
(Constant)	-.347	.066		-5.271	.000		
PAPIVA	-0.022	0.003	-0.197	-7.455	.000	0.33	1.96
PAPICoC	0.009	0.002	0.142	4.769	.000	0.26	1.85
PAPIAP	-0.01	0.002	-0.102	-4.389	.000	0.43	1.34
PAPIPSD	0.011	0.002	0.091	4.614	.000	0.58	1.71
PCIEC	-0.007	0.002	-0.079	-4.464	.000	0.74	1.35
PCIPB	-0.005	0.001	-0.07	-4.365	.000	0.89	1.13
PCILP	-0.007	0.001	-0.105	-5.221	.000	0.57	1.75
DTI	0.097	0.012	0.232	8.18	.000	0.60	1.68
LTFP	1.474	0.058	0.636	25.336	.000	0.29	1.50
GDP	-0.003	0.001	-0.055	-2.813	.005	0.36	1.75

Source: Authors' research.

Public Service Delivery show a positive impact on resource consumption efficiency. This finding aligns with M.C. Brisbois (2020) [49], who stated that effective multi-level electricity governance requires some decentralisation of responsibility, authority, and resources. Furthermore, J. Guo, et al. (2021) [50] and F. Teichmann, et al. (2023) [51] express that anti-corruption improves the allocation efficiency of resources.

5. Conclusions

In this study, we investigate the potential relationship between resource consumption efficiency and various determinants, including digital transformation, logistics performance, public governance mechanisms, and competitive advantages at the provincial level within the Vietnamese context. Our findings reveal that the quality of public governance has a notable correlation with the efficiency of resource consumption, exhibiting both favourable and unfavourable outcomes across specific categories. To address this, the Vietnamese government should enhance transparency, accountability, and the rule of law to ensure efficient resource use and mitigate negative outcomes. They should also consider developing smart city initiatives that integrate digital solutions for efficient urban planning and resource management.

Additionally, the adoption of digital transformation and the overall productivity of logistics significantly contribute to enhancing the quality of resource utilisation. Policymakers should focus on investment in digital infrastructure, provide training for digital skills, and encourage public-private partnerships to leverage technology in resource management and logistics at the provincial level in Vietnam. Moreover, the competitive performance among provinces in Vietnam demonstrates a considerable adverse effect on resource consumption efficiency. Therefore, engagement in cooperative initiatives is essential to share best practices and resources, thereby reducing redundancy and promoting more sustainable competition.

Thus, policymakers should prioritise the enhancement of public governance frameworks alongside fostering digital transformation initiatives to bolster resource utilisation quality. This necessitates the implementation of policies aimed at strengthening governance structures and promoting technological advancements in logistics. Furthermore, creating an environment that fosters healthy competition and promotes initiatives aimed at enhancing efficiency is crucial. Through these efforts, policymakers can drive Vietnam towards sustainable development and increased competitiveness on the global stage.

In future research, it is essential to investigate advanced manufacturing indices and cross-sectoral approaches to sustainable development that integrate environmental, social, and economic considerations. Research could focus on identifying synergies and trade-offs between different sectors (e.g., energy, agriculture, transportation) and developing integrated policy frameworks to address multiple sustainability challenges simultaneously. Moreover, conducting policy analysis and evaluation to assess the effectiveness of existing resource management policies and identifying opportunities for improvement can broaden the research scope. This could involve assessing the alignment of policies with sustainability objectives, evaluating their implementation and enforcement mechanisms, and identifying policy gaps or inconsistencies.

CRediT author statement

Nguyen Thi Xuan Hoa: Conceptualisation, Methodology, Validation, Writing; Nguyen Duc Anh: Data collection, Data analysis, Writing, Methodology; Ngo Huu Quang: Data collection, Data analysis; Nguyen Thi Huyen Trang: Data collection, Writing.

COMPETING INTERESTS

The authors declare that there is no conflict of interest regarding the publication of this article.

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Determinants of tourism destination competitiveness in Savannakhet province, Lao PDR: A proposed model

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Abstract:

Recently, the Lao People's Democratic Republic (Lao PDR) has increasingly become a popular tourist destination, especially for international tourists. Because there is still a lack of research on the tourism aspects of this country, this article aims to develop a model to assess destination competitiveness and identify critical factors affecting tourism destination competitiveness within the tourism industry in Savannakhet province in Lao PDR in 2023. By using the quantitative method, the research conducted a survey with 153 respondents and analysed the data using SPSS. Moreover, Importance - Performance Analysis is also employed. As a result, eight groups of factors with 29 items were determined. These factors are resources, diversity and quality of facilities and accommodation, costs and safety, currency, vision of the tourism destination, environmentally oriented destinations, demand, and supporting factors. This research is also expected to provide valuable insights and help the government, destination management organisations, residents, and other interested parties to gain a better understanding of the critical determinants of tourism destination competitiveness in Savannakhet province, Lao PDR.

Keywords: **competitiveness, competitiveness indicator, Lao PDR, tourism, tourism destination.**

Classification numbers: **2.2, 2.3**

1. Introduction

Tourism is one of the fastest-growing industries in the world, leading to fierce competition among destinations to attract visitors. To achieve this, destinations must build and maintain a favourable image to develop attractive tourism services, thereby enhancing visitor satisfaction [1]. However, not all competing destinations in the tourism sector achieve equal market share. Popular destinations appear to have a distinctive edge over others, making the concept of destination competitiveness of prime importance [2]. Moreover, due to the increasing competition in the international tourist market between existing tourist attractions and the emergence of new ones, achieving and especially maintaining and enhancing competitive advantage is extremely challenging [3]. This challenge arises from the fact that destinations are composed of many factors, complex structures, systems, and constantly changing interactions. As destinations are subject to intense global competition, increasing competitiveness among tourist destinations is a key feature of the modern tourism market. Therefore, to survive in such a rapidly changing environment and compete in the global market, tourism destinations need to innovate and constantly seek new resources that offer a comparative advantage over other destinations [4].

Lao PDR is an underdeveloped country with great potential for tourism development. However, Lao PDR has not attracted as many tourists compared to other Southeast Asian destinations such as Thailand, Singapore, and Vietnam. Therefore, Lao PDR needs to maintain and enhance its destination competitiveness. Current research related to assessing the competitiveness of Lao PDR as a tourist destination has not yet been conducted, making it a new area of research. The competitiveness of Lao PDR as a tourist destination needs to be studied to identify capacity weaknesses and provide a basis for improvement. Thus, this study was conducted to develop an appropriate model to assess the competitiveness of Savannakhet province, Lao PDR as a tourism destination from the supply side.

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2. Literature review

2.1. The concept of tourism destination competitiveness

The concept of tourism destination competitiveness originates from the broader notion of competitiveness [5]. It is highly significant in tourism research, recognised as a crucial factor for the success of tourist destinations [6]. Regarding tourism destination competitiveness, it involves a combination of comparative advantage and competitive advantage. Comparative advantage pertains to inherent resources such as climate, landscape, flora, and fauna, while competitive advantage relates to generated factors such as tourism infrastructure, management quality, worker skills, and government policy [7].

While the concept of competitiveness initially emerged in the economic sector, its application in tourism has led to new debates regarding its definition. Destination competitiveness, like general competitiveness, is complex and multifaceted [8]. Consequently, numerous variables have been associated with this term, and various factors and perspectives have been proposed. This has resulted in multiple descriptions and definitions of the concept, indicating that consensus on a single definition remains elusive [9, 10].

Through the synthesis of competitiveness definitions, three general aspects have emerged. The first is the economic aspect, central to competitiveness, as noted by L.A. Caldito, et al. (2014) [11]. The second aspect involves attractiveness and satisfaction [6, 12], referring to a destination's ability to attract and satisfy potential tourists increasingly. The third aspect pertains to sustainability. Despite the predominance of economic aspects in research and measurement of destination competitiveness, environmental and social aspects are also considered [13]. This is evident in perspectives that emphasise preserving a destination's natural capital for future generations [12] and creating and integrating valuable products to sustain its resources [14]. This aspect ensures long-term success and achieves a fair return from resources used to satisfy all stakeholders [15].

Previous research has identified J.R.B. Ritchie, et al. (2003) [12] approach as the most comprehensive regarding destination competitiveness [16]. These authors define tourism destination competitiveness as the ability to increase tourism spending, attract more tourists, provide satisfying and memorable experiences, generate business profits, enhance the well-being of residents, and preserve the destination's natural resources for future generations.

2.2. Theories related to tourism destination competitiveness

Two economic theories, the theory of comparative advantage and the theory of competitive advantage, serve as the foundational basis for researching destination competitiveness. These theories facilitate a deeper understanding of competition and its interrelationships and applications within tourism. Additionally, R.E. Freeman (1984) [17]'s stakeholder theory is utilised in this research, positing that stakeholders at the destination play a crucial role in its success and should therefore be included in the assessment of the destination's competitiveness.

2.3. The theory of comparative advantage

The theory of comparative advantage was developed by David Ricardo in 1987, based on the theories of mercantilism and Adam Smith's absolute advantage. While absolute advantage identifies the lowest-cost producer, comparative advantage is based on the opportunity cost of producing a particular good over others. Even countries without an absolute advantage in any goods will have a comparative advantage in producing at least one good. This inter-country opportunity cost assessment encourages specialisation and trade. The theory is based on rigorous assumptions, including perfect competition, constant returns to scale, known and stable international market prices, and fixed characteristics of goods [18]. Despite these strict assumptions, the structure of comparative advantage remains a fundamental element in trade theory and is applied in many research [19]. For example, in the research of J.R.B. Ritchie, et al. (2003) [12], the core diamond theory of competitive advantage was applied as a discerning framework providing some elements such as human and physical resources, availability of know-how capital, tourism infrastructure, historical and cultural assets [12].

2.4. The theory of competitive advantage

While early research laid the groundwork for the concept of competitive advantage, Michael Porter's work popularised the notion in the 1970s and 1980s. M.E. Porter (1985) [20] explains that competitive advantage arises from a company's ability to create value for buyers that exceeds the firm's cost of creating it. Value is what the buyer is willing to pay, and superior value is achieved by offering a lower price than competitors for equivalent benefits or unique benefits that justify higher prices [20].

This definition primarily focuses on the customer, comparative value, and distinguishes between two basic types of competitive advantage: cost leadership (providing the lowest-cost products) and differentiation (offering unique benefits). Furthermore, it asserts that gaining a competitive advantage leads to higher performance. In other words, competitive advantage is the outcome and goal of strategy, not just an element within the strategy. For instance, this theory is the foundation in providing some elements in tourism destination competitiveness such as audits and inventories, maintenance, growth and development, efficiency and effectiveness [12].

2.5. Stakeholder theory

Stakeholder theory is a management theory that clarifies the roles and responsibilities of various stakeholders within an organisation [21]. Initially proposed by H.I. Ansoff (1965) [22] and refined through the seminal work of R.E. Freeman (1984) [17], it challenges the conventional wisdom that shareholders' perspectives are the only ones that matter [23]. This perspective helps manage and balance competing interests and requirements among multiple stakeholders [24].

T.M. Jones, et al. (1999) [25] summarise the four essential premises of stakeholder theory. Firstly, an organisation is characterised by its relationships, presence, and the influence of its decisions, as noted by R.E. Freeman (1984) [17]. Secondly, the theory is concerned with the processes and outcomes of these relationships [25]. Thirdly, the theory posits that all individuals or groups with a legitimate interest have intrinsic value, with no preference or dominance of one group over others. Finally, the theory discusses managerial judgement, offering suggestions for fostering a stakeholder-centred management approach.

Applied to the context of tourist destinations, stakeholder theory implies that the support of destination stakeholders is fundamental to the destination's success. The importance of considering the interests of different stakeholders for the destination's long-term profitability is widely recognised [26]. Additionally, applying stakeholder theory to the tourism context implies that a tourist destination's performance should be assessed against stakeholder expectations, similar to how companies do.

Overall, these theories form the foundational basis for this research. The study of competitiveness is rooted in the theories of comparative advantage and competitive advantage. Furthermore, stakeholder theory provides a useful lens for investigating and assessing the competitiveness of destinations, supporting the premise that destination stakeholders must actively assess the competitiveness of a tourism destination.

2.6. Measuring the competitiveness of the destination

There is no single set of competition indicators applicable to all destinations at all times. Various indicators contribute to a destination's competitiveness, ranging from more subjective characteristics (e.g., the attractiveness of the destination) to more empirically determined characteristics (e.g., market share of tourists, revenue in foreign currency) [7]. As a result, primary indications can be divided into hard measures and soft measures. Hard metrics are quantitative or objective indicators, while soft measures concern stakeholder opinions and are typically less formal, more subjective, or qualitative indicators.

A tourist destination's competitiveness is critical for achieving and maintaining success in the global tourism business [27]. Tourism research cannot ignore the importance of managing these locations [28]. Researchers have used various methods, instruments, and indicators to diagnose the competitive situation of individual destinations and destination clusters when assessing destination competitiveness [29]. However, there is heterogeneity in this research topic, with some contradictions and problems discussed.

One issue is that different definitions lead to measuring different elements in assessments. Tourism scholars have recognised the multidimensional complexity of destination competition structures and attempted a holistic approach that includes both price and non-price factors [5, 7, 30]. J.R.B. Ritchie, et al. (2023) [12] and L. Dwyer, et al. (2003) [7] were among the first authors to research specific factors or aspects of tourism competitiveness. Although most basic opinions regarding the factors and determinants of destination competitiveness are similar, these aspects are influenced by the internal and external environment of a specific destination, adding to the complexity and diversity of this research topic.

Even in empirical research with more complex frameworks, a wide range of variables is examined. For any determinant of destination competitiveness, various indicators can be used as measures [30]. Therefore, detailed assessments providing an overall account of a particular destination's competitive position require many indicators (e.g., 83 indicators according to L. Dwyer, et al. (2023) [7]; or 111 according to C.Y. Chens, et al. (2008) [31]). However, most studies measuring destination competitiveness include only 20 to 30 indicators (20 according to M. Caber, et al. (2012) [32]; 21 according to W. Deng (2007) [33]; 23 according to O. Bahar, et al. (2007) [29]), with some studies using only eight (e.g., C.M. Chen, et al. (2011) [34]). It can be argued that using too few indicators has limited effect in providing detailed information and understanding of each determinant of destination competitiveness, limiting the ability to identify specific directions to strategically improve its position. Conversely, studies with extensive lists of indicators using questionnaires to collect data may reduce response rates due to respondent fatigue, thus threatening data accuracy.

Some studies have surveyed visitors to compile lists of competitive indicators from a demand perspective [11], while others have consulted supply-side stakeholders [31]. Quantitative data are frequently used since they are thought to be more precise and accurate. Two approaches related to qualitative data or "soft measures" can be found in tourism literature. First, competitiveness is measured using data from surveys and tourists' perceptions. The second approach is based on the empirical evaluation of several subjective indicators of tourism competitiveness, surveyed across key tourism stakeholders, such as reports [4].

3. Developing a research model on tourism destination competitiveness: The case of Savannakhet, Lao PDR

This model aims to provide a comprehensive framework for sustainable tourism competitiveness, specifically focusing on Savannakhet province, Lao PDR, based on the analysis of previously discussed competitiveness models. The model identifies three groups of factors determining the province's competitiveness in Lao PDR: (1) factors related to resources and main attractors, (2) factors related to supporting elements, and (3) demand conditions, as illustrated in Fig. 1. The main factors include key attractors and activities, while the supporting factors encompass situational elements and destination management factors. The remaining group pertains to demand conditions.

3.1. Key attractors

The primary resources and attractions of a destination are what draw visitors. Several essential components of resources and attractors serve as the foundation for an unforgettable adventure for tourists.

One of the most crucial assets for any tourist location is its legacy resource, which is also the first aspect in determining a place's attractiveness. The natural environment and local culture are two types of resources that contribute to a location's appeal [7, 35]. The natural resources of a destination include geography, climate, flora and fauna, landscape, and other physical assets [36]. The relationship between tourism and natural resource management has garnered much attention in recent years, leading to growing research in this area. T. Mihalic (2000) [37] demonstrated that destination managers must maintain the functionality and appeal of their core products to compete [38]. J.R.B. Ritchie, et al. (2003) [12] identified heritage and culture as including historical sites, traditional customs, architectural features, art, music, handicrafts, and local cuisine. A high proportion of international tourists are considered cultural tourists [39]. Cuisine, typical local products, and handicrafts have the potential to attract customers; however, there is limited research on this [40]. A.M. Hjalager, et al. (2002) [41] state that authentic cuisine is important and is considered a source of tourism-related economic development.

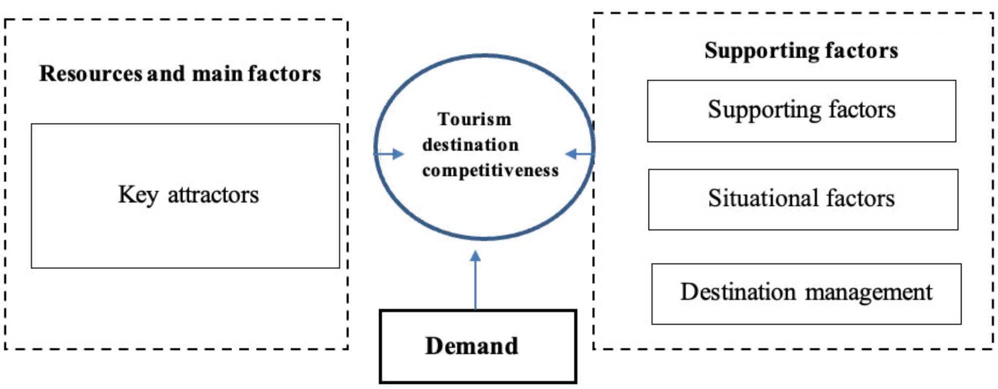

Fig. 1. A proposed framework to assess the tourism destination competitiveness of Savannakhet province, Lao PDR.

Shopping, activities, entertainment, and special events and festivals are major motivations for tourists to visit a destination [12]. These "generated resources" are crucial for improving a destination's market position. Particularly in established seasonal tourist destinations, events and festivals can extend the seasonality of tourism. One of the main attractions of a vacation spot is the variety of activities available. As more travellers seek to go beyond passive sightseeing, the availability of a wide range of activities is becoming increasingly important [42]. The tourism business can also benefit greatly from the leisure market. Furthermore, shopping is likely the most popular tourist activity, despite being infrequently listed as a key motivation for travel [43]. L. Dwyer, et al. (2003) [7] found that tourists' favourite activity is shopping, which positively impacts the local economy.

3.2. Situational and supporting factors

Facilitating and supporting factors add value to the travel experience, thereby encouraging visitation. Supportive resources increase a destination's competitiveness by laying the groundwork for enhancing a tourism destination's competitiveness [7, 12]. The strength of these factors can amplify or diminish the effect of other elements influencing a destination's competitiveness. Destination accessibility, "value for money in accommodation," "value for money in the tourist experience," and metrics regarding resident conditions, such as friendliness, environmental quality, and personal safety, are taken into consideration.

3.3. Destination management

Destination management is the ability of a destination to execute its tourism strategy [35]. Effective destination management involves efficiently managing resources, improving the quality and efficacy of enabling elements, and adapting to situational constraints [7]. It includes various practices aimed at enhancing a location's appeal to visitors. Successful planning, development, management, and marketing of tourist destinations require collaboration [12]. Additionally, Destination Management Organisations (DMOs) play a significant role by coordinating various public and private organisations involved in the tourism industry.

3.4. Demand

While the supply side is frequently researched in the Ritchie & Crouch competition model, L. Dwyer, et al. (2003) [7] argue that focusing solely on supply-side factors provides an incomplete picture of a destination's competitiveness. According to M.E. Porter (1985) [20], the nature of demand for industry products significantly influences competitiveness literature. L. Dwyer, et al. (2004) [30] suggest a similar relevance in tourism competition. This aspect considers tourism seasonality, perceptions of the destination (perceptions/information, perceptions/images, and preferences), and tourists' responsible behaviour (interest in local heritage, respect for local culture, etc.). Factors influencing demand include the compatibility of products and services with visitor preferences, global perceptions of the destination and its products, and the destination's overall image [35].

4. Methodology

This research aims to provide a better understanding of the tourism destination competitiveness of Savannakhet province, Lao PDR. Formerly known as Savanh Nakone, which means "city of paradise" or "heavenly city," Savannakhet province boasts more than 117 tourist sites, including 74 natural, 32 cultural, and 11 historical sites [44]. International tourism has been considered a poverty-alleviation strategy, providing a vital source of foreign exchange and employment since 1989. With government support, the number of tourists arriving in Lao PDR has rapidly increased. In 2015, Lao PDR welcomed more than 4.6 million international visitors, generating over 700 million USD for the state budget, an increase compared to the previous year. From 2016 to 2019, Lao PDR saw more than 22 million international tourists [44]. However, since 2020, the tourism industry in Lao PDR has been severely affected by the COVID-19 pandemic, resulting in an 81.5% decrease in international tourists, from 4,791,065 in 2019 to only 886,447 in 2020 [44]. The Development Plan from 2021-2025 aims to attract 1,077,002 foreign tourists to Lao PDR, generating revenue of about 271,725,235 USD, contingent on the subsiding of the COVID-19 epidemic and the relaxation of international border restrictions, including the Lao PDR-China international border gate along the railway.

Quantitative analysis is employed using the questionnaire method. Moreover, the importance-performance analysis (IPA) model which is conceptually a multi-criteria model was utilized in this research. To use this model, each component is measured in terms of two dimensions "importance (optimal status)" and "performance (current status)". Hence, the questionnaire consists of two sections. The first part asks respondents to rate their opinions about the performance and importance rate of tourism competitiveness using a 5-point Likert scale (34 indicators); the second part collects demographic information about the respondents. The scale items, adapted from previous studies, are measured on a five-point Likert scale ranging from one ("strongly disagree") to five ("strongly agree").

Based on the synthesis of the literature review, especially the research of L. Dwyer, et al. (2004) [30] and J.R.B. Ritchie, et al. (2003) [12], the indicators for assessing tourism destination competitiveness were chosen. Additionally, discussions with tourism industry experts helped refine a set of 34 items to suit the context of Lao PDR (Table 1). The questionnaire was originally developed in English and then translated into Lao for data collection.

Data collection was conducted mainly by face-to-face method with senior and middle managers in

Table 1. List of variables.

Factors	Encoding	Variables
Key attractors	TH1	Favourable climate, comfortable for travel
	TH2	Natural scenery, beautiful destination
	TH3	Architectural art at a beautiful, unique destination
	TH4	Historical sites, cultural areas/folk villages with unique traditional art
	TH5	Special local events and festivals
	TH6	Diversity and quality of accommodation
	TH7	Diversity of facilities (amusement and entertainment places, restaurant and coffee shops)
	TH8	Cleanliness of the destination
Supporting factors	HT1	Electricity and water supply
	HT2	Financial institution and currency exchange facilities
	HT3	Health/Medical facilities to serve tourists
	HT4	Telecommunication system for tourists
	HT5	Convenient road and traffic system
	HT6	Friendliness and hospitality of residents towards tourists.
Destination management	QT1	Some specific experience-oriented programs for tourists
	QT2	Tourism-oriented destination
	QT3	Destination 'vision' reflects tourism industry stakeholder values
	QT4	Community support for special events
	QT5	Public sector commitment to tourism/hospitality education and training
	QT6	Existence of laws and regulations protecting the environment and heritage
	QT7	Research and monitoring of environmental impacts of tourism
Conditional factors	DKTH1	Location of tourist sites
	DKTH2	Level of safety
	DKTH3	Suitable travel costs
	DKTH4	Suitable price of accommodation
	DKTH5	Value for money in destination tourism
	DKTH6	Incidence of crimes against tourists in destination
	DKTH7	Living fees
	DKTH8	Exchange rate
The demands	DKVC1	Available information on tourism destination
	DKVC2	Available tourism promotion
	DKVC3	International tourist sites
	DKVC4	Positive destination images
	DKVC5	Alignment of the condition of destination and tourist' interests

the public sector in the tourism industry in Lao PDR. Exploratory factor analysis (EFA) and Confirmatory factor analysis (CFA), IPA model was utilized in analysing the collected data by SPSS.

5. Results and discussion

5.1. Characteristics of respondents

Regarding the gender of respondents, more than half (58%) of the 153 respondents are female. More than one-third (34%) of the respondents have worked in the tourism industry for 5-10 years, followed by 29% with less than 3 years of experience. Nearly 22% of respondents have 3-5 years of experience, while only 15% have over 10 years in the field.

Concerning company position, over 80% of respondents are managers or owners of their company, while the others are employees, residents, and other stakeholders. Regarding the type of company, 29% and 27% of the respondents work in restaurants/coffee shops and hotels, respectively, 18% are in tour operations, and less than 10% are in transportation companies, amusement parks, and the department of tourism.

5.2. Exploratory factor analysis

Cronbach's alpha measures internal consistency, indicating how closely related a set of items are as a group. Variables such as "Convenient road and traffic system", "Location of tourist sites", and "Available information on tourism destination" had coefficients less than 0.5 and were removed from the list of variables. After eliminating unsuitable variables, the factors had Cronbach's alpha coefficients greater than 0.6, and the corrected item-total correlation coefficients of all observed variables were greater than 0.3. All scales are used to ensure internal consistency.

In the first EFA, "Suitable price of accommodation" and "Tourism-oriented destination" had factor loadings lower than 0.5 and were eliminated. The EFA was rerun, resulting in a KMO (Kaiser-Meyer-Olkin) measure of 0.748, satisfying the condition (0.5<KMO <1). Bartlett's test had a p-value of 0.000 (<0.05), indicating that factor analysis is consistent with real data and observed variables are correlated within each factor group. The Eigenvalue was greater than one, and the percentage of total variation explained by the factor analysis model was 72.148% (>50%), retaining eight common factors. As hypothesised, there are twenty-nine factors in the independent variables.

The EFA results also demonstrated that some groups of factors are classified differently (Table 2). Key attractors are categorised into two main groups:

Table 2. Rotated component matrix from exploratory factor analysis.

Rotated component matrix								
	Component							
	1	2	3	4	5	6	7	8
HT2	.902							
HT1	.887							
HT3	.878							
HT4	.862							
HT6	.860							
TH2		.883						
TH1		.809						
TH4		.809						
TH3		.790						
TH5		.763						
DKVC5			.913					
DKVC2			.892					
DKVC3			.875					
DKVC4			.864					
TH6				.851				
TH8				.847				
TH7				.845				
DKTH2					.785			
DKTH6					.703			
DKTH3					.667			
DKTH5					.632			
DKTH4								
QT5						.791		
QT3						.755		
QT4						.727		
QT6							.836	
QT7							.713	
QT1							.627	
QT2							.537	
DKTH7								.921
DKTH8								.907
Extraction method: Principal component analysis. Rotation method: Varimax with Kaiser normalisation.								
a. Rotation converged in 6 iterations.								

Source: Results extracted from SPSS.

Resources (favourable climate, comfortable for travel; natural scenery, beautiful destination; architectural art at a beautiful, unique destination; historical sites, cultural areas/folk villages with unique traditional art) and Facilities and quality of tourism destination (diversity and quality of facilities and accommodation; cleanliness of the destination).

Situational factors consist of two main groups: Costs and safety (level of safety; suitable travel costs; incidence of crimes against tourists; living fees) and Currency (exchange rates when travelling).

Destination management is categorised into two groups: Vision of tourism destination (stakeholder values; community support for special events; public sector commitment to tourism education and training) and Environmental-oriented destination (existence of laws protecting the environment; research and monitoring of environmental impacts).

Thus, the EFA test reveals eight groups of factors affecting the assessment of tourism destination competitiveness: Resources, Diversity and quality of facilities and accommodation, Costs and safety, Currency, Vision of tourism destination, Environmental-oriented destination, Demand, and Supporting factors.

5.3. Confirmatory factor analysis confirmatory factor analysis

The data analysis method to test the scale was carried out using the CFA to confirm the reliability and validity of the scale in a new context. The findings illustrated in Fig. 2 show that the Chi-square value/df (1.489) is less than 2, GFI (0.860) is greater than 0.8, TLI (0.934) is greater than 0.9, CFI (0.940) is greater than 0.9, and RMSEA (0.050) is less than 0.08. Hence, the model is considered to match the data [45].

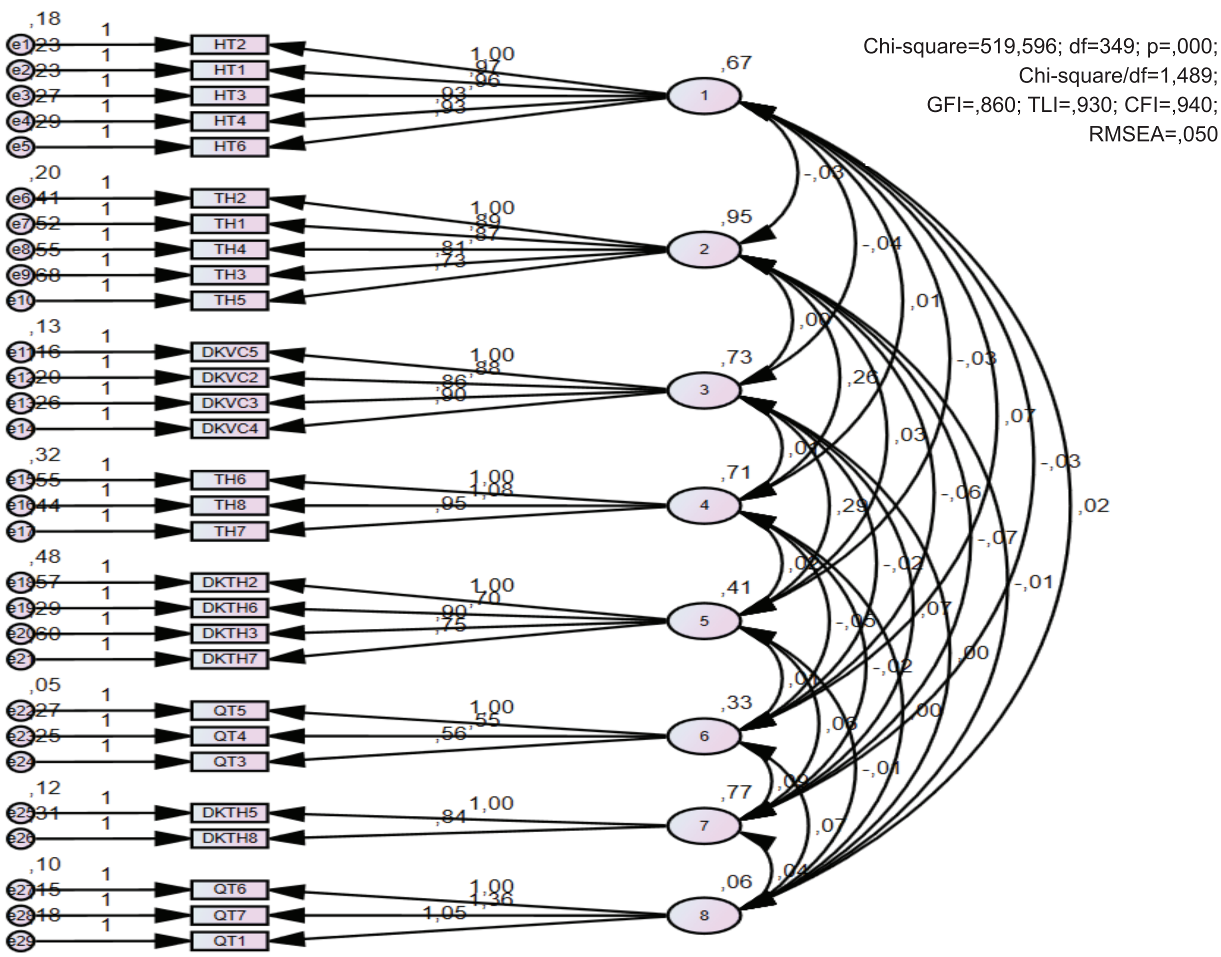

Fig. 2. Results from confirmatory factor analysis. Source: Results extracted from SPSS.

Table 3. Importance-performance analysis for Savannakhet province, Lao PDR.

Variables	Performance (P)	Importance (I)	P-I	Quadrant
Supporting factors	***3.97***	***4.36***	***-0.39***	
HT2	3.85	4.36	-0.51	1
HT1	4.00	4.39	-0.39	1
HT3	3.80	4.32	-0.52	1
HT4	4.00	4.33	-0.33	1
HT6	4.2	4.38	-0.18	2
Resources	***4.05***	***4.37***	***-0.32***	
TH2	4	4.35	**-0.35**	1
TH1	3.9	4.36	**-0.46**	1
TH4	4	4.36	**-0.36**	1
TH3	4.2	4.33	**-0.13**	2
TH5	4	4.38	**-0.38**	1
Demands	***4.05***	***4.40***	***-0.35***	
DKVC5	4.2	4.43	**-0.23**	4
DKVC2	3.9	4.36	**-0.46**	2
DKVC3	4	4.39	**-0.39**	1
DKVC4	4.1	4.4	**-0.3**	2
Diversity and quality of facilities and accommodation	*4.07*	*4.37*	*-0.31*	
TH6	3.9	4.35	**-0.45**	2
TH7	4.1	4.37	**-0.27**	2
TH8	4.2	4.4	**-0.2**	2
Costs and safety	***4.08***	***4.30***	***-0.21***	
DKTH2	4.02	4.36	**-0.34**	1
DKTH6	4.01	4.36	**-0.35**	1
DKTH3	4.05	4.22	**-0.17**	4
DKTH5	4.04	4.19	**-0.15**	4
DKTH4	4.3	4.35	**-0.05**	2
Vision of tourism destination	*3.98*	*4.153*	*-0.173*	
QT5	3.9	4.05	**-0.15**	3
QT3	3.94	4.06	**-0.12**	3
QT4	4.1	4.35	**-0.25**	2
Environmental-oriented destination	*3.91*	*4.17*	*-0.25*	
QT6	3.8	3.93	**-0.13**	3
QT7	3.9	4.03	**-0.13**	3
QT1	3.9	4.33	**-0.43**	1
QT2	4.05	4.37	**-0.32**	2
Currency	*4.18*	*4.32*	*-0.14*	
DKTH7	4.3	4.4	**-0.1**	2
DKTH8	4.05	4.23	**-0.18**	4

Source: Results extracted from SPSS.

5.4. Importance performance analysis

Results from Table 3 show that the level of performance of the elements constituting tourism destination competitiveness (TDC) of Savannakhet province, as assessed by customers, is lower than their expectations. To determine the overall difference, the study conducted a Paired Samples T-test to measure the difference between the average value of the attribute in terms of importance and performance level in the provincial TDC assessment. Savannakhet from stakeholders. The results of the test demonstrate a significant difference.

The results of the analysis show that among the 31 factors evaluating TDC in Savannakhet province, there are 31 factors with a statistically significant difference ($p<0.05$) between the assessment of importance and level of implementation. The analysis also calculated the gap between the level of implementation and the importance of the attributes constituting TDC of Savannakhet province. The results show that the overall factors constituting the TDC of Savannakhet province have a GAP (P-I) value of -0.27.

The result from Fig. 3 shows that the components with the largest gap from performance level to importance are "Supporting factors" (GAP value = -0.39), followed by "The demands" (GAP=-0.35) and "Resources", respectively. (GAP=-0.32), "Diversity and quality of facilities and accommodation" (GAP=-0.31), "Environmental-oriented destination" (GAP=-0.25), "Costs and safety" (GAP=-0.21), "Vision of tourism destination" (GAP=-0.17) and finally "Currency" (GAP=-0.14).

The attributes constituting Savannakhet province TDC are placed in the corners of the IPA matrix specifically as follows:

The first quadrant (Concentrate here) includes 12 factors: HT1, HT2, HT3, HT4, TH1, TH2, TH4, TH5, QT1, DKTH2, DKTH6, DKVC3. The factors in this partition are considered to have a high level of importance but the level of implementation at the destination of Savannakhet province is low. Therefore, managers need to increase investment and focus on improving service quality related to these factors.

The second quadrant (Keep up the good work) includes 11 attributes: HT6, TH3, DKVC2, DKVC4, TH6, TH7, TH8, DKTH4, QT4, QT2, DKTH7. Stakeholders rated these factors as important and the Savannakhet province destination also achieved a good level of implementation. Therefore, administrators need to continue to maintain and promote strengths related to these factors.

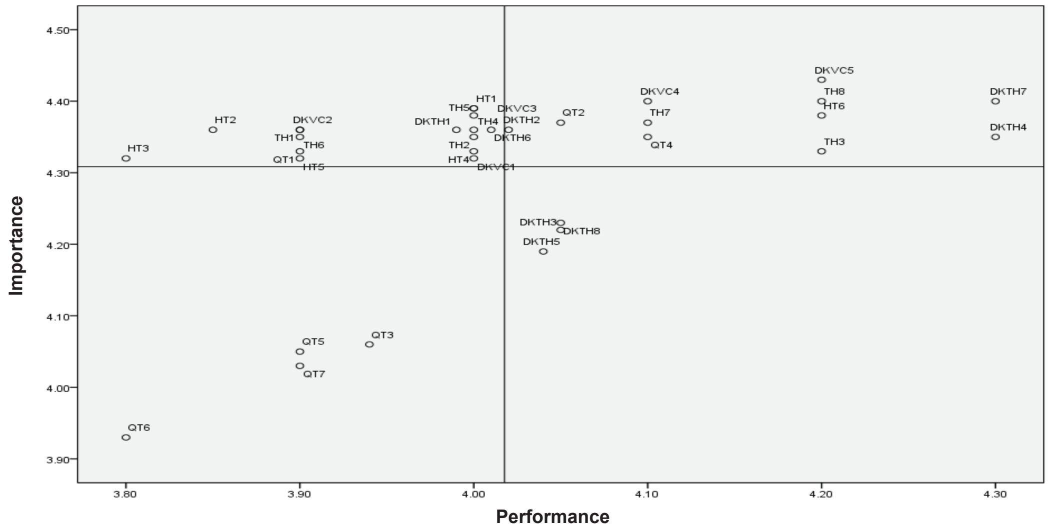

Fig. 3. Importance-performance analysis for Savannakhet province, Lao PDR. Source: Results extracted from SPSS.

The third quadrant (Low priority) is where the most distributed attributes are, including 4 factors: QT3, QT5, QT6, QT7. These factors have a low level of importance and also achieve a low level of implementation. Therefore, tourism managers do not need to focus too much and limit the use of resources on these factors.

Fourth quadrant (Possible overkill): Includes 4 factors: DKTH3, DKTH5, DKTH8, DKVC5. These factors are rated as having low importance, however the Savannakhet province destination has performed very well in implementing them. Therefore, tourism administrators should use existing resources to focus on developing other attributes.

6. Conclusions and implications

Based on the synthesis of previous studies on destination competitiveness, this study develops a model to evaluate the competitiveness of a destination in Lao PDR, focusing on eight key factors: Resources, Diversity and quality of facilities and accommodation, Costs and safety, Currency, Vision of tourism destination, Environmental-oriented destination, Demand, and Supporting factors. To assess Savannakhet province and provide a basis for improving its competitiveness towards sustainable competition through the role of DMOs, the study engaged tourism industry experts to identify a set of 34 items necessary for improvement. The data analysis results show that 29 items in the research model are suitable for measuring competitiveness in this context. The factors, grouped into eight categories, explain 72.148% of Savannakhet province's competitiveness.

The results of the analysis of importance - level of implementation show that the resource allocation of the attributes of the 8 components are mostly arranged in the quadrant first (12 attributes) and quadrant second (11 attributes) on the IPA matrix. The number of attributes in quadrant fourth is very small (4 attributes). There are also a few attributes located in quadrant third (4 attributes).

Savannakhet province is a potential destination for tourism development, and the provincial government aims to make tourism a key economic sector, contributing to economic growth and job creation, given the limited resources for developing other industries. To achieve this strategic goal, increasing the destination's competitiveness must be the top priority for DMOs, tourism industry stakeholders, and residents. As tourism in these destinations begins to develop, sustainable competitiveness must be a primary focus from the outset. Coordination among all tourism stakeholders and residents is essential to plan and develop high-quality tourism products that meet target customers' needs, providing memorable experiences while protecting the environment and cultural heritage. Maintaining the existing culture and beauty of Savannakhet province, and preventing disruptions to the natural landscape, is crucial.

Human resources for tourism development are of great importance. Therefore, education and training programmes on tourism activities need to be prioritised and invested in early to create high-quality services and products. Quality standards should be established for all tourism services, including accommodation, restaurants, travel, and attractions. Close inspection and correction plans are necessary to maintain these standards.

On the other hand, natural resources are quite abundant and full of potential, however, administrators have not yet exploited natural resources well in Savannakhet province. Therefore, exploiting and protecting these resources will have a great boosting effect on the competitiveness of the destination. The results also show that Savannakhet province should preserve its artistic architecture, ensure the maintenance of environmental quality as well as good price competition and people's support for events held in the province. According to supply-side stakeholders, these attributes are of high importance and are being implemented well, so they should be further promoted to increase the attractiveness of the destination.

Additionally, tourism managers in Savannakhet province should not spend too much effort on tourism costs because these attributes are already performing well but should instead focus on other more important attributes.

Attributes that received low scores for both importance and performance were long-term vision for tourism development, tourism development planning in a direction that reduces negative impacts on the environment. Considering that the mentioned aspects are not of importance to supply-side stakeholders, investing in the development of such attributes is not of prime importance.

However, this topic is broad and complex, and it is not without limitations, suggesting areas for future research. Firstly, the research focuses on tourism destination competitiveness from the supply side. Geographical limitations may lead to different results and conclusions about the impacts of determinants on tourism destination competitiveness. Tourism stakeholders in other destinations and countries may have different perceptions of tourism development and competitive strategies. Therefore, to enhance the findings and achieve reliable results, future studies should expand the research scope to other countries.

Secondly, destination competitiveness can be analysed from both hard and soft aspects. This study mainly evaluates the TDC of Lao PDR from a subjective perspective on the supply side. To gain a more comprehensive understanding of this destination's competitiveness, future research needs to further analyse the hard aspects and the demand side, allowing for comparisons between the supply and demand perspectives.

CRediT author statement

Thi Bich Thuy Nguyen: Methodology, Writing, Reviewing, Editing; Pisa Vongsila: Conceptualisation, Data collection and analysis, Writing, Reviewing and Editing; Tran Bao Tran Nguyen: Conceptualisation, Writing, Reviewing.

COMPETING INTERESTS

The authors declare that there is no conflict of interest regarding the publication of this article.

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Relationship between environmental awareness and environmentally responsible behaviour in the hospitality industry: A literature review

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Abstract:

The authors provide a systematic review of previous empirical studies conducted on the relationship between environmental awareness (EA) and environmentally responsible behaviour (ERB). We point out several existing gaps in the literature. Specifically, in Vietnam, there is a scarcity of studies addressing the relationship between EA and ERB, particularly in the context of tourism. In addition, there are a limited number of studies delving into the relationship between EA and ERB of hotel managers in Vietnam. Moreover, previous studies predominantly relied on a single theoretical model for their investigations. To address the existing gaps, we highlight the need for further research on the role of managers in the hospitality industry in Vietnam and their impact on environmental sustainability. Future research should also employ an integration of models and theories and focus on actual behaviour related to ERB rather than behavioural intentions. Another direction for future research is the simultaneous investigation of individual ERB and institutional ERB and the inclusion of various types of accommodation facilities.

Keywords: **environmental awareness, environmentally responsible behaviour, the relationship between awareness and environmentally responsible behaviour.**

Classification numbers: **2.2, 2.3, 4.1**

1. Introduction

Hospitality has gained widespread recognition as one of the most energy-intensive sub-sectors within the tourism industry, consistently ranking among the top 5 in terms of energy consumption within the commercial building sector. It is estimated that a typical hotel releases approximately 160 to 200 kilograms of carbon dioxide per square metre of room floor area annually, with the specific emissions dependent on the type of fuel used for electricity generation, heating, or cooling [1]. However, the hotel industry initially displayed a sluggish response to environmental demands until the emergence of several EA programmes in the 1990s, including the National Hotel Environment Initiative (IHEI) and the Environmental Action Package for Hotels [2, 3].

The operational practices of tourism-related businesses have a substantial influence on how tourists perceive and engage in responsible consumption. Research findings reveal that 90% of individuals in the UK, 70% in Australia, and only 30% in the United States believe that the tourism industry has adverse effects on the environment [4]. In particular, tourism is associated with adverse environmental impacts [5-7]. Furthermore, 75% of tourists consider a hotel's environmental policies when making accommodation choices, while a noteworthy 87% prioritise eco-friendly hotels [8]. For Asian tourists, including Chinese tourists, the environmentally responsible behaviour of tourists might be due to their fear of losing face [9].

The adoption of eco-friendly practices not only enables businesses to achieve cost savings but also attracts new customers while contributing to the preservation of the natural environment, which forms

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the foundation of much of the tourism industry [4, 10]. These benefits encompass attracting customers, realising financial gains, and generating community advantages by mitigating the negative impacts associated with hotels practising environmental responsibility.

The process of implementing responsible tourism within enterprises typically begins with raising awareness, especially among top management. Numerous factors affect the integration of responsible tourism practices within businesses, encompassing both external and internal influences. The direction and scope of responsible tourism development within a specific country and region determine the availability of information, knowledge, tools, and models related to responsible tourism. Factors such as legal constraints, customer expectations, and community requirements linked to responsible tourism directly influence businesses. Meanwhile, the scale of operations, field of activity, experience, and capacity of enterprises play crucial roles in determining the level of awareness and the successful implementation of responsible tourism initiatives.

This article employs a systematic approach to review previous studies on the relationship between awareness and behaviour to identify research gaps and provide direction for future research endeavours. To fulfil such research objectives, during the review of the literature, we aim to address 4 questions which are mentioned in the second part of this article.

2. Research methods

Several justifications support this selection of the literature review method. Firstly, a systematic literature review provides a clear and comprehensive overview of the available evidence on a specific topic (e.g., EA and behaviour) [11]. Conducting a systematic review is a valuable endeavour for researchers to cultivate knowledge in the subject area of interest, thereby aiding in the identification of research gaps in the current state of understanding within a field and the development of new research ideas [11]. Additionally, a systematic literature review may draw attention to methodological issues in research that can help advance future efforts in the field [11]. Moreover, they can be used to determine questions for which the available evidence provides clear answers and, therefore, do not require further research. In the field of tourism and hospitality, systematic literature reviews have also been widely applied, such as the previous reviews [12-15].

Systematic approach was conducted across multiple stages. Initially, specific keywords related to environmentally responsible behaviour and awareness, encompassing terms such as “awareness and behaviour,” “environmental awareness,” “responsible behaviour in the context of the environment,” and “the connection between awareness and environmentally responsible behaviour in hotels” were employed. These keywords served as the foundation for the search strategy, applied within the “Google Scholar” platform, to identify pertinent studies.

The selection of studies for this review adhered to three primary criteria:

(i) A concentration on articles originating from high-ranked journals, as catalogued in Web of Science - Clarivate Analytics and Scopus, situated within the domains of business and tourism.

(ii) Prioritisation of research articles that had more than 200 citations.

(iii) A preference for studies specifically conducted within the hotel sector.

It is important to emphasise that four questions were also considered during the above process. These questions are (i) How EA affects ERB in previous studies; (ii) Foundational theories used in empirical studies on the relationship between EA and ERB; (iii) The analytical approach to address the relationship between EA and ERB in previous studies; and (iv) How sociodemographic factors of respondents and characteristics of the accommodations affect the relationship between EA and ERB.

Following this rigorous selection process, a total of sixty-two (62) studies pertaining to awareness and environmentally responsible behaviour were identified. To maintain the focus of our research, which centres on examining the relationship between "environmental awareness" and "responsible behaviour," 36 studies that solely explored these individual concepts were excluded from this literature review. Consequently, the final set of studies used in this review includes 26 studies. Within these, only 9 studies delved into the connection between EA and environmental behaviour in the field of tourism, and only 6 studies investigated this relationship within the hotel sector. The remaining studies were conducted in other industries.

3. Results

3.1. The relationship between environmental awareness and environmentally responsible behaviour

EA encompasses the development of human understanding and consciousness regarding the physical environment and the associated challenges, including the interactions and impacts of humans within this context. EA comprises two essential components: (1) knowledge pertaining to the environment and (2) a heightened awareness of environmental issues. In alignment with this perspective, several researchers acknowledge that EA signifies an individual's comprehension of the natural environment [16-19]. Additionally, knowledge concerning environmental concerns is considered an integral facet of EA [20]. Furthermore, the dimensions of EA encompass specific environmental issues such as waste treatment, noise, air pollution, water pollution, soil pollution, ozone layer depletion, the greenhouse effect, and acid rain [21-23]. More recently, Y. Li (2018) [24] and Y. Du, et al. (2018) [25] have expanded the understanding of EA to include knowledge and skills as integral components. In summary, EA could be defined through three key dimensions: (1) comprehension of the natural environment, (2) awareness of environmental issues, and (3) the possession of environmental action skills.

ERB is a concept that encompasses the actions undertaken by an individual or a collective of individuals who possess an interest in environmental issues and ecological knowledge [20, 26]. ERB not only signifies a concern for the environment but also manifests as a willingness to protect the environment through the concrete daily activities of individuals or groups [27]. The aim of such actions is to mitigate adverse environmental impacts [28-31]. Furthermore, ERB could be expressed through a spectrum of attributes, including attitudes, emotions, environmental values, a genuine concern for the environment, and sustained efforts in environmentally responsible conduct [31]. ERB could be classified as ERB of individuals and ERB of institutions [32].

EA plays a significant role in shaping an individual's behaviour towards the environment [28]. An individual's level of EA can strongly influence their engagement in environmentally responsible actions [28]. For instance, individuals who possess awareness of environmental issues are more likely to purchase eco-labelled products, such as organic foods, and actively participate in recycling programmes. A tangible example of this influence is observed when individuals cease using aerosol hairspray upon recognising the severe consequences of chlorofluorocarbon (CFC) emissions and ozone depletion. EA carries broad implications, extending beyond mere environmental knowledge [33]. It encompasses attitudes, values, and the skills necessary for addressing environmental challenges. In essence, EA serves as the wellspring of an individual's behaviour, encompassing their attitudes and environmental problem-solving skills. In other words, there exists a correlation between EA and environmental behaviour. The alteration in one's perception can consequently lead to a corresponding change in behaviour [24, 25, 34-36]. In line with this perspective, empirical research provides concrete evidence confirming that EA directly and strongly influences ERB [25, 34-37].

Within the hotel sector, when examining the attitudes of hotel staff towards environmental management systems, EA is positively reinforced by heightened awareness and comprehension of environmental issues [38-40]. This increased EA, in turn, prompts employees to apply their knowledge in their daily routines. Simultaneously, employees' perceptions of a hotel's positive Corporate Social Responsibility (CSR) activities exert a significant influence on their behaviour, contributing to the achievement of the hotel's environmental objectives [41]. Moreover, the EA exhibited by hotel guests, coupled with their inclination to choose environmentally responsible or "green" hotels, has a favourable impact on endeavours aimed at conserving water resources and promoting sustainable food practices within hotels, such as the increased use of environmentally friendly ingredients like green onions [42]. H. Cao, et al. (2018) [43] revealed that the enforcement of green strategies and policies tends to be stronger when top management has a higher level of EA. Similarly, F. Wang, et al. (2015) [44] found that managers' EA has a significant positive correlation with institutional ERB. This indicates that the level of EA among management influences the direction and approach the organisation takes towards green activities [45] in the context of hotels. Supporting this perspective, E.S.W. Chan, et al. (2014) [32] highlight that EA directly affects the practice of ERB in accommodation establishments, in addition to its mediating effect on the environmentally responsible practices of the facility.

It is worth noting that while there are two distinct types of ERB (i.e., individual and institutional), much of the existing research predominantly centres on exploring the connection between EA and individual ERB, as outlined in Table 1. The majority of studies pertaining to individual ERB primarily investigate the behaviour of customers, with a limited number of studies delving into the relationship between EA and ERB of hotel managers. Furthermore, it is evident that there is a scarcity of research focusing on the relationship between EA and ERB in the hotel industry. Moreover, there is a paucity of research that comprehensively evaluates the relationship between EA and both types of ERB simultaneously. Additionally, it is essential to highlight that limited research has been conducted within the context of Vietnam. The previous studies primarily concentrate on customer behaviour concerning the selection of eco-friendly products, with few studies addressing the management practices of accommodation facilities in Vietnam.

Table 1. Summary of previous empirical studies by research problems.

Research problems	Effect	Studies	Notes
The influence of EA on ERB	+	[24, 25, 32-35, 37-39, 41, 42, 45-51]	
Impact of individuals' ERB on institution's ERB	+	[26, 32, 44]	
Effect of EA on institution's ERB	+	[25, 32, 43, 45, 52]	Indirect impact on the company's/hotel's environmental behaviour
	+	[18, 34, 36, 51, 52]	Comply with the hotel's green policy/national policy
	+	[35, 36, 38]	Impact on green practice intention

Source: Summarised by the authors, 2023.

3.2. Foundational theories and analytical methods used in empirical studies on the relationship between environmental awareness and environmentally responsible behaviour

Table 2 summarises the analytical methods and foundational theories used in empirical studies on the relationship between EA and ERB. It can be seen from the table that studies in this field are not explicitly based on foundational theories, with only a few studies explicitly stating the foundational theories used. Major foundational theories in the field include the Theory of Planned Behaviour (TPB) [34, 44], the Value-Attitude-Behaviour model [37], and the Belief-Action-Outcome (BAO) framework [39]. TPB seems to be the most important foundational theory in this field. Regarding analytical methods, a wide range of methods, from qualitative to quantitative, have been used, although quantitative methods are employed by most studies in this field. In fact, more than 95% of previous studies employed a quantitative approach. In this literature review, only S. Lawton (2016) [53] used a qualitative method. The remaining studies use quantitative methods, including correlation, ANOVA, cluster, regression, path analysis, SEM, and meta-analysis. No studies in this literature review employed a mixed-method approach. Previous studies mostly used one theoretical model in their research. Although a relationship stream can be deciphered through the model, the reality is much more complicated than the linear trend the model suggests, so a more advanced model that incorporates the relationship is needed to provide a concise explanation of the interacting variables of human behaviour in environmental conservation.

Table 2. Summary of previous empirical studies by research problem.

Analytical methods	Studies	Field	Foundational theories
Paths analysis	[25]	In general	-
	[38]	Tourism sector	-
SEM	[24]	In general	TPB
	[37]	Tourism sector	Value-Attitude-Behaviour model
	[39]	Tourism sector	Belief - Action - Outcome framework (BAO framework)
	[48]	In general	-
	[34, 46]	Hotel sector	-
Regression	[44]	In general	TPB
	[35, 43]	In general	-
	[41]	Hotel sector	-
Correlation analysis	[44]	In general	TPB
	[33]	In general	-
Qualitative research	[54]	In general	-
Cluster analysis	[42]	Hotel sector	-
Anova analysis	[24]	In general	-
	[52]	Hotel sector	-
	[34]	In general	-
Meta analysis	[47]	In general	-

Source: Summarised by the authors, 2023.

3.3. Factors affecting the relationship between environmental awareness and environmental behaviour

Several experts have reached a consensus on the significant influence of individual characteristics on environmental behaviour [24, 33, 37, 44, 47]. Among these characteristics, sociodemographic factors such as gender, age, and education level have been identified as particularly significant.

Extensive research conducted by sociologists has demonstrated that young, educated women exhibit higher levels of active participation in environmental protection activities [24, 34, 37, 44, 47]. Education is also recognised as an important factor, with individuals possessing higher levels of education displaying greater ERB, especially in certain countries [24, 37]. Nevertheless, H.M. Arshad, et al. (2020) [35] has reported contradictory findings, challenging the prevailing pattern.

A meta-analytical study focusing on the association between age and environmental sustainability was carried out by B.M. Wiernik, et al. (2013) [47]. This study involved the collection and analysis of data from 1970 to 2010, using a total of 340 articles. The results obtained from the analysis indicate that older individuals tend to demonstrate a greater inclination towards engaging with nature, minimising environmental harm, and conserving both raw materials and natural resources.

Newly appointed CEOs are more engaged and focused on developing their company's ERB [54]. This can be explained by the fact that when a person is appointed to a new position, there will usually be renewal policies because changes are needed compared to the old term to make an impression [54]. However, if a person is in a management position for a long time, there will be a tendency for "resistance to change" [54]. Such findings are consistent with [44]. Particularly, the seniority of managers is negatively correlated with corporate ERB, although senior managers have higher EA [44]. Thus, it can be seen that the number of years of internal service of top managers will be negatively related to strategic choices related to innovation.

The larger the enterprise, the more likely it is to have better social and environmental responsibility [55]. In addition, a large number of small and medium-sized hotels in many countries have not seen the benefits of implementing corporate social activities due to short-term costs [56, 57]. It can be said that scale also has a significant influence on the relationship between EA and ERB.

The rating of the hotel (number of stars) is also one of the important factors [52]. Specifically, hotels with higher star ratings are more socially responsible, and there is no significant difference between 4-star and 5-star hotels [52].

In summary, individual characteristics such as gender, age, and education level should be considered when studying the relationship between EA and behaviour. At the same time, factors such as the size and class of the hotel should also be considered (Table 3).

Table 3. Impacts of socio-demographic factors on the relationship between environmental awareness and environmentally responsible behaviour.

Socio-demographic factors	Impact	Studies	Notes
Gender	ns	[33]	Females tend to have better ERB
	+	[24, 37, 44, 47]	
Age	+	[47]	Meta analytical article
Education	+	[24, 37, 44, 53]	
Years of experience in managing	-	[53]	
Size of institutions	+	[52, 57]	

Notes: ns: non-significant. Source: Summarised by the authors, 2023.

4. Discussion

There are many studies applying different theories to examine ERB. Research on ERB has a large and diverse number of published research works in the fields of education, health, agriculture, business, and tourism, with numerous citations in each of these broad fields. Focusing on the ERB of enterprises, the literature review shows that the number of studies on the ERB of enterprises worldwide is very large. However, in the field of tourism, and specifically the hospitality industry, there is only a small amount of research. In addition, in Vietnam, there is a scarcity of studies addressing the relationship between EA and ERB, particularly in the context of tourism. Most existing research focuses solely on customer behaviour in selecting environmentally friendly products or evaluating intent, such as the intention to choose green products, green hotels, or the intention of hotel staff to practice environmentally friendly behaviours, which are influenced by hotel policies. However, there is a gap in the literature regarding in-depth research on the role of managers in the hospitality industry in Vietnam. Existing studies mainly examine the environmental intentions or commitments of managers, rather than exploring the specific ERB influenced by managers' EA. Previous research highlights that top management with higher environmental awareness is more likely to assume responsibility for green innovation and allocate resources and capabilities towards green initiatives [43].

Furthermore, in evaluating institutional ERB, prior studies have utilised a self-assessment method, enabling respondents to self-evaluate the level of commitment of the accommodation unit to the specific issue using the Likert scale. Consequently, the obtained results will heavily rely on the subjective assessments of the participants. It is widely acknowledged that individuals tend to inaccurately assess their own capabilities and performance, and tend to overestimate their personal or institutional capacities [58]. This phenomenon of overestimation arises from their limited or non-existent understanding of their own capabilities, despite being fully aware of the solutions found [58].

Previous studies predominantly relied on a single theoretical model for their investigations. While this model was effective in highlighting a certain relationship pattern, it fails to capture the complexity of reality, which goes beyond the linear trend suggested by the model. Consequently, it becomes imperative to develop a more advanced model that incorporates the interconnectedness of variables and offers a comprehensive explanation of human behaviour in environmental conservation.

5. Conclusions and future research directions

In the literature on EA and ERB, the focus on ERB from the perspective of managers has been limited. Particularly in Vietnam, research on ERB within the tourism sector, especially the accommodation sector, has primarily concentrated on the viewpoints of tourists, local residents, and employees. Consequently, further studies should explore the EA and ERB of accommodation managers. To address the existing gaps in the field, future research could consider the following directions:

Integration of models and theories: By combining multiple models and theories, researchers can establish interconnected pathways to identify sustainable solutions for various environmental problems arising from different human behaviours.

Focus on actual behaviour: Instead of solely examining behavioural intentions, future research could focus on specific behaviours related to ERB, allowing for a more comprehensive understanding of managers' actions and their contribution to environmental strategy implementation.

Consider the perspective of accommodation managers: Recognising the managerial role as a significant motivator for the application of environmental strategies, it is crucial to investigate the perceptions and actions of accommodation managers in relation to ERB.

Simultaneous investigation of individual ERB and institutional ERB: It would be beneficial to study both individual-level ERB and how it integrates with institutional-level ERB within the accommodation sector, providing a holistic perspective on environmental conservation efforts.

Inclusion of various types of accommodation facilities: While research often focuses on hotels, future studies should encompass a broader range of accommodation facilities, such as guesthouses, cottages, and resorts, to gain a more comprehensive understanding of ERB across the industry.

CRediT author statement

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COMPETING INTERESTS

The authors declare that there is no conflict of interest regarding the publication of this article.

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The impacts of guest-host interaction in tourism from cultural differences approaches: Theoretical basis and management implications

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Abstract:

Tourists and residents are two important subjects in tourist activities, and the interaction between these two subjects has certain significance for tourism development at the destination. International tourists from countries and cultures will have certain cultural differences and gaps from the host community. This article aims to assess an overview of the research issues of guest-host interaction from approaching cultural differences and their influence on tourists and residents in tourism activities. The study results show that the guest-host interaction in tourism from approaching cultural differences includes both positive and negative effects on both participants. The main aspects affected include cultural exchange and understanding of each other, expansion of knowledge, foreign languages, feelings of inferiority complex, cultural losses of the host community, and conflicts between guests and host due to cultural and social distances. These findings help suggest governance implications for destination managers to be more cautious in formulating destination-based tourism development strategies.

Keywords: **cultural differences, cultural distance, guest-host interaction, impacts of guest-host interaction.**

Classification numbers: **2.2, 4.1, 9.3**

1. Introduction

The globalization of tourism and international tourism is developing rapidly, and the interactions between cultures of international tourists are increasingly interesting to learn. Tourists increasingly pay attention to the quality of the guest-host relationship when they choose a destination [1]. Many studies focus on the influence of culture on tourist behavior [2]. Tourists and residents often have many cultural differences, especially international tourists who come from cultures different from the destination. Cultural differences in tourism can cause cultural conflicts between tourists and the host community [3]. Host-guest interaction plays a significant role in building tourist experiences, which helps tourists learn culture, and influences the socio-cultural life of the destination community. Visitors and community members have diverse needs during their interactions with each other and are affected at different levels [4]. Tourist activities can generate conflicts between tourists and residents. Conflicts between locals and tourists may arise from the distribution of limited resources at the destination [5]. In addition to tensions related to cultural distance, locals and tourists also have had conflicts related to social and environmental issues such as tourists' needs to be served quickly and professionally but the working habits of local tourism workers have not been met, causing people to think that tourist activities changed the local lifestyle. Besides that, tourists' behaviors such as littering, drinking, guests deliberately playing music too loud, making noise in the middle of the night, and going into off-limits places [6]. In general, cultural differences between residents and visitors are prominent factors that lead to tensions and conflicts between these two groups [6].

The interaction between tourists and the host community has a certain significance for the tourism development of the destination. Tourists and hosts have strong relationships and positive views of each other that are important for the sustainable development of

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the destination [7]. Researching cultural differences between tourists and hosts has implications for developing positive guest-host interactions, leading to satisfaction with holidays and intention to return to the destination of tourists [8]. Cultural differences are a utility basis for promoting international tourism and providing suitable criteria for determining a target and positioning a destination in the market [9]. Previous studies on interactions between tourists and local communities have often approached from the perspective of tourists or local people [10]; or research focusing on intermediaries or travel brokers between tourists and residents. However, relatively few studies have assessed the interactions between tourists and residents contemporary from the perspective of these two subjects [4], especially those on this interaction from a culturally different approach. Learning about guest-host interactions in tourism from a cultural difference approach is imperative. This helps provide useful information for destination managers and is the basis for proposing solutions implications in research and destination management.

Negative impacts on tourists and destination hosts in the guest-host relationship in tourism will bring unwanted or even bad experiences to tourists [11, 12], and losses in benefits and spirit to the host community [13, 14]. The host community plays a significant role in influencing tourist satisfaction with the tourism experience at a destination. Negative experiences with host-guest interactions can lead to tourists' negative attitudes toward both the host community and the destination [15]. Therefore, identifying the interaction process and manifestations of guest-host interaction from cultural differences helps tourism management organizations at destinations, and tourism businesses predict potential risks of conflicts between tourists and hosts [1]. On-site experiences and contact with residents are gradually emphasized in the tourism activities of international tourists in destinations, so cultural contact and interaction will become more important in determining future tourism quality. Destination management organizations can develop appropriate tourism development and management strategies, helping the host community become more aware of the importance of tourism and have a view and behave more favorably towards tourists, becoming an important part of tourists' positive travel experience. In addition, tourism businesses can design and organize tourism programs and products to exploit tourism potential based on the host community, harmonizing interests between residents and tourists, and helping tourists have positive travel experiences at the destination [11].

The studies mentioned above demonstrate that the approaches to the study of host-guest interaction are diverse. From the perspective of residents, host-guest interaction is studied by evaluating the mechanism of conflict formation between tourists and residents from group differentiation and social framework between them. From this, strategies for coping with social conflict such as spatial distance are proposed [7]. In addition, studies evaluate the perspectives of residents on host-guest interaction in terms of form, frequency of interaction, satisfaction with interaction, and the impact of factors related to host-guest interaction on residents' perception of their quality of life [16, 17]; on residents' perception of the impact of tourism and the residents' support for tourism [18]. The impact of host-guest interaction on the emotional cohesion of residents and social distance towards tourists [19]. From the perspective of tourists, host-guest interaction is studied through the relationship between the intensity of the social relationship between tourists and hosts and tourists' emotions, the change in attitudes towards hosts and destinations, satisfaction with the holiday and travel experience [20]; the impact of host-guest interaction on tourist behavior in terms of in-site costs, travel experience, destination evaluation, and future destination choice [21]; the factors affecting the interaction between tourists and hosts [22].

The impact of host-guest interaction on tourists and residents can vary in different cultural and social contexts. Studies should consider tourists' preferences for interacting with the host community at the destination [21]. Additionally, current studies have not simultaneously evaluated the relationship between host-guest interactions (positive and negative), residents' satisfaction with interaction, residents' emotional bonding, and residents' support for attracting more tourists to the destination. Furthermore, from the perspective of tourists, studies have not simultaneously examined the relationship between host-guest interactions (both positive and negative) and tourists' evaluations of destination image, satisfaction with the travel experience at the destination, and intention to return to the destination. Understanding the evaluations of residents and tourists in host-guest interaction helps tourism developers at the destination develop strategies to enhance positive relationships between stakeholders and reconcile their interests. This is an important condition for sustainable tourism development.

This research aims to generalize and analyze the interactions between tourists and locals in tourism from the perspective of cultural differences; assessing the impact of cultural differences on the interactions between tourists and locals; proposing research framework and solutions for the management and development of tourism destinations toward promoting positive interactions between tourists and locals in tourism, based on mutual respect and understanding of cultures.

2. Literature review

2.1. The concept of guest-host interaction in tourism

Guest-host contacts in tourism refers to the encounters, contacts, and interactions between tourists and all those at the destination, including residents and tourism industry employees [23]. The term guest-host interaction in tourism is used in this paper to refer specifically to the encounters and communication between tourists and residents at tourist destinations.

2.2. Cultural differences

According to the UNESCO Universal Declaration on Cultural Diversity, "culture should be regarded as the set of distinctive spiritual, material, intellectual and emotional features of society or a social group, and that it encompasses, in addition to art and literature, lifestyles, ways of living together, value systems, traditions, and beliefs" [24].

Cultural differences can be seen as differences in cultural values, social categories and nonverbal behavior, communication, service, expectations, etc. between cultures [8]. Cultural differences lead to different perceptions of the formation of the behavior of individuals based on the culture they belong to [3].

Cultural distance refers to the level of difference between cultures. Large cultural distances can be a source of friction and cause the breakdown of economic, social, or political relationships between countries or communities having different cultures. In tourist activity, cultural distance is considered the degree of cultural difference between the tourist and the local community, which is significant for the interaction between the tourists and the hosts. The greater the cultural gap, the more difficult it is for tourists to interact with the host community [25].

2.3. Guest-host interaction in tourism

The interaction between tourists and residents takes place through intercultural contact, including cultural exchanges in essence and the formation of social interactive relationships between individuals from different cultures [1]. Guest-host interaction in tourism includes many behaviors in many forms and takes place in many different contexts between tourists and hosts such as tourists traveling by plane and bus, staying at hotels, shopping, visiting attractions, talking to tour guides, meeting locals on the streets, etc. Every contact between tourists and hosts leads to certain cultural experiences [26]. This interaction can bring positive or negative cultural experiences for tourists and hosts [23]. Cross-cultural communication between visitors and host communities can help promote the preservation or revitalization of local ethnic identities. Visitors who come into contact with the host community can learn cultural values, discover new things at the destination, or experience culture shock [26]. Tourists claim that insight understanding into local culture comes from interacting and chatting with local people [1]. However, tourism can lead to the potential threat of miscellaneousness of the local culture from the tourist's culture [27]. At tourist destinations, as the number of tourists increases, cultural conflicts between guests and hosts may arise and be expressed through aspects such as cultural ethnocentrism, communication problems, poor service quality, and lifestyle differences [3].

Research on cultural differences between visitors and hosts has been conducted by scholars since the 1960s [8]. Some approaches in the study of guest-host interaction in tourism from cultural differences can be mentioned as cross-cultural communication between tourists and hosts in Mexico [26]; the importance of understanding cultural differences to develop positive relationships between tourists and hosts [8, 28]; studies on the likability of tourists through their interactions with the host community in South Wales [29]; structure and meaning of cultural interaction between international tourists and local residents [1]; social distance between residents and international tourists for international business [7]; studying international tourist experiences, interactions with residents, and the social, cultural, and environmental impacts of tourism in host communities [15]; exploring how guest-host interactions at a destination promote tourists' intention to engage in public service co-creation [30].

For example, R.C. Prentice, et al. (1994) [29] research on the endearment behavior of tourists through their interactions with host communities in South Wales. The results show that many tourists believe they are welcomed and liked by local people, traveling, and interacting with people through conversations gives them more opportunities to understand the culture of the destination. Although some first-time visitors are welcomed, their vacation experience is culturally superficial and transient. A part of tourists believes that maintaining their close relationship with local people is also a reason why tourists come back to travel and participate in experiential activities at the destination. M.J. Carneiro, et al. (2017) [17] argue that understanding the host-tourist interaction (intensity and satisfaction) and residents' perceptions of tourism impacts on their quality of life helps decision-makers develop appropriate strategies to increase opportunities for social contact between tourists and hosts to bring satisfaction to these two subjects.

Many studies have shown differences between national groups in terms of travel motivations, behavioral patterns, perceptions, or beliefs, most commonly research on differences between Asian and Western cultures. Issues of cultural differences were identified such as the culture of payment, tipping, and miscommunication between cultures such as eye contact, smiling, and gestures; misinformation about negotiations, contracts, or organizational behavior, noise levels, and complaining behavior [31]. Previous studies on guest-host interaction applied the psychosocial contact model to the tourism sector, showing that interactions between international tourists and residents will influence tourists' satisfaction, changing the culture and attitudes of residents [1, 16]. Some studies show that interactions between tourists and locals are often brief and rather superficial [12, 16]. Most publications choose quantitative or qualitative research methods, mixed methods have not been integrated by many authors.

3. Methods

Qualitative methods are used through synthesizing and analyzing data collected from previous studies. Source material is collected from the Scopus and Google Scholar databases. Data collection was carried out by searching for the keywords "guest-host interaction/relationship", "cultural differences/cross-cultural", and "in tourism" on the Scopus database, the initial results were 18 research articles related to the study. To increase the ability to collect appropriate data, we conducted an additional search for the keywords "residents' perception", and "sociocultural impact" in tourism on the Scopus database, the search results showed 22 related studies. On the Google Scholar database, the keywords "guest-host interaction" from "cultural differences" or "cross-cultural" in tourism were searched and the initial results had 48 related results. In our ability to access resources, we collected 38 studies published from 1976 to 2023 from prestigious academic journals to briefly review the history of research on the impact of guest-host interaction in tourism from a cultural differences approach. 24 studies published in the period 2000-2021 were selected to be included in the analysis of research results.

The selected articles met the following criteria: (1) published in academic journals within the Scopus database (Q1-Q4 ranking); (2) presented research findings on guest-host interaction and its impact on tourism; and (3) clearly outlined the specific research sites, methodology, and research results.

NVivo 12 Plus, a qualitative data analysis software, was utilized to code the data. The coding process involved carefully reading and synthesizing relevant data into corresponding categories. The coded data facilitated the evaluation of the research on the topic and served as the basis for the discussion of the research findings. This included the theoretical foundation of guest-host interaction, cultural differences between guests and hosts in tourism, an overview of analytical frameworks and research models on guest-host interaction from a cultural difference perspective, the impact of guest-host interaction in tourism, research implications, and destination management implications.

4. Results and discussion

Some studies related to guest-host interaction in tourism from a cultural difference approach are summarised in Table 1.

Table 1. Summary of some researches related to guest-host interaction in tourism from a cultural difference approach.

Authors (year)	Research sites	Methods	Respondents	Topics
A. Pizam, et al. (2000) [20]	Israel	Quantitative	Tourists	The intensity of tourist-host social relationship
Y. Reisinger, et al. (2002) [9]	Australia	Quantitative	Asian tourists, Australian service providers	Cultural differences between tourists and hosts
J. Yoo, et al. (2003) [1]	Korea	Qualitative	Korean international tourists	The structure and meanings of intercultural interactions between international tourists and local residents
R.R. Sinkovics, et al. (2009) [7]	Austria	Quantitative	Austrian residents, German tourists, Japanese tourists	Social distance between residents and international tourists
M.M. Su, et al. (2010) [21]	China	Quantitative	Tourists	Implications of host-guest interactions for tourists' travel behavior and experiences
C.A. Eusébio, et al. (2012) [22]	Portugal	Quantitative	University student tourists	Determinants of tourist-host interactions
E. Kastenholz, et al. (2013) [12]	Portugal	Qualitative	Tourists, residents	Host-guest relationships in rural tourism
J. Yu, et al. (2014) [11]	Many places	Qualitative	Tourists, residents	Impact of tourists' intercultural interactions
M.J. Carneiro, et al. (2015) [16]	Portugal	Quantitative	Residents	Host-tourist interaction and impact of tourism on residents' quality of life
M.M. Su, et al. (2016) [4]	China	Qualitative	Tourists, residents	Tourist-community interactions in ethnic tourism
P. Upadhyay (2020) [15]	Nepal	Quantitative	Tourists	Exploring resident-tourist interaction and its impact on tourists' destination image
S. Tse, et al. (2021) [32]	Hong Kong, Singapore	Quantitative	Residents	Intensity of residents' behaviors in host–tourist interactions
C. Eusébio, et al. (2018) [18]	Cape Verde	Quantitative	Residents	Host–tourist interactions, and residents' attitudes towards tourism development
B. Sharma, et al. (2008) [33]	Australia	Quantitative	Residents	Exploring residents' perceptions of the social impacts of tourism
L.A. Jackson (2008) [34]	Florida, USA	Quantitative	Residents	Residents' perceptions of the impacts of tourism
K.L. Andereck, et al. (2011) [35]	Arizona, USA	Quantitative	Residents	Exploring the nature of tourism and quality of life perceptions among residents
K.F. Backman, et al. (2011) [36]	Chinese Taipei	Quantitative	Residents	Residents' perceptions of social and cultural impacts
C.D. Mello, et al. (2015) [37]	Goa, India	Quantitative	Residents	Factors influencing residents' perception of the impacts of tourism
M.J. Carneiro, et al. (2017) [17]	Portugal	Quantitative	Residents	The influence of social contact in residents' perceptions of the tourism impact on their quality of life
D. Joo, et al. (2018) [19]	Texas, USA	Quantitative	Residents	Residents' attitude towards domestic tourists explained by contact, emotional solidarity and social distance
F.G. Bello, et al. (2017) [38]	Malawi	Quantitative	Residents	Local residents' perceptions of socio-cultural impacts of tourism
X.R. Liu, et al. (2018) [39]	India	Quantitative	Residents	Host perceptions of tourism impact
X. Zhuang, et al. (2019) [14]	China	Qualitative	Residents	Socio cultural impacts of tourism on residents of world cultural heritage sites
H. Bartis, et al. (2020) [40]	South Africa	Quantitative	Residents	Residents' perceptions of the socio-cultural impacts of tourism

Source: Author's synthesis (2023).

4.1. Overview of some models for studying host-guest interaction in tourism from a cultural difference approach

The guest-host interaction in tourism has been studied by many authors, and analytical frameworks and research models are provided with diverse approaches and goals.

Approach from residents' perception at the tourist destinations:

R.R. Sinkovics, et al. (2009) [7] investigated the social distance between residents in Austria and German and Japanese tourists. Social distance was considered as a strategy for resolving group conflict. This conflict stems from the process of social categorization and stereotyping between hosts and guests. To identify and clarify the structure of social distance between these subjects, the following factors were used: spatial distance (related to issues, incidents, and aspects encountered at the border crossing), visiting (the meeting between residents and tourists at local attractions), personal contact (personal interaction between tourists and residents), and negative behavior (the behavior of tourists, considered unfavorable by residents). The study results showed that conflicts often occur through close personal contact between residents and tourists at attractions, public places, or public transportation. In the interaction between German and Japanese tourists, Austrian residents were more reluctant to engage in personal interactions with Japanese tourists. The reasons for this phenomenon could be attributed to language barriers, geographical distance, and/or psychological distance between Austrian residents and German and Japanese tourists. Increasing spatial distance can help to avoid conflict and enhance positive interaction between tourists and residents.

M.J. Carneiro, et al. (2015) [16] investigated the relationship between residents' satisfaction with their interactions with tourists and their perceptions of the impact of these interactions on their quality of life in Barra, Costa Nova, Ílhavo, Portugal. They identified three dimensions of host-guest interaction: intimate interaction; superficial host-guest interaction at tourist attractions and support services; and formal interaction at residents' workplaces. The results showed that tourist interactions are often brief and superficial. The frequency of interaction and residents' satisfaction with their interactions with tourists had a positive relationship with residents' perceptions of the positive impact of tourism on specific aspects of their quality of life. Workplace social contact, longer interactions, and more frequent interactions were associated with higher perceptions of the positive impact on residents' quality of life. Residents' tolerance of some of the potential negative impacts of tourism may increase when they perceive that they can gain benefits from tourism, including healthier psychological and social life, greater safety, and a more peaceful environment through increased social interaction with tourists. Residents may feel safer when interacting with tourists because interaction contributes to a better understanding of tourists. Recommendations for increasing opportunities for contact and extending the length of interaction between tourists and residents are seen as initiatives for developing positive host-guest relationships.

M.J. Carneiro, et al. (2017) [17] proposed a model to study the relationship between host-tourist interaction (intensity and satisfaction) and residents' perceptions of tourism impacts on their quality of life in Barra and Costa Nova in Ílhavo, Portugal (Fig. 1). The research model focuses on groups of factors including (1) Intensity of interaction between hosts and tourists in some contexts, (2) Level of satisfaction with the interaction between hosts and tourists, and (3) Residents' perceptions of impacts of tourism on their quality of life. The structure of social interaction between tourists and hosts is represented by three directions: (1) close interaction; (2) workplace interactions; and (3) interactions at tourist attractions and facilities. Research results show that guest-host social contact is often brief, superficial, and temporary, especially for close contacts. However, residents appeared very satisfied with the interaction between them and tourists. Residents' perception of the impact of tourism on the quality of their life overall and on areas of this structure such as (i) economic and social opportunities; (ii) calm and safety; (iii) public and facilities services; and (iv) positive feeling. People perceive a high impact of tourism on their quality of life, especially in the psychological aspect (positive feeling) and improving the environmental context (economic & social opportunities as well as public and facilities services).

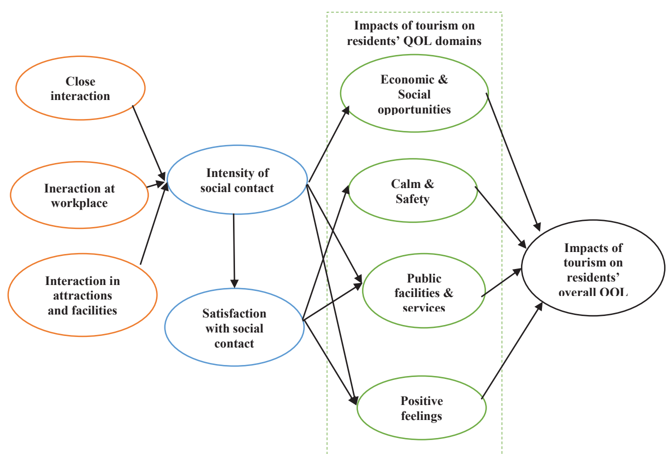

Fig. 1. Model to study host-tourist interaction relationship and residents' perception of tourism's impact on their quality of life. Source: Adapted from M.J. Carneiro, et al. (2017) [17].

C. Eusébio, et al. (2018) [18] investigated the impact of host-guest interaction on residents' perceptions of the impacts of tourism and residents' attitudes towards tourism development in Boa Vista Island, Cape Verde. In this model, the interaction between residents and tourists was assessed based on positive perspectives, such as residents' liking to make friends, and interact with tourists, and feeling that host-guest interaction is positive. Residents' perceptions of the impacts of tourism were measured on both positive and negative aspects, including economic, and social impacts. Residents' attitudes towards tourism development included attitudes towards tourism development, intention to participate in tourism, and desire to see more tourists at the destination. The study results showed that host-guest interaction has a direct impact on residents' perceptions of the impacts of tourism, both positive and negative, and residents' attitudes toward tourism development.

D. Joo, et al. (2018) [19] measured the impact of host-guest interaction on residents' emotional bonding and social distance with tourists at the Texas Hill Country destination. The results of the model testing showed that the frequency of interaction and the activities of interaction between residents and tourists explained residents' perceptions of emotional bonding with tourists and social distance with tourists. Emotional bonding affects social distance.

S. Tse, et al. (2021) [32] researched residents' behaviors towards tourists from a multicultural approach, intensity (i.e., active or passive) toward those behaviors, and the corresponding matrix by the interaction and influence between groups (BIAS). The paper consisted of two studies, surveying residents in (1) Hong Kong, (2) Singapore, and the United States. In study 1, residents' behaviors were divided into four groups, such as positive facilitation, passive facilitation, positive harm, and passive harm. The four quadrants of the BIAS Map represent four levels of residents' behaviors toward tourists, including residents who can be beneficial to tourists; residents' adaptive behaviors toward tourists; residents who are distant from tourists; and residents' threatening behaviors toward tourists. Study 2 evaluated the behaviors of residents in Singapore and the United States toward mainland Chinese tourists. The results showed that Singaporeans had a higher level of harmful behaviors, both active and passive, while Americans had a higher level of positive facilitation towards tourists. The research results also showed that positive or negative host-guest interactions would affect tourists' satisfaction and evaluation of the destination image.

Approach from the perspective of tourists:

A. Pizam, et al. (2000) [20] investigated the impact of the intensity of social interaction between tourists and hosts on tourists' satisfaction and attitude change toward the destination and the host community. The results of this study showed that the higher and more intimate the intensity of contact between tourists and hosts, the more positive tourists' feelings towards hosts, the more positive their attitude change towards hosts and the destination, and the higher their satisfaction with the vacation and the tourism experience.

M.M. Su, et al. (2010) [21] surveyed the perceptions of domestic tourists residing in Beijing, China, about the impact of destination community members on their previous domestic tourism behavior and experiences. The study investigated the relationship between host-guest interaction and tourists' perceptions of their behavior at the destination, such as on-site costs, length of stay, tourism experience, destination evaluation, and future destination choice. The survey results showed that four of the five factors were significantly affected by tourists' perceptions of host-guest interaction at the destination. These were on-site costs, tourism experience, destination evaluation, and future destination choice. These impacts were affected differently depending on the demographic characteristics of tourists, such as age, gender, and education.

C.A. Eusébio, et al. (2012) [22] investigated factors that influence the level of interaction between tourists (students at the University of Aveiro) and hosts. Factors considered to measure the level of interaction between tourists and hosts include travel motivations, travel behavior, cultural familiarity and similarity, tourists' perceptions of tourism impacts, and socio-demographic profile of tourists. The results show that the independent variables all affect the interaction between tourists and hosts to a certain level. Among them, travel motivation (considered the most important factor) and tourists' perception of tourism's impact on cultural benefits affect the level of interaction between tourists and hosts in the measurement model. Tourist's travel behavior affects the level of interaction depending on the specific context of contact between tourists and hosts.

Simultaneous approach to the perspectives of tourists and residents:

J. Yoo, et al. (2003) [1] outlines a model of international tourist intercultural interaction that includes tourists' interaction in a tourism context, in which, tourists experience accelerated role conflicts more when recognizing the situational constraints, the commercial travel environment, and the sense of distinctive that arises from their position as a stranger in the destination. Residents are accepted as subjects for cultural negotiation, which involves learning the norms of the new culture that may not be appropriate to their own country, achieving the goals of tourism, and satisfying cultural needs.

Inheriting the model of J. Yoo, et al. (2003) [1], J. Yu, et al. (2014) [11] propose a model of intercultural interaction of international tourists (Fig. 2), including two parts structure and impact of guest-host interaction. Variables for interaction include trust, hospitality, language, equality, and nationalism. As the subject of interaction, international tourists develop a more comprehensive understanding of the cultures in which they travel, through unique experiences and cross-cultural interactions, which ultimately influences changing tourists' attitudes towards the local people and culture at the destination. Research shows that international tourists' cross-cultural interactions can be a reflective, comparative, or holistic experience, thereby helping tourists to self-discover; and expand awareness and understanding of different cultures with new cultural norms.

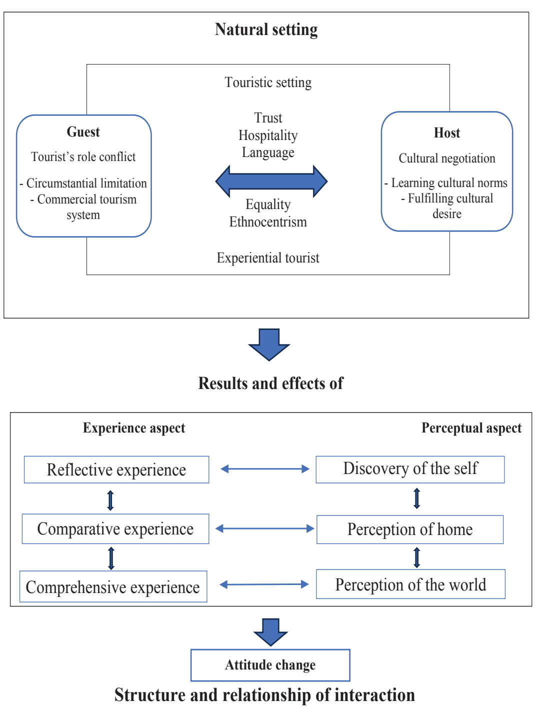

Fig. 2. Intercultural interaction model of international tourists. Source: Adapted from J. Yu, et al. (2014) [11].

To study guest-host interactions from the perspectives of both tourists and local residents, M.M. Su, et al. (2016) [4] propose a diagram illustrating the interaction progression into five types of interactions (Fig. 3), with increasing degree and intensity of interaction from the first to the fifth type as indicated by the arrow's direction: (1) The presence of tourists and community members at a destination without active interaction; (2) Tourists seek help or information from community members; (3) Residents sell products to tourists; (4) Both sides are actively seeking mutual understanding; (5) Two subjects make friends to satisfy a longer-term or deeper social need. The impacts on tourists in this interaction can be related to ethnic experiences, cultural learning, destination image, community image, destination evaluation, and understanding of tourism-community relationships. Impacts on ethnic communities may be related to economic benefits, language skills, ethnic culture and traditions, national identity, social relations, understanding of other cultures and people, and understanding the tourism-community relationship. Host-guest interaction contributes to the formation of tourists' sense of satisfaction with their tourism experience at the destination.

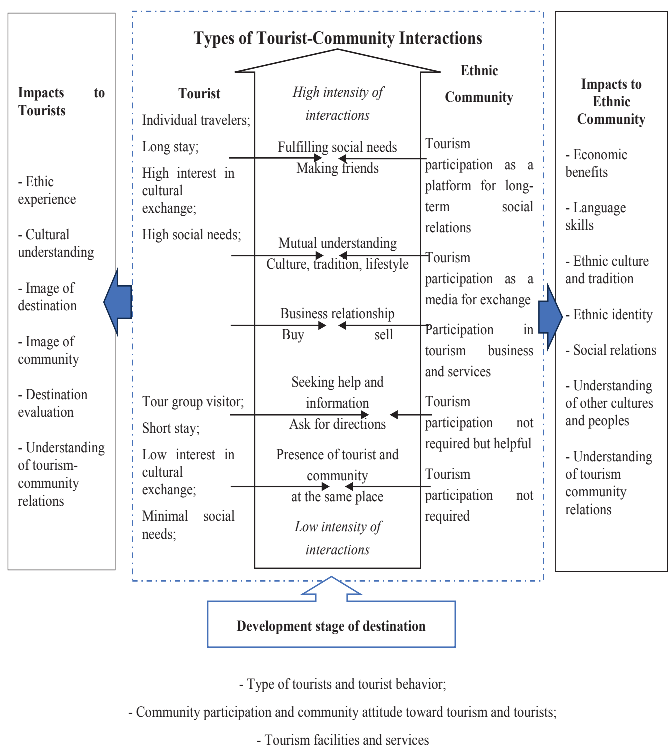

Fig. 3. Diagram of interaction between tourists and the community in ethnic tourism. Source: Adapted from M.M. Su, et al. (2016) [4].

4.2. The impacts of guest-host interaction in tourism from a cultural difference approach

The influence of guest-host interaction in tourism from approaching cultural differences is summarized in the contents:

Impact on tourists: The higher the level of social relationship between the tourist and the host, the higher the tourist's satisfaction with their holiday and tourism experience [20]. Interacting with locals broadens tourists' horizons, deepens their understanding of the destination, and enriches their travel experience [21]. Residents' hospitality helps tourists feel closer and better understand the people and culture at the destination [11]. On the other hand, many studies show that tourists recognize their role conflicts from three perspectives: (1) limitations in relationships with local people, (2) themselves as objects of commercialism - as a source of income for local people, (3) feeling different as a stranger [1, 11]. Language differences cause difficulty in communication between tourists and hosts. Some tourists feel different because they think they are just strangers and feel discriminated against by local people at destinations [11]; Tourists feel that locals suspect them and do not feel comfortable about it [12].

Impacts on residents at the destination: The impacts of guest-host interactions on residents are mainly investigated from studies on residents' perceptions of the impacts of tourism. Research results show that when people regularly come into contact with tourists, they will view tourism more positively [35]; improve locals' understanding of other cultures [33]; Interacting with visitors from around the world is a valuable educational experience for the people at the destination [34]; thereby improving the level of preservation of local culture and traditions that are gradually disappearing [15, 36, 39]. Besides, cultural differences between tourists and local residents can change locals' lifestyles according to tourists' culture in the way they dress, behave, eat, etc [13-15, 38]; local culture is damaged by servicing tourists' needs [37]; traditional local cultural values are commercialized to serve the needs of tourists [40].

4.3. Implications for research and destination management related to guest-host interaction in tourism from the cultural difference approach

Implications for research and proposed research framework on guest-host interaction in tourism from a cultural difference approach:

From the mentioned research results on guest-host interaction in tourism from a cultural difference approach, we collect and propose the following research implications: future research needs to carry out an integration of qualitative and quantitative research methods to gain a more comprehensive and in-depth understanding of the research problem [11], surveys should be conducted with both tourists and local residents simultaneously [7, 11] to better ask about the perspectives of stakeholders and their expectations in this interaction. Besides, culture includes many aspects of human life, so when researching host-guest interactions in tourism, it is also necessary to specifically consider the cultural aspects and contexts of each subject to have the most accurate research results [7]; researching compares many different tourist destinations to get a multi-dimensional view of guest-host interactions [15].

Propose a research framework for tourists related to host-guest interaction in tourism:

The intensity of social interaction between hosts and long-term tourists is one of the important factors affecting tourists' satisfaction with their vacation, and tourism experience at the destination [4, 15, 20]. Residents are considered to be a part of the tourism activity at the tourists' destination. Host-guest interaction affects tourists' tourism experience, destination evaluation, tourism expenditure, and future destination choice. Tourism experience and tourists' satisfaction and positive economic outcomes for the destination community can be enhanced through the promotion of interaction between hosts and tourists [21]. Tourists' perspectives and experiences of residents can affect their perceptions and emotions of destination image. Tourists who perceive the behavior of local people as positive tend to assess a positive image of the destination, and vice versa, if the behavior of local people is negative, it can negatively affect tourists' perceptions of the destination image. The promotion of positive interaction between people and tourists is seen as a viable solution that can improve the attractiveness and competitiveness of the destination [32]. Hospitality and friendliness of the people are important reasons and predictive factors for tourists' intention to return to the destination [13, 41].

The destination image, both cognitive and affective, has an impact on tourists' intention to return and recommend the destination. Of these, the affective image of the destination has a stronger impact on tourists' intention to return and recommend the destination [42]. Tourists' satisfaction with their tourism experience at the destination has a positive impact on their attitude towards returning and their intention to return to the destination [43].

Based on the discussion above, a research framework on tourists' evaluation of interaction with local people on their satisfaction with tourism experience, destination image, and revisit intention to tourist destinations is proposed with the following hypotheses:

Hypothesis 1a: Positive interaction with residents has a positive impact on tourists' satisfaction with their tourism experience at the destination.

Hypothesis 1b: Negative interaction with residents has a negative impact on tourists' satisfaction with their tourism experience at the destination.

Hypothesis 2a: Positive interaction with residents has a positive impact on tourists' evaluation of the destination image.

Hypothesis 2b: Negative interaction with residents has a negative impact on tourists' evaluation of the destination image.

Hypothesis 3a: Positive interaction with residents has a positive impact on tourists' revisit intention to the destination.

Hypothesis 3b: Negative interaction with residents has a negative impact on tourists' revisit intention to the destination.

Hypothesis 4: Tourists' evaluation of the destination image has a positive impact on their revisit intention to the destination.

Hypothesis 5: Tourists' satisfaction with their tourism experience has a positive impact on their revisit intention to the destination.

Propose a research framework for residents related to host-guest interaction in tourism:

Residents' satisfaction with their interaction with tourists and the frequency of interaction has a positive impact on residents' perceptions of the positive impact of tourism on specific areas of their quality of life [16, 17]. The enhancement of positive interaction with tourists influences residents to perceive that the interaction brings many benefits to their quality of life, and increases their tolerance for tourists and acceptance of tourism [16]. M.J. Carneiro, et al. (2017) [17] found that there is a positive relationship between the intensity of social interaction between residents and tourists and the satisfaction of residents with this interaction.

On the relationship between host-guest interaction and emotional solidarity, D. Joo, et al. (2018) [19] found that the frequency and types of interaction between residents and tourists in the Texas Hill Country influence the emotional solidarity and social distance of residents toward tourists. Positive host-guest interaction affects the attitudes of residents toward tourism development, in which residents support the attraction of more tourists to the destination [18]. The emotional solidarity of residents toward tourists through welcoming nature, emotional closeness, and sympathetic understanding predicts residents' perspectives on the support for tourism development and the contributions of tourism to the community [44]. The residents' emotional solidarity with tourists in Kaifeng, China significantly affects the attitudes of residents toward tourism development and the behaviors of supporting the development of night tourism. In this case, the attitudes of residents toward night tourism development are expressed through the desire of residents for tourists to choose and visit Kaifeng more, and the feelings of happiness and interest of residents about the presence of tourists in the destination [45].

Based on the findings of the relationships between host-guest interaction, satisfaction with host-guest interaction, emotional solidarity, and support for the attraction of more tourists to the local area from the perspective of residents, a research framework that simultaneously examines these relationships is proposed with the following hypotheses:

Hypothesis 1a: Positive interaction with tourists has a positive impact on residents' satisfaction with host-guest interaction.

Hypothesis 1b: Negative interaction with tourists has a negative impact on residents' satisfaction with host-guest interaction.

Hypothesis 2a: Positive interaction with tourists has a positive impact on residents' emotional solidarity with tourists.

Hypothesis 2b: Negative interaction with tourists has a negative impact on residents' emotional solidarity with tourists.

Hypothesis 3a: Positive interaction with tourists has a positive impact on residents' support for tourism development (attraction of more tourists to the destination).

Hypothesis 3b: Negative interaction with tourists has a negative impact on residents' support for tourism development (attraction of more tourists to the destination).

Hypothesis 4: Residents' satisfaction with host-guest interaction has a positive impact on residents' support for tourism development (attraction of more tourists to the destination).

Hypothesis 5: Residents' emotional solidarity with tourists has a positive impact on residents' support for tourism development (attraction of more tourists to the destination).

4.4. Recommendations for destination management related to guest-host interactions from the cultural difference approach

As discussed above, the cultural differences between residents and tourists can both bring about positive aspects and risks of conflict between the two groups. Therefore, destination management should pay attention to this issue to minimize the risks of conflict and enhance the positive interactions between residents and tourists, contributing to the success of tourism development at the destination [7]. The recommendations focus on the following issues:

For tourism marketers, destination marketing strategies need to pay attention to the cultural differences between tourists' source and destination residents in terms of geographical factors, socio-demographic characteristics, psychology, and behavior of hosts and guests [8]; identify the travel motivations of tourists from main customer markets [2] and understand the cultural background of international tourists, needs and psychological experiences of tourists [9], to serve the segmentation and promotion of international tourism marketing because they provide a more accurate, predictable and stable basis for identifying the objectives of developing suitable tourism products and services [28].

For tourism policy and management planners, it is necessary and important to develop new products that meet the diverse needs of customers, especially in response to the need for positive interactions and intercultural experiences with local people [11]. Tourism developers at the destination need to encourage the host community to participate in tourism activities and enhance positive interactions with tourists [16]. At the same time, residents should be encouraged to share their norms and values with tourists [32]. Residents can provide supplementary tourism services such as providing local information, catering services, guiding local tours, introducing local cultural values to tourists, providing cultural experiences for tourists such as guiding tourists to cook traditional meals, performing traditional dances, and performing handicraft activities [16].

Local communities and governments need to focus on preserving natural and cultural beauty, as well as unique hospitality traditions, to increase attraction and tourist experience toward tourists [15]. In addition, positive interactions between hosts and tourists can be seen as a highlight to promote and advertise the destination image to increase tourist attraction [32].

Destination management organizations (DMOs) need to establish codes of conduct for all stakeholders, especially residents and tourists at destinations and tourist attractions. This helps to regulate the behavior of residents and tourists and to reduce inappropriate behaviors that have the potential to lead to conflict between these actors. In addition, raising awareness of the impacts of tourism among residents is very essential. When residents have a correct understanding of the benefits, negative impacts, and psychological characteristics of tourists, they will be able to have a more objective and tolerant view of tourists. This will help to promote hospitality and welcome and help tourists have positive travel experiences at the destination.

For tourism service providers, tourism staff need to understand the cultural differences and cultural needs of international tourists to provide more effective services [11]. To reduce cultural conflicts between tourists and hosts, tourism service providers and destination managers need to pay attention to advertising about destination tourism, advertising that is honest and does not exaggerate what the destination can offer tourists; provide information to help tourists understand the destination and its residents; tourists should be informed in advance of potential limitations in their travel experiences and potential cultural conflicts that may occur at the destination. This helps tourists not experience cultural shock if they have different cultural experiences, and also helps tourists experience the destination proactively, conflicts that are warned in advance at the destination do not reduce the value of the tourist experience of tourists [3].

5. Limitations of the study

The number of reviewed studies is quite limited, so it is not possible to generalize all research issues related to guest-host interaction with cultural differences approaches. Future research needs to expand exploring the diverse aspects of this relationship and its impact on stakeholders in tourism activities.

6. Conclusions

The topic of guest-host interaction and cultural differences in tourism has been researched by many authors, with each study pointing out specific aspects of these two topics. Studies often approach and survey from the perspective of tourists or local people (finding out the views of local people is often done in studies related to residents' perceptions of the impacts of tourism at the destination). The number of Studies on guest-host interaction from a cultural difference approach in tourism with survey subjects including both tourists and local people is quite limited.

Guest-host interaction in tourism takes place at levels from low interaction to deeper interaction. Most interactions between tourists and local people are often short and superficial. However, there are also a few tourists and residents who demand to interact more positively with each other. Besides, cultural differences also bring positive and negative effects to both tourists and locals during interaction. The main affected aspects include cultural exchange and understanding each other, expanding knowledge and skills (especially foreign language skills), feelings of inferiority, cultural loss, and conflict due to cultural and social distance.

Guest-host interaction is important significance in developing destination tourism. Tourism managers and policymakers at destinations need to have solutions to involve conflicts between guests and hosts; enhance positive interactions, promote positive effects from interactions; and understand cultural differences between tourism markets and destination communities to help tourists increase their travel experience and meet the diverse tourism and cultural needs of tourists and the needs of local people in tourism activities.

Future research needs to develop research on guest-host interaction with a cultural difference approach from the perspective of both tourists and residents, with research methods that integrate quantitative and qualitative. To gain a better understanding of host-guest interactions in tourism, future research could simultaneously examine the following approaches: (1) The relationship between host-guest interactions, residents' satisfaction with the interactions, host emotional solidarity, and residents' support for attracting more tourists to the destination; (2) The relationship between host-guest interactions, tourists' assessing on destination image, satisfaction with the travel experience, and their intention to revisit the destination.

COMPETING INTERESTS

The author declares that there is no conflict of interest regarding the publication of this article.

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How lecturers of English perceive hybrid learning at the tertiary level

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Abstract:

Hybrid learning has gained prominence in higher education institutions in Vietnam, particularly in response to the COVID-19 pandemic. However, research on lecturers' perspectives of this educational paradigm remains limited. This study aims at investigating English lecturers' perceptions towards hybrid learning via self-assessment of their Technological, Pedagogical, and Content Knowledge (TPACK). Employing a mixed-methods approach, combining Likert-scale surveys and in-depth interviews aligned with M.J. Koehler, et al. (2014) [1]**'s framework. The research engaged 35 in-service English lecturers across four universities and a college in Ho Chi Minh city and Dong Thap province. The findings indicated that lecturers demonstrated high levels of content knowledge, pedagogical knowledge, and pedagogical content knowledge, while self-assessments on technological pedagogical knowledge were comparatively lower. Notably, qualitative data from in-depth interviews highlighted the pivotal role of collaborative support from colleagues in sharing teaching materials and addressing technological challenges, alongside the perceived benefits of time flexibility and the comfort of teaching at home, as crucial factors facilitating the effective implementation of hybrid learning. Nevertheless, lecturers identified obstacles to hybrid learning implementation, including limited technological literacy, deficiencies in suitable professional training programmes, learner hesitancy, and inadequacies in available textbooks. Some recommendations arising from these findings include a call for English lecturers to enhance their proficiency in technological pedagogical content knowledge and for educational institutions to furnish adequate resources to support teaching faculty.**

Keywords: **English as a Foreign Language tertiary level; English lecturers; hybrid learning; perceptions; Technological, Pedagogical, and Content Knowledge (TPACK).**

Classification numbers: **3.1, 3.2**

1. Introduction

The incremental application and facilitation of technology in teaching and learning have exposed higher education to globalisation tendencies with e-learning involving web-based courses, virtual classroom meetings, and digital collaborations. J.W. Foncha, et al. (2022) [2] posit that higher education appears to be in a state of high uncertainty throughout the world, necessitating a deliberate increase in lecturers' technological and methodological readiness for both face-to-face and online teaching and learning. Nevertheless, it is widely believed that the face-to-face (FTF) teaching mode is familiar to learners' target language acquisition because it has been a typical and conventional delivery teaching mode N. Abdelrahman, et al. (2016) [3]. However, a learning process with the lecturer as the primary source of delivering knowledge has seemingly come to its bygone era because of the further requirements of discussion, negotiation of meaning, and reflection. Therefore, combining delivery teaching modalities, such as FTF mode and virtual classrooms, constitutes hybrid learning or blended learning. Hybrid learning, which represents an inextricable connection between traditional and online instructions, appears innovative for the development of education. This delivery teaching mode aids in-class learning to amplify the learning process with distinctive asynchronous opportunities. Despite its increasing employment at the collegiate level several decades ago, hybrid learning is potentially breaking new ground in higher education institutions in Vietnam. Thus, the introduction of hybrid learning is urgent for Vietnamese lecturers as a way to enrich their teaching methods and for students as a tool to obtain high-level professional knowledge.

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The research problem identified in this study operates on both practical and literature levels. Practically, the authors have observed that English lecturers potentially encountered several obstacles, such as employing online teaching applications. Therefore, it is a prerequisite for English lecturers to have a good command of pedagogical knowledge and technological literacy. According to the TPACK framework proposed by M.J. Koehler, et al. (2014) [1], three aspects (technological, pedagogical, and content knowledge) are worth using to reflect how effective the lecturer's teaching knowledge is. It can be elucidated that the complementarity of these three aspects possibly constitutes lecturers' flexible understanding to apply technology-assisted lessons. Thus, evaluating the hybrid learning approach can apply the TPACK framework because this state-of-the-art teaching approach combines both virtual activities and face-to-face classroom meetings. The TPACK framework proposes that lecturers must possess a profound comprehension of each aspect of the knowledge mentioned above. This is essential for effectively integrating and managing the use of technology, pedagogy, and content in their teaching practice M.J. Koehler, et al. (2014) [1].

On the literature level, the research problem addresses a notable gap in existing studies. Hybrid learning is considered relatively innovative for English lecturers in this digital age. In the context of Vietnam's tertiary education, research on hybrid learning primarily focuses on students' academic progress and perceptions. H. Ngo (2010) [4]'s, study on an English for specific purposes (ESP) course using Canvas and virtual training revealed significant improvement despite technical challenges. An additional study, H.Y. Phuong, et al. (2019) [5], has supported the need for increased lecturer involvement to enhance course effectiveness, promoting autonomy among English as a foreign language (EFL) undergraduates. Internationally, T. Vereshchahina, et al. (2018) [6], explored English as a second language (ESL) lecturers' perceptions, noting high content and pedagogical knowledge but lower technological expertise. T.N. Le, et al. (2022) [7], identified barriers for EFL lecturers, emphasising infrastructure and institutional support issues. The researchers have identified knowledge and methodology gaps in existing studies, prompting the current study to explore how English lecturers at Vietnam's tertiary level perceive hybrid learning models, utilising a mixed-methods approach to address these gaps. Hence, the objective of this study was to explore how English lecturers at Vietnam's tertiary level perceive hybrid learning models, achieved by examining how they assess their TPACK in teaching approaches.

To accomplish this aim, the two research questions were formulated:

Research question 1: To what extent do EFL lecturers perceive hybrid learning through their self-assessment of TPACK?

Research question 2: What are the factors that facilitate and hinder the hybrid learning process?

This study significantly contributes to both practical and theoretical realms. Practically, it aims to raise awareness of the need for implementing hybrid learning in the near future. Accordingly, lecturers need to equip themselves with knowledge related to the seven aspects of TPACK. Theoretically, there have been few studies investigating English lecturers at the tertiary level, especially in the Vietnam context. Therefore, this study explores the English lecturers' self-perceived perspectives on the hybrid learning model, focusing on their knowledge of TPACK.

2. Literature review

2.1. Hybrid learning

The term hybrid learning has been interpreted in various ways by numerous authors. C.R. Graham, et al. (2007) [8] described it as a combination of face-to-face teaching modes with technology-driven modes, referring to it as a blended learning approach. Similarly, A. Uzun, et al. (2010) [9] defined courses that integrate the Internet with conventional teaching delivery modes as hybrid, web-assisted, blended, or mixed learning modes. Some authors share the idea that hybrid learning refers to a whole educational programme combining elements of both a face-to-face teaching approach and a virtual or computer-enhanced phase; in this context, traditional classroom meetings can be supplemented by online learning time [10]. Generally, hybrid learning involves a combination of teaching delivery modes (e.g., on-site, web-oriented, and self-paced learning), teaching methods (e.g., FTF and technology-driven phases), synchronous and asynchronous learning forms, and delivery media (e.g., web-based activities or courses, videos, classroom sessions, textbooks).

Most authors (e.g., C.R. Graham, et al. (2007) [8]) agreed that the terms "hybrid" and "blended" can be used interchangeably. Thus, the term hybrid learning used in this article depicts an educational approach that merges in-person and virtual teaching methods. The participants underwent courses involving both online and offline sessions, each accounting for an equal proportion. This division of approaches also defined the study's scope. This innovative strategy seamlessly integrates conventional classroom interactions with online elements, providing students with a flexible and dynamic learning experience.

2.1.1. The application of hybrids in foreign language teaching

Recently, the implementation of hybrid learning into foreign language teaching and learning has gained much attention from researchers.

B.F. Klimova (2012) [11] offered an example in an Academic Writing for English for Academic Purposes (EAP) course, emphasising online submission of written assignments and independent online reading. M. Nashir, et al. (2021) [12] highlighted the suitability of hybrid learning in adapting to the "new normal" era, particularly in Intensive English classes. Their study indicated that hybrid learning improved communication practice, leading to enhanced learning outcomes, particularly in speaking skills. Most students (71.7%) reported increased interest and effectiveness with hybrid learning, with 81.8% preferring it over purely online or FTF instruction. Additionally, C.S. Ironsi (2023) [13] investigated the effectiveness of educational materials in a blended learning environment, discovering significant improvements in students' writing abilities. In summary, hybrid learning, developed over a decade, has demonstrated numerous benefits for language education, including improved communication, academic success in EAP courses, and enhanced writing skills. This innovative approach aligns well with teaching second languages.

2.1.2. Hybrid learning in the context of tertiary level

As a part of the incremental application of hybrid learning in the education sector, tertiary institutions have proliferated their courses with this innovative teaching mode.

In tertiary education, hybrid learning is gaining traction as institutions adopt this innovative approach. T. Vereshchahina, et al. (2018) [6]'s pilot study involved 18 ESL university instructors assessing their self-perceived hybrid learning proficiency. The lecturers demonstrated strong subject matter knowledge but had limited expertise in developing multimedia resources and using online collaboration platforms. Nevertheless, they showed a deep understanding of hybrid learning's advantages and disadvantages, signalling their interest and support for its implementation.

In the Vietnamese context, H. Ngo (2010) [4] explored Vietnamese lecturers' perceptions of hybrid learning. Sixteen lecturers participated in an interactive PDF module-based hybrid English course. The study revealed increased knowledge and contributions from participants, although some faced challenges. They appreciated the clear objectives and well-organised content, and feedback in embedded tests helped them improve. Overall, the study confirmed the effectiveness of the instructional module for hybrid learning.

2.1.3. Hybrid learning in the Vietnam university teaching context

In Vietnam's tertiary education context, research on hybrid learning focuses on two key aspects. Firstly, limited studies explore the impact of hybrid learning on students' academic progress. H. Ngo (2010) [4] conducted research on students' perspectives in an English for Specific Purposes (ESP) course using Canvas and virtual training. The study divided participants into pilot, experimental, and control groups, showing a significant improvement in ESP performance. Students faced technical challenges and intermittent internet connectivity but remained enthusiastic about Canvas training.

Previous studies delved into tertiary students' perceptions of this innovative approach (e.g. H.T.T. Nguyen, et al. (2021) [14]). They have suggested that more lecturer involvement may enhance the effectiveness of these courses in Vietnam. Students' reliance on lecturers for motivation and direction may hinder their autonomy in learning. However, this approach can promote autonomy among EFL undergraduates (H.T.T. Nguyen, et al. (2021) [14]).

In summary, previous research studies in this field have predominantly focused on Vietnamese students as participants, with limited attention given to tertiary lecturers. Consequently, there is a justifiable need for this study to be conducted, as it aims to address the existing gap in the literature by investigating the experiences and perspectives of lecturers in the context of hybrid English courses.

2.2. Technological, pedagogical, and content knowledge

L. Shulman (1987) [15] defined the knowledge of educational technology possessed by teachers as pedagogical content knowledge. In light of this, M.J. Koehler, et al. (2014) [1] argued that the TPACK framework comprises three essential components: technological knowledge, pedagogical knowledge, and content knowledge, which are crucial for effective teaching. These components and their relationships are demonstrated in the following Fig. 1:

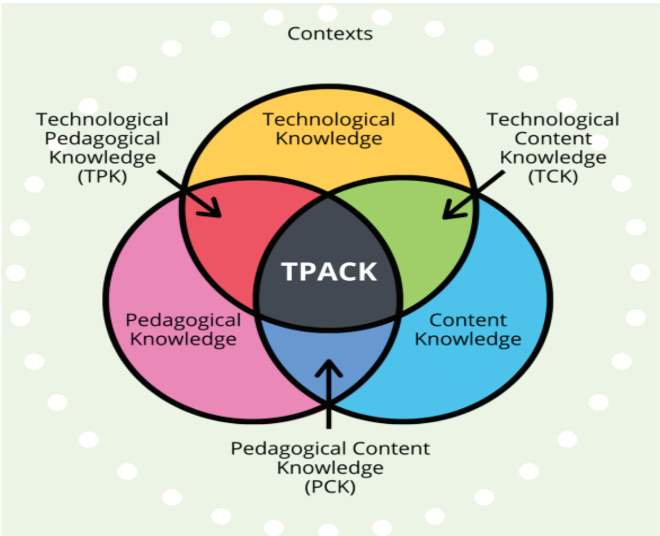

Fig. 1. Diagram of the technological, pedagogical, and content knowledge framework [1].

According to M.J. Koehler, et al. (2014) [1], content knowledge represents the subject matter that teachers are expected to teach based on their training and professional responsibilities. Secondly, pedagogical knowledge encompasses a teacher's understanding of various instructional techniques and pedagogical strategies. Lastly, technological knowledge refers to a teacher's familiarity with both conventional and computer-mediated technologies that can be employed in the classroom.

However, rather than existing in isolation, these three components complement and intersect with each other, giving rise to additional forms of knowledge. Firstly, Technological Content Knowledge (TCK) corresponds to a teacher's understanding of how to effectively utilise technology to convey subject-specific knowledge to their students. Secondly, Pedagogical Content Knowledge (PCK) refers to a teacher's knowledge of appropriate and effective pedagogical approaches and strategies for teaching content knowledge, taking into account the learning preferences and abilities of their students. Lastly, Technological Pedagogical Knowledge (TPK) encompasses a teacher's understanding of how to integrate technology into their instructional practices to enhance teaching and learning. Therefore, TPACK encompasses the integration and utilisation of these knowledge domains to achieve curriculum-aligned learning objectives. The TPACK framework emphasises that teachers must possess a deep understanding of each of these knowledge components in order to effectively coordinate and integrate technology, pedagogy, and content in their teaching practices M.J. Koehler, et al. (2014) [1].

2.3. Research conceptual framework

This article aims to explore EFL lecturers' perceptions of hybrid learning in some universities and colleges in Ho Chi Minh city and Dong Thap province and to identify factors that influence the implementation of this teaching and learning mode.

Generally, individuals interpret new phenomena according to their prior knowledge and experiences. Thus, the key individual factors influencing EFL lecturers' perceptions of hybrid learning lie in their knowledge of the hybrid learning mode. This knowledge, according to M.J. Koehler, et al. (2014) [1], is represented through lecturers' understanding of teaching English with three main fundamental knowledge factors: content knowledge, pedagogical knowledge, and technological knowledge, as categorised into different components illustrated in the TPACK framework. These ideas are illustrated in the conceptual framework of this study as follows in Fig. 2.

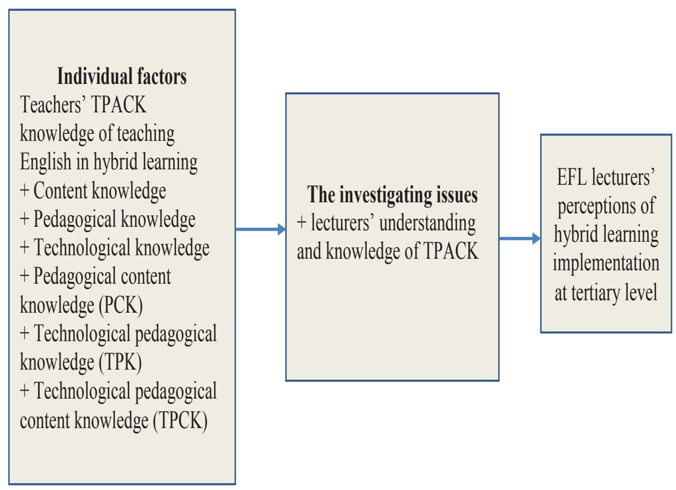

Fig. 2. Conceptual framework for the study.

2.4. Previous studies and research gaps

In the international university teaching context, limited research explores English language lecturers' perceptions of hybrid learning, except for T. Vereshchahina, et al. (2018) [6]'s study. They examined lecturers' TPACK and the advantages and disadvantages of hybrid learning. While lecturers generally possessed high content and pedagogical knowledge, their technological knowledge was lower due to a lack of information support and digital equipment. Despite this, lecturers noted benefits such as a student-centred approach, easy access to materials, and a wide range of online tools. Overall, ESL lecturers had positive perceptions of hybrid learning but recognised the need to enhance their technical knowledge.

In a study by T.N. Le, et al. (2022) [7], 30 EFL lecturers identified barriers and drawbacks to implementing a combination of online and offline periods. Major barriers included a lack of infrastructure, institutional support, knowledge, and time for web-based technologies. Drawbacks involved workload, time consumption, and demotivation. The study provides implications for addressing these challenges through policy and practice changes.

Upon conducting a review of previous studies, the researchers identified knowledge and methodology gaps in existing research. To address these gaps, the current study aims to explore how English lecturers at Vietnam's tertiary level perceive hybrid learning models by examining how they assess their TPACK in teaching approaches. To achieve this aim, a mixed-methods approach incorporating both qualitative and quantitative data was utilised. In-service English lecturers from four universities and colleges in the Southern region of Vietnam participated in the study, responding to Likert-scale surveys and taking part in in-depth interviews following the framework proposed by M.J. Koehler, et al. (2014) [1].

3. Methodology

This article applied a mixed-method approach, combining qualitative and quantitative methods. Quantitative data collected from questionnaires were analysed with the help of the SPSS 25 statistics programme while the qualitative data coded from interviews were categorised into thematic analysis.

3.1. Study site

The study was conducted with participants teaching at three universities in Ho Chi Minh city and a college in Dong Thap province. The reasons for choosing these research sites include: (1) Hybrid learning implementation, and (2) the authors' familiarity with research sites. Specifically, the most important factor is that all the research sites have implemented hybrid learning in their training programmes. Additionally, the authors have worked at the universities in Ho Chi Minh city both as full-time and visiting lecturers, and they have close connections with participants working at Dong Thap College. Therefore, they have a profound understanding of the hybrid learning implementation process in those contexts. According to C. Marshall, et al. (2011) [16], these advantages facilitate the quality of research data and research findings.

3.2. Study sample

The participants of this study consist of 35 in-service English lecturers working at four universities and colleges in Ho Chi Minh city and Dong Thap province, Vietnam. The subjects were selected using purposeful sampling. The criteria used to invite the participants for the questionnaire is that all of them have experience in applying hybrid learning in their English classes. After one week of receiving survey responses from participants, three of them were randomly selected for the semi-structured interviews. The demographic information of these interviewees is presented in Table 1.

Table 1. Lecturers' descriptions.

Name	Gender	Qualification	Years of teaching English
Lecturer C	Female	MA	10-15 years
Lecturer H	Female	PhD Student	5-10 years
Lecturer T	Female	MA	5-10 years

Source: Authors' research results.

3.3. Instruments

The experiences and opinions of lecturers towards the implementation of hybrid learning were assessed using a previously validated and reliable 5-point Likert scale survey instrument, which was first developed by Baser, Kopcha & Ozden (2015), then adapted by T. Vereshchahina, et al. (2018) [6]. The main concept of the questionnaire is to assess lecturers' self-assessment of technological pedagogical content knowledge. The original version contains 39 questions, categorised into seven main sections as follows: technological knowledge, content knowledge, pedagogical knowledge, pedagogical content knowledge, technological content knowledge, technological pedagogical knowledge, and technological pedagogical content knowledge.

However, in this article, the authors have made some adjustments to make the given questionnaire appropriate to the studied settings. Specifically, two items mentioning "collaboration tools such as Second Life, Wiki, and animation tools such as digital story tools" were excluded from the survey as they are not popular in the research settings. Thus, the survey used in this article contains 37 items.

For the open-ended questions, the authors aimed to investigate the factors that facilitate or hinder the hybrid learning process in their classrooms. The final version of the questionnaire ends with four open-ended questions to gain a deeper understanding of participants' teaching environments and their preferences in using teaching facilities. To ensure comfort in answering the questionnaire, it was translated into Vietnamese, the participants' native language. The translated version was reviewed by two other researchers to ensure understanding.

Then, a semi-structured interview was employed to gain deeper insights into the participants' perceptions, following up on their answers to the open-ended questions in the questionnaire, which highlighted factors impacting the hybrid learning process. The interviews were recorded with the participant's permission and conducted in Vietnamese.

3.4. Data analysis

In this study, as participants' opinions about the TPACK are ultimately important, the result of each section in the given survey was analysed and explained with a thematic description from interview feedback. After the screening process to get qualified responses, 30 answers were used for data analysis. The other five were not used because they had not been fully completed by the participants. Descriptive statistics presenting the means and standard deviations were used to analyse the survey results. A mean in the range of 1.0-2.4 is deemed a low level, 2.5-3.4 a medium level, and 3.5-5.0 a high level. In this case, descriptive statistics were used to profile the general level of lecturers' attitudes towards TPACK. Then, the authors used thematic analysis with the data from the interview sections. The two authors jointly coded the themes from answers recorded in the interview section with three lecturers who were willing to take part in semi-structured interviews.

3.5. Data collection procedure

Because all the research participants live in different places such as Ho Chi Minh city and Dong Thap province, the authors sent the questionnaire surveys to participants via email. After that, the study subjects who were willing to participate in the interview section were contacted and scheduled for interviews at their preferred time. For convenience sampling, three interviewees were chosen for online interviews with the authors. For the quantitative data, there were 35 responses; however, five of them did not meet the requirements of the questionnaire (these five did not complete the questions in the questionnaire), thus, they were not included in the data analysis process. For the qualitative data, the semi-structured interviews were recorded with the participants' permission. To better facilitate the interview process, Vietnamese - the participants' mother tongue - was used, then the data were transcribed into English to illustrate the respondents' ideas in this article. The interviewees were coded as Lecturer C, Lecturer H, and Lecturer T to maintain their confidentiality.

3.6. Reliability statistics

Cronbach's alpha was employed to evaluate the reliability of the five-point Likert scale utilised for data collection in pursuit of the study's objectives. The overall Cronbach's alpha coefficient is calculated at 0.845, indicating a satisfactory level of consistency among participant responses across the 35-item list. Individual Cronbach's alpha scores for each section surpass the established threshold of 0.7, which is a standard measure for assessing the reliability of responses. Overall, these Cronbach's alpha values fall within the acceptable range of 0.6 to 1, strongly suggesting the credibility of the questionnaire items for practical research purposes.

Furthermore, the researcher utilised the KMO Test to assess the suitability of the questionnaire data for factor analysis.

Table 2. KMO and Bartlett's test.

Kaiser-Meyer-Olkin measure of sampling adequacy	**.762**
Approx. Chi-Square	2,945.987
df	210
Sig.	.001

Source: Author's research results.

The KMO value computed was 0.762, as shown in Table 2, implying a noteworthy partial association among the variables. This signifies the suitability of the variables for conducting factor analysis. Additionally, the researcher employed Bartlett's test on the collected data to assess whether the variables were unrelated and unsuitable for factor analysis. As indicated in Table 2, Bartlett's test yielded Sig=0.001 (0.05), indicating correlation among the variables in the dataset. With the pertinent KMO value and the significance level obtained from Bartlett's Test, it becomes evident that the questionnaire data is highly appropriate for factor analysis.

4. Results

In this study, the perception of lecturers on the use of hybrid learning is investigated through seven specific teaching dimensions illustrated via their technology, pedagogy, and content knowledge. Regarding the detailed description of the technological knowledge dimension (Table 3), it is noticeable that the minimum mean value is M=4.17, and the maximum mean value is M=4.67. It is evident that lecturers showed their preferences towards using the necessities of computer peripherals, such as projectors and cameras, which are crucial parts of their lesson preparation for teaching language skills (M=4.67). Additionally, some basic technological terms such as wireless connection or virtual memory are much more familiar to them (M=4.63). However, these lecturers indicated their reluctance in figuring out some computer problems or digital issues in class (M=4.13). Moreover, they claimed that they were not able to install multimedia or collaboration tools in accordance with their teaching objectives. Thus, the idea of learning software to create multimedia like pictures or videos received a low level of agreement among the participants (M=4.17).

Table 3. Technological knowledge.

	Mean	Std. deviation
I can use basic technological terms (e.g., operating system, wireless connection, virtual memory, etc.) appropriately.	4.63	.556
I can adjust computer settings such as installing software and establishing an Internet connection.	4.57	.626
I can use computer peripherals such as projectors, camera.	4.67	.606
I can troubleshoot common computer problems (e.g., projector problems, Internet connection problems, etc.) independently.	4.13	.776
I can use digital classroom equipment such as projectors and smart boards.	4.30	.596
I can use office programs (e.g., Word, PowerPoint, etc.) with a high level of proficiency.	4.43	.679
I can create multimedia (e.g., video, Web pages, etc.) using text, pictures, sound, video, and animation.	4.17	.791
I can use collaboration tools (wiki, GG classroom, etc.) in accordance with my objectives.	4.33	.802
I can learn software that helps me complete a variety of tasks more efficiently.	4.33	.711

Source: Authors' research results.

Table 4. Content knowledge.

	Mean	Std. deviation
I can express my ideas and feelings by speaking in English clearly.	4.43	.504
I can express my ideas and feelings by writing in English clearly.	4.47	.507
I can read texts written in English with the correct pronunciation.	4.53	.507
I can understand texts written in English.	4.57	.504
I can understand the speech of a native English speaker easily.	4.43	.504

Source: Authors' research results.

Concerning the next dimension of content knowledge (Table 4), it is possible to assume that lecturers perceive their content knowledge relatively highly. Generally, all the survey subjects rated their content knowledge, which covers areas of skills such as listening, speaking, reading, and writing, relatively high, with the highest mean score being M=4.57 for writing skill and the lowest score being M=4.43 for speaking skill. From the collected data, these lecturers were most confident in their ability to understand written text in English (M=4.57), followed by speaking and listening. This can be understood as the subjects are all millennials who experienced a time of national education trends where the English language was trained to be grammatically oriented.

Regarding pedagogical knowledge (Table 5), the majority of participants expressed confidence in their teaching methods. Specifically, they believed in their ability to design learning experiences that match students' levels (M=4.40) and foster self-directed learning. However, when it comes to addressing all areas of students' needs, including physical, mental, emotional, social, and cultural differences, these lecturers were less confident, reflected in the lowest mean score of M=4.03. Interestingly, some survey participants expressed divergent views regarding their ability to apply knowledge gained from professional development programmes to the teaching process.

Table 5. Pedagogical knowledge.

	Mean	Std. deviation
I can use teaching methods and techniques that are appropriate for a learning environment.	4.40	.498
I can design a learning experience that is appropriate for the level of students.	4.30	.535
I can support students' learning in accordance with their mental, emotional, social, and cultural differences.	4.03	.556
I can collaborate with school stakeholders (students, teachers, IT staff, etc.) to support students' learning.	4.03	.669
I can reflect the experiences that I gain from professional development programs in my teaching process.	4.13	.681
I can support students' out-of-class work to facilitate their self-regulated learning.	4.13	.730

Source: Authors' research results.

Considering pedagogical content knowledge (Table 6), the mean values are relatively high, ranging from M=4.07 to M=4.27. Among the given statements, lecturers felt less confident in preparing curricular activities that develop students' language skills (M=4.07). However, they were confident in their ability to adapt lesson plans according to their students' language skill levels (M=4.27) and manage a classroom learning environment (M=4.23).

Table 6. Pedagogical content knowledge.

	Mean	Std. deviation
I can manage a classroom learning environment.	4.23	.679
I can evaluate students' learning processes.	4.20	.925
I can use appropriate teaching methods and techniques to support students in developing their language skills.	4.17	.874
I can prepare curricular activities that develop students' language skills.	4.07	.907
I can adapt a lesson plan in accordance with students' language skill levels.	4.27	.640

Source: Authors' research results.

Table 7. Technological pedagogical knowledge.

	Mean	Std. deviation
I can meet students' individualised needs by using information technologies.	3.90	.712
I can lead students to use information technologies legally, ethically and with respect to copyrights.	3.80	.761
I can support students as they use technology such as virtual discussion platforms to develop their higher-order thinking abilities.	3.83	.791
I can manage the classroom learning environment while using technology in the class.	3.93	.907
I can decide when technology would benefit my teaching of specific curricular standards.	4.07	.785
I can design learning materials by using technology that supports students' learning.	4.10	.845
I can use multimedia such as videos and Web sites to support students' learning.	4.13	.900

Source: Authors' research results.

Table 8. Technological, pedagogical, and content knowledge.

	Mean	Std. deviation
I can use collaboration tools (e.g., wiki, Google classroom, etc) to support students' language learning.	4.27	.521
I can support students as they use technology to support their development of language skills in an independent manner.	3.90	.803
I can support my professional development by using technological tools and resources to continuously improve the language teaching process.	4.20	.610

Source: Authors' research results.

The mean values for TPK range from medium to high, from M=3.80 to M=4.13, which is relatively lower than the other six factors, as shown in Table 7. Noticeably, the lecturers found it challenging to guide their learners to use information technologies legally, ethically, and with respect to copyrights (M=3.80). They were also hesitant to support learners in using technologies such as virtual discussion platforms to develop higher-order thinking abilities (M=3.83).

For the final dimension analysed in Table 8, TPACK, the mean scores are similar to TPK, ranging from medium to relatively high. In line with TPK, these research subjects indicated uncertainty about supporting students in using technology to develop language skills independently (M=3.90). However, they were relatively confident in using collaboration tools such as Google Classroom to support students' learning (M=4.27).

In short, the majority of the participants expressed a positive attitude towards their knowledge related to TPACK as well as the implementation of hybrid learning. Following up with the answers in the open-ended questions in the questionnaire, the collected information from the semi-structured interviews highlights the factors that affect the implementation of hybrid learning.

4.1. The factors that facilitate the implementation of hybrid learning

Qualitative data from interviews revealed two main factors that promote the implementation of hybrid learning.

Firstly, the interviewees agreed that they received significant support from their colleagues while applying hybrid learning. This help came from sharing teaching materials and solving technological problems related to lesson preparation and delivery.

Lecturer H and Lecturer C detailed:

"My colleagues guided me how to use the quizzes app to create quick check questions, which helped me a lot to engage my students".

(Lecturer H)

"At the beginning, I was confused with using MS Teams with my online class, I didn't know how to create classrooms on MS Team and assign assignments for students, but Ms. Ngoc helped me a lot".

(Lecturer C)

Secondly, the time flexibility and comfort of teaching at home brought positive aspects to hybrid learning. These lecturers expressed strong support for the convenience of time and the comfort of working from home. They believed these points significantly contributed to their support for the implementation of hybrid learning.

"When teaching hybrid, I have much time at home to prepare for the lessons, learning how to use new teaching apps such as Kahoot, instead of rushing on the street for hours."

(Lecturer H)

In short, all the interviewees strongly believed that support from colleagues, time flexibility, and the comfort of teaching at home are the main factors that facilitate hybrid learning.

4.2. The factors that hinder the implementation of hybrid learning

On the other side, several factors hinder the hybrid learning approach, including poor internet connection, low technology skills, learners' reluctance, and unsuitable textbooks.

Firstly, all the interviewees claimed that the most significant factor influencing the quality of hybrid learning is the internet connection. Without a stable internet connection, hybrid learning is meaningless. Poor connection negatively impacts lesson outcomes and learners' attitudes.

Lecturer T highlighted the main issue affecting the quality of hybrid teaching and learning is technology skills. Lecturers need to be well-prepared to use teaching platforms or apps to increase learners' interest. However, not every lecturer is confident with their digital literacy, especially older generations.

She said:

"*Technology skill is the most concerning. Especially with some older lecturers, they are not comfortable or inexperienced when using so many tech applications."*

(Lecturer T)

Another issue is students' reluctance to adapt to the new teaching and learning mode. According to Lecturer C, even though some students easily accept and follow the guidelines of hybrid learning, others are still unwilling. These students resist turning on cameras while studying or turning on cameras but do other activities.

Lecturer C evidenced:

"*In some of my classes, I have to repeatedly ask students to turn on their cameras. Sometimes, I heard the background noise coming from a place that's not supposed for learning as in the football field."*

(Lecturer C)

Unsuitable textbooks were also considered a significant issue negatively impacting hybrid learning. All the interviewees raised concerns about the textbooks during their hybrid teaching. The designed teaching activities are often for offline rather than online classes. For offline sections, the teaching content is appropriate, but it is challenging for lecturers to prepare lesson plans for online classes.

"*The current teaching material is outdated. The groupwork tasks were designed for offline learning, not for an online environment."*

(Lecturer H)

In summary, the dominant factors negatively influencing hybrid learning implementation include poor internet connection, low technology skills, learners' reluctance, and unsuitable textbooks.

5. Discussion

The study investigated lecturers' perceptions of hybrid learning across seven teaching dimensions, covering TPACK. Lecturers showed proficiency in basic technology but struggled with technical issues. They felt confident in content knowledge, particularly in written English. While they were adept at matching learning experiences to students' levels, they expressed hesitation in preparing activities for language skills development. Facilitating factors for hybrid learning included colleague support and teaching flexibility, while challenges encompassed poor internet connectivity, low technology skills among lecturers, student reluctance, and unsuitable textbooks.

The findings of this study highlight several issues needing consideration:

Firstly, the majority of participants expressed strong support for hybrid learning, aligning with T. Vereshchahina, et al. [6]. However, despite their enthusiasm, participants expressed concerns about reluctance to install multimedia tools to create videos, part of technological knowledge. This concern was shared by T. Vereshchahina, et al. (2018) [6], who found creating multimedia resources and collaborating on internet-based platforms to be the least prevalent skills among lecturers. The study also highlights lecturers' reluctance to troubleshoot computer problems, calling for future research to focus on analysing lecturers' technical knowledge.

Secondly, the study highlighted that some lecturers' perceptions of hybrid learning were not positive, especially those familiar with traditional teaching pedagogy. This finding is consistent with Hoang & Thao (2012), cited in N.T. Hoang (2015) [17], claimed lecturers were unprepared professionally and mentally for technology-driven teaching. This article argues that the gap between professional development programmes and teaching practices contributes to this reluctance. As Lecturer T mentioned, even though they were trained to use additional functions on platforms like MS Teams and Zoom, more time is needed to apply this knowledge in teaching practices. This finding underscores the importance of organising appropriate professional training activities to prepare lecturers for new teaching modes.

Thirdly, regarding factors hindering hybrid learning effectiveness, the study highlighted the need for suitable teaching resources, especially textbooks. Lecturer C explained the difficulties in designing teaching activities for hybrid classes using textbooks meant for traditional classes. It is recommended that suitable textbooks with activities for both online and offline learning are necessary for this new teaching mode. This issue warrants further research into the role of teaching materials in facilitating hybrid learning pedagogy.

Lastly, the study mentioned factors positively facilitating hybrid learning, such as teaching flexibility. With flexibility, lecturers can better manage their time and design appropriate teaching activities to increase student engagement. This suggests a future trend towards online education. M. Ioannou, et al. (2020) [18] confirm that much work and education have continued online with technology's help. In such scenarios, hybrid learning, combining face-to-face and online teaching, is a potential solution.

In short, issues related to lecturers' reluctance to adopt new media apps, lack of suitable professional training, and appropriate textbooks are critical areas for further research on hybrid learning.

6. Conclusions

The rapid development of technology has prompted both learners and lecturers to consider suitable teaching modes. While face-to-face learning remains dominant, hybrid learning is gaining importance. Understanding lecturers' perceptions of hybrid learning implementation and their readiness for TPACK is crucial. The findings assert that the majority of participants support hybrid teaching with technology. However, concerns remain about digital literacy, reluctance to use updated tech applications, the gap between professional training and teaching practices, and suitably designed textbooks for both learners and lecturers.

Theoretically, this study sheds light on the perspectives of English lecturers at the tertiary level regarding hybrid learning in Vietnam. It contributes to filling the gap in the literature concerning the application of hybrid learning among English educators, emphasising the TPACK framework. By exploring lecturers' self-perceived perspectives, the study provides valuable insights into how educators integrate technology, pedagogy, and content knowledge in hybrid learning. The findings offer theoretical implications for understanding the challenges and facilitators encountered by English lecturers when implementing hybrid learning, informing future research in educational technology and pedagogy.

Practically, fostering collegial support systems for educators to share resources and best practices is indispensable. Teachers are suggested to prioritise professional development in technology skills through workshops and coaching, collaborate to adapt curriculum and develop resources suitable for hybrid learning, employ engaging strategies like multimedia content and interactive activities, and proactively address student resistance with orientation sessions and clear guidelines. At the administration level, stakeholders are suggested to address connectivity issues by investing in infrastructure and providing technical support, and continuously evaluating and improving hybrid learning implementations based on feedback.

In conclusion, understanding lecturers' perceptions of hybrid learning and factors influencing their practice, such as TPACK, is crucial in the current technology-oriented education landscape. This article presents its results with a small sample size; thus, more research with a larger sample size is needed to provide a comprehensive picture of hybrid learning, especially in the EFL context.

CRediT author statement

Truong Thi Thanh Canh: Conceptualisation, Methodology, Validation, Data analysis, Writing; Tran Thanh Tan: Data Collection, Conceptualisation, Writing, Reviewing and Editing.

COMPETING INTERESTS

The authors declare that there is no conflict of interest regarding the publication of this article.

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DOI: 10.31276/VMOSTJOSSH.2023.0101 **EDUCATIONAL SCIENCES** | OTHER EDUCATION; **POLITICAL SCIENCES** | POLITICAL SCIENCE; **HISTORY AND ARCHAEOLOGY** | HISTORY

Enlightenment thoughts in Vietnam and Korea: Focusing on the thoughts of renovated education by Nguyen Truong To (1830-1871) and Yu Gil-Jun (1856-1914)

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Abstract:

The 19th century was a significant period of history for Vietnam and Korea when numerous challenges ignited by the West had become more visible and critical. To prolong the rule of the royal family, Vietnam and Joseon decided to shun the gateway to the outside world. In such a context, Dai Nam's and Joseon's intellectuals became alert and commenced to seek for optimal resolutions to revive their countries' vitality. The authors selected the two most important thinkers from Dai Nam and Joseon: Nguyen Truong To (1830-1871) and Yu Gil-jun (1856-1914). These two ideologists were born right prior to the fall of their states. Both exhibited an acute interpretation of the current situations which were happening within the entire Sino-sphere; hence, strongly enunciated remedies for their own country. Specifically, the authors try to illuminate the commonality and disparity between the two typical intellectuals who were born in the nineteenth century in each respective country to provide a keen insight into the struggles of Dai Nam and Joseon's adaptation in the process of modernisation in East Asia.

Keywords: **enlightenment intellectuals, enlightenment thoughts in Vietnam and Korea, Nguyen Truong To, Yu Gil-jun.**

Classification numbers: **3.4, 5.1, 8.1**

1. Introduction

1.1. Comparative premises for the research

The 19th century was deemed to be an important period when premises for the changes and development of East Asian countries were gradually set. This was the period where interference and confrontation between the East and the West were taking place across the East Asian countries [1].

History is not simply a description of events with statistical achievements, or an inventory of consequences caused by a particular incident. History, as seen, should be the behavioral analysis of an individual or a group of individuals as large as a nation in a specific context with specific factors that form those behaviors such as cultural space, socio-political background, etc., together with cause-and-effect relationships amongst those determinants. In Meg Gorzycki's opinion, history can also be seen as a lesson about social psychology on a macro scale, which subsequently provides social policymakers with an effective reference tool in the national governance process [2].

Until the 19th century, Vietnam and Korea were still largely subjected to Chinese political influences. Although each country had to face new challenges arising in their own territory, it was vital for them to ensure that their responses to whichever challenges, had to be consistent with the national interests in relation to China. However, the 19th century was a period that evidenced the decline of the Chinese

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empire over the entire Asian continent. Numerous Chinese essentials that used to be seen as ‘civilised’ in terms of cultural, political, and arts perspectives were consistently either reviewed or refuted. In such context, by the mid to late 19th century, East Asian countries witnessed the emergence of reformist ideas such as the Self-Strengthening Movement in China, Meiji Restoration in Japan, Enlightenment (개화 Kaehwa) in Korea, the call for modern reforms like those of Nguyen Truong To (1830-1871), Nguyen Lo Trach (1853?-1895?), etc. in Vietnam.

As one of the most significant intellectuals who contributed to the formation of the Enlightenment movement during the latter half of the 19th century in Korea, research on Yu Gil-jun (1856-1914) was conducted in various aspects. Besides, there are also a variety of research works which compare Yu Gil-jun’s thoughts with other Korean intellectuals’ innovative thoughts, or with other intellectuals from China or Japan. In particular, the authors pay special attention to the comparative study of the thoughts of innovative education between Yu Gil-jun and Fukuzawa Yukichi (1835-1901) - a prominent Japanese thinker during the Meiji Restoration period. On the other hand, in Vietnam, regarding comparative research on innovative thoughts of Vietnam and Japan during the 19th century, it is typical to mention the work by Nguyen Tien Luc (2005) “A comparative study of reformist ideas of education in Vietnam and Japan in the mid-19th century: Focusing on the “real study” thoughts of Nguyen Truong To and Fukuzawa Yukichi”.

The authors are inspired by the above academic works. We focus on the connectedness of ideological movements in each East Asian country at a certain decisive moment for the nation’s destiny. To manifest this purpose, by analyzing the ideology of two typical educational reformers in Vietnam and Korea, Nguyen Truong To (1830-1871) and Yu Gil-jun (1856-1914), respectively, the authors mainly focus on explicating how the role of education was perceived as well as exploring the trajectory of education reforms in the context of the 19th century when many regional challenges constantly arose.

1.2. Vietnam and Korea between the East Asian geopolitical changes in the 19th century

1.2.1. The disintegration of the Chinese tribute system

After the end of the Imjin War (1592-1598) (Japanese Invasion of Korea) led by Hideyoshi Toyotomi (1537-1598)’s expansionism policy into mainland Asia, Japan under the Edo Shogunate almost conducted non-official diplomatic relations in the form of tribute with the Qing dynasty [3]. Despite that fact, Japan maintained trade relations with China through the gateway of Joseon and Nagasaki in southwestern Japan [4]. The Qing dynasty maintained its good relations with other neighboring countries, Vietnam and Korea included, under the tribute system established in the Ming dynasty.

By the 19th century, on the path of “Escape from Asia” (탈아), after years of covertly buttressing the field of Oceanology (i.e., 양학 Western Studies), Japan managed to keenly encounter Western thoughts as well as adopting the technology of the West. Consequently, Korea’s role as a bridge in trade and diplomacy between Japan and mainland Asia progressively became less important. Meanwhile, China under the reign of the Qing, began to decline in terms of international and regional prestige resulting from major events such as the Taiping Rebellion, or the defeat of the Qing empire in the two Opium wars. Subdued by the Japanese during the First Sino-Japanese War (1894-1895), China was forced to cede the imperial control over the Korean peninsula to Japan. At the same time, due to the disastrous impacts of the Taiping Rebellion, Vietnam’s Nguyen dynasty had to terminate the tribute rituals to China for about 10 years. Vietnam’s tribute practice to the Qing empire was later restored in the 1870s under the Tu Duc period (1847-1883). However, it is noticeable that during this period of regional chaos, China was no longer aware of the ongoing French invasion of Vietnam [5].

1.2.2. Pressure of foreign interference

a. Vietnam

When Nguyen Truong To peaked his maturity of ideology and started to send testimonies to king Tu Duc, Nguyen dynasty’s kingship and territorial sovereignty were also being challenged severely by the French colonial government. One of the most lethal attacks to the reign of the Nguyen dynasty was seen through the Treaty of Saigon (1862)[1], by which three important provinces such as Bien Hoa, Gia Dinh, and Dinh Tuong were yielded to the French. The loss of these provinces was fatal to the Nguyen dynasty since these three regions were important economic and political outposts before and after the establishment of the dynasty [6]. This Treaty was later extended into a more severe treaty, the "Treaty of Saigon (1874)" by which the Nguyen dynasty once again turned over another three Southwestern regions to France [6].

Since the Treaty of Saigon (1862), bewildered by the encroachment of Christianity and lost in finding proper ways for dealing with the internal and external pressure related to Christianity, Tu Duc's government gradually lost trust in the literati class within his kingdom. Also, since his enthronement, king Tu Duc had to tackle legitimacy issues. His unrest conflicts with the court mandarins and literati across the country and aggregated the drastic decline of the Nguyen dynasty's prestige. Thus, it is generally stated that the social and political situation of the Nguyen dynasty in the mid-19th century was either in a conservative or stagnant state. This state of the Nguyen royalties in the 19th century made a step backwards in terms of progressiveness compared to the social and political characteristics of the Dang Trong (Cochinchina) autonomous region, which were recorded to be more dynamic and open-minded in the Westerners' journey diaries [7].

b. Korea

Since the 19th century, Korea encountered intense provocations from Western powers with the frequent appearance of exploration ships from the West. Before the 19th century, the appearance of these ships did not cause any significant turbulence to Joseon's national security, which was different from what happened within the 19th century when their encroachment was constantly met with violent clashes. In addition, the *sedo* (세도 Power Politics) political government was mainly under the control of the two powerful maternal families of the Yi royalties known as the Kim clan of the An Dong region (安東 金氏) and the Jo clan of the Pungyang region (豐壤 趙氏). Political competition between these two clans caused constant tension within the central governmental factions which weakened the king's power. During the same period, Korean history also recorded several factional purges which projected Christianity as the main cause of the moral decline of Joseon's social tradition.

From the mid-19th century, *sedo* politics were suppressed, which helped to secure central power for the king, Heungseon Daewongun (흥선대원군, 1821-1898) started to deal with Western ideas which were considered a major threat to his efforts of rebuilding a traditional social order. He ordered to build Anti-appeasement steles (척화비 cheokhwabi) across the kingdom, warning people not to trade or try interacting with Western ideas. Heungseon Daewongun's rejection and suppression of Western ideas caused great discontent among Western countries. Joseon's anti-Western policy led to violent clashes with a French ship in the *Byeongin Yangyo* incident (병인양요 French Expedition to Korea) (1866) and with a US ship in the *Shinmi Yangyo* incident (신미양요 United States Expedition to Korea) (1871). Throughout these incidents, Joseon succeeded in resisting and repelling the provocations of the two powerful Western countries. Heungseon Daewongun's successful resistance against the West as such instigated an arrogant mentality which further helped the Joseon court to tighten their closed-door and anti-Western policy [8]. Unfortunately, under the Ganghwa Treaty (강화조약 Japan-Korea Treaty of 1876), Joseon was forced to unlock the kingdom's door, marking the inescapable period of foreign intervention in Joseon's political process, which ultimately revealed the fragility of Joseon's closed-door policy (쇄국정책) in the 19th century.

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[1]The Treaty of Saigon (1862) was signed by the Government of King Tu Duc under the internal and external pressure. At that time, the Northern part of the Kingdom became chaotic due to constant rebellions while the Southern part was gradually occupied by the French.

1.3. Summary of life and activities of Nguyen Truong To and Yu Gil-jun

1.3.1. Nguyen Truong To (1830-1871)

Nguyen Truong To was born in 1830 into a Catholic family of Confucian background. His father was a Confucian and a Catholic who fervently practiced Vietnamese traditional medicine [9]. Due to the family background, Nguyen Truong To got acquainted with a Confucian education at a young age. According to Truong Ba Can (1988), Nguyen Truong To obtained in-depth knowledge of Chinese characters and excelled at composing poems, whose ability was not at all inferior to any Mandarins at Nguyen's Court. Unfortunately, despite the outstanding capacity, he did not thrive in the national civil examinations. After several failures to pass the exams, he quit conventional studies and opened a Confucian school to teach Chinese classics in his hometown. During this time of adulthood, he happened to meet with Gaultier - the French bishop with whom he learned the French language.

Likewise, growing up during the reign of King Minh Mang (1791-1841), Nguyen Truong To had direct contact with Western ideas while witnessing the decline of the Nguyen dynasty throughout the reigns of King Thieu Tri (1807-1847) and King Tu Duc. Especially during the reign of King Tu Duc, although not a mainstream scholar in the society, his innovative ideas were attracted by the Tu Duc government including major court mandarins with bipolar attitudes: both excited and cautious. During the King Tu Duc period, Nguyen Truong To's reformist ideology was expressed mainly through testimonies sent to Tu Duc's court within the 1860s and onwards [9].

1.3.2. Yu Gil-jun (1856-1914)

According to Yu Yeong-ik' (1995), Yu Gil-jun studied Chinese classics with his father and grandfather since his childhood [10]. Yu Gil-jun studied hard for the Joseon civil examinations. In the 7th year of King Gojong (1870), Yu adopted Silhak (실학 Practical Learning) ideology when encountering Kim Ok-kyun (김옥균, 1851-1894) whom he shared similar thoughts with [11]. Later, by the age of 19 (1874), he abandoned the path of Confucian examination and was fascinated with Western ideas. In 1881, Yu became the first Korean student in Japan. From then, he spent some time in Japan and visited America to explore Western ideas, culture, and institutions. During his overseas studies, Yu studied at Keio University where he worked under Fukuzawa Yukichi and Edward S. Morse's supervision - two prominent enlightenment thinkers of Japan and America.

While studying in Japan, Yu Gil-jun participated in the activities of Heungaheu (흥아회) - an organisation established with the purpose of uniting the three Northeast Asian countries Korea, China, and Japan. Through active participation in Heungaheu, Yu also managed to extend exchanges with Japanese scholars and politicians of his time. In 1882, during the Imo Incident (임오군란), Yu Gil-jun stopped studying in Japan on Min Young-ik (1860-1914)'s proposal and returned to Korea in January of the following year. In the fall of 1884, Yu Gil-jun started studies at Governor Dummer Academy, becoming the first Korean student in America. However, having known the debacle of the Gapsin Coup (갑신정변 1884), Yu decided to halt his studies in America in the winter of the same year. He then departed for European countries to further explore Western societies and returned to Joseon in December 1885.

After returning to Joseon, he began taking part in enlightenment movements which aimed at reforming the social system and awakening Joseon ordinary classes as a progressive activist both inside and outside of the government. Among many published works, the book *Journey to The West* (서유견문 西遊見聞) written in Korean and Chinese, it was one of the most significant since it substantially contributed to enlightening the Joseon people, and promoted ideas of progressive reforms. Via the book, Yu asserted that the Joseon dynasty's prosperity could only be attained providing that its people would have been nurtured with progressive and civilised thinking [12].

Later, Yu Gil-jun became involved with the activities of the pro-Japanese cabinet, established at the outbreak of the first Sino-Japanese collision ignited by the Donghak peasant movement in 1894. After the Eulmi Incident (을미사변 Assassination of Empress Myeongseong) (October 1895), Yu approached Japanese minister Inuoe to request an investigation into the case. In February 1896, when the pro-Japanese cabinet collapsed and a pro-Russian cabinet was established, he was forced to flee to Japan [10]. After the dethronement of King Gojong in 1907, Yu Gil-jun returned to Joseon to serve as deputy leader of Heungsadan (흥사단) and chairman of the Hanseongbu People's Assembly (한성부민회). Facing the loss of Joseon to the hands of Japanese colonists, Yu Gil-jun did not hesitate to take part in many anti-Japanese movements.

It can be concluded that Yu Gil-jun was born and raised in a turbulent period of Korean society during the late Joseon period. He directly witnessed all the changes and decided to confront the recession of his fatherland. These societal factors of late Joseon in the 19th century evidently influenced Yu Gil-jun's perception of renovative education.

2. Nguyen Truong To and Yu Gil-jun's thoughts on renovative education in Vietnam and Korea in the 19th century

2.1. Nguyen Truong To's thoughts on renovative education

2.1.1. Awareness of the role and reality of education

After unifying the country and establishing his kingship in 1802, King Gia Long (1762-1820) advocated for the restoration of Confucian ideology along with Confucian traditional social order by encouraging education of Chinese classics and organising civil examinations to select talents for the government [13]. Since the period of King Ming Mang, the Nguyen dynasty's process of "Sinicisation" was accelerated and extended throughout the reigns of King Thieu Tri and King Tu Duc [14].

As a man of 19th century Vietnam, driven by his family background, Nguyen Truong To himself also pursued a social advancement path but did not achieve much success. However, compared to others of his time, his early exposure to Western ideas provided him with an in-depth comparative vision of the strengths and weaknesses between Vietnamese traditional education and education of the West [15]. After giving up his pursuit of social status via the conventional civil examinations, Nguyen Truong To led a life of solitude, separating himself from his current society to take the standpoint of a quiet observer contemplating the changing world and to consolidate his perception of Vietnam in the 19th century. From the standpoint of an intellectual observing Vietnamese society, he expressed disappointment at the degeneration of the Nguyen dynasty's scholarship. In the Third Testimony "Grand Discussion on the Divided World" (*Thiên hạ phân hợp đại thế luận*) sent to King Tu Duc's court in 1863, he frankly said: "People often take advantages of education as a means of seeking honor and social advancement" while, at the same time, affirming his studies simply a means of "repaying what God has given me to learn". He spent all his life to prove that he did exactly as what he stated from the standpoint of an innovative intellectual, outside the officialdom: "At the court, I have no position, I do not attend banquets" [9].

Nguyen Truong To highly regarded the core value and role of education in building a strong nation. However, education with its purpose and mission manifested by Nguyen Truong To was to focus on "practical learning" (thực học). He articulated that "Learning and cultivating talents" was "an important key to the ups and downs of the past and present, to the prosperity and decline of we - ourselves and the others" [9]. He also clearly stated his views on "practical learning", such as: "In ancient times, someone was called a great saint because that person knew how to utilise things to serve humanity" [9]. By saying so, he emphasised to intellectuals that learning needed redefining as a means of serving social benefits which should be prioritised over the purpose of satisfying personal needs. Meanwhile, since the founding of the country, the Nguyen dynasty implemented a "respecting farmers, inhibiting traders" (trọng nông ức thương) policy which identified scholars with higher social status than others who created material wealth for the society. Such social stratification based on type of occupation was also known as "agricultural, industrial, commercial, scholar" (sĩ nông công thương) order [16]. These two factors led to the phenomenon of a corrupted education situation in which the learners were keen on pursuing fame, seeking higher positions while forgetting common social interests, contributing greatly to the cause of cultural and social decay in the Nguyen dynasty.

2.1.2. Proposal for education reform in Vietnam

Impressed with Japan's proactive reform movements during the Meiji Restoration period, Nguyen Truong To reported this to the Nguyen court. In his testimony, he positioned the Japanese as more civilised than the Chinese, thereby criticising the old-fashioned studies style of Vietnam literati in the 19th century.

Having had the opportunity to approach Western ideas and visit Western countries at a young age, Nguyen Truong To possessed a distinctly positive view of the Western thoughts of education. However, he also emphasised that learning from the West should not be equal to the obliteration of traditional values, but rather be equated with enhancing the national internal strength against external pressures and challenges. Many of his proposals hinted at the tendency of human resource development found in Japan during the Meiji Reformation period.

2.2. Yu Gil-jun's thoughts on renovative education

2.2.1. Awareness of the role and reality of education

Yu Gil-jun's progressive thoughts were deemed to have taken shape during his years of studying abroad in Japan and America. Returning to the Korean peninsula, he directly participated in the government and was enthusiastic about cultivating the people through renovative education. Yu Gil-jun realised that in the process of state building, human factors played a paramount role which always served as the foundation for a civilised society development. Therefore, Yu Gil-jun wrote and translated many works related to education in Japan and other Western countries to promote intellectual improvement for all classes in the society at his time. Yu's thoughts were particularly similar to Fukuzawa Yukichi's thinking, such as: "the difference between the wise and the fool is due to education" [17].

As aforementioned, Yu Gil-jun's "Journey to the West" is one of the most significant sources to be examined to deeply explore a variety of Yu's thoughts. The work analyses modern Western civilisation through the experience of observing and experiencing European-American culture, "The Civilisation Situation" (實狀開化), one of the archetypal works, compiled on the analysis of Western civilisation through observing and interacting with European and American culture seemed to be suitable for the situation in Joseon [11]. Yu's perspectives on civilisation progress were of great significance in which he criticised outdated traditional viewpoints while promoting the studies of Western thoughts. Yu's progressive thoughts were formed based on the doctrines of human rights, social contracts of the West, and the renovative ideology of Japan during the Meiji Restoration period [12].

Many of Yu's reformist ideas became the theoretical foundation for the enlightenment movements after the Gapsin incident in 1894. Yu Gil-jun pointed out the negative effects of learning by memorising Confucian classics. After experiencing the education systems in Japan, America, and exploring Europe, Yu Gil-jun strived to expand education to the whole society as part of his education reform thoughts. To him, studying abroad was strongly recommended as a major accelerator for the enlightenment process. In the context that the Joseon society was not open enough to accept new ideas from the outside, Yu Gil-jun sought help from Fukuzawa Yukichi to have his *Journey to the West* book published in Japan [11]. Similar to Fukuzawa, Yu stated that "learning does not mean just learning difficult words, reading difficult ancient texts, enjoying poetry, etc. Ordinary people are often concerned about the future, and thus, are not willing to spend all their property for their children to study such things. This style of learning needs renovating into practical learning which closely meets people's daily needs" [17].

2.2.2. Proposal for education reform in Joseon

Korean scholars in Korea previously analysed many aspects of Yu Gil-jun's work *"Journey to the West"*. His renovative ideas of education were analysed from a historical perspective. In that light, Yu was said to have adopted ideas from his instructor Fukuzawa Yukichi - in the aspects of political economy, and Edward S. Morse, an American biologist - in the aspect of Western science and technology [11]. The content of Yu Gil-jun's work "*Journey to the West*" includes two parts. Part one is the translation of the political economy of the West extracted from Fukuzawa Yukichi's book. Part two, written by Yu, is the idea of "education for all" at which the outline of his modern and traditional views on education were revealed [12]. In the book, Yu argued that: "All things can reach an extremely good state. Currently, no country has reached such a state. Only the West is pioneering at this point. Anyone who tries their best will reach civilised enlightenment" [12].

At the same time, he denounced a trend of enlightenment ideology that unconditionally praised Western civilisation without fully understanding it. Also, he disagreed with those who verbally attacked whoever argued the negative aspects of the West as: "those who stand in the way of enlightened civilisation" [12]. Yu Gil-jun's thoughts on this issue are seen closely to Yukichi's ideas of promoting "practical learning": "All those, who are properly educated, acknowledge the benefits of knowledge, and think that it is an advantage worthy of efforts and sacrifices. However, ignorant people are quite indifferent about its benefits. This is one of the serious effects of their ignorance. It is truly heartbreaking to witness the indifference of parents in educating their children. They do not see any benefit for their children to bury their heads in books, nor are they grateful to the teachers who make efforts to learn and come to educate their children" [17].

To Yu Gil-jun, civilised reform in the East must be executed by understanding the superiority of the West providing that the cultural essence of the East should not be ignored but enhanced. Truly civilisation was required to maintain Eastern moral values while learning Western civilisation in terms of scientific and technological advances. Yu Gil-jun's interpretation of Eastern civilisation can be found in his instructor's sayings- Fukuzawa Yukichi: "Independence of a nation or of an individual cannot be separated from knowledge and civilisation" [18].

3. Conclusions

3.1. Similitude through historical and political perspectives within the boundary of each country

First of all, it is to mention the similarity in the social and historical context in which the two innovative thinkers- Nguyen Truong To and Yu Gil-jun- grew up. Vietnam and Korea in the second half of the 19th century witnessed multifaceted political and social decadence resulting from the passive and conservative proclivity of the Nguyen dynasty and Joseon dynasty. These two dynasties blocked themselves into a trap of Confucian ideology, and closed their borders to the West, ultimately limiting their internal strength to respond to foreign pressures.

Secondly, it also refers to the rapid social changes of Vietnam and Korea along with the process of adolescence of both. Nguyen Truong To and Yu Gil-jun were both passionate about learning. They can be seen as 'social products' born from the intersection of East Asian traditional thoughts and newly adopted Western ideas. Both did not achieve much success on the traditional academic lifepath. But their constant efforts of studying were the motivation for the two innovative thinkers to keep learning to deepen their insights into their fatherlands.

Fascinated by the overwhelming power of the West, Nguyen Truong To and Yu Gil-jun advocated reform modeling from the West. Both placed a significant role on "practical learning" in which teaching subjects contributed to the spiritual and material enhancement were encouraged while refuting the old-fashioned teaching and learning in Vietnam and Korea in the 19th century. However, sharing common ground, Nguyen Truong To and Yu Gil-jun both called for education reform following the West without losing cultural quintessence and national identity. At this point, it can be concluded that Nguyen Truong To and Yu

Gil-jun' thoughts were more or less impacted by the idea of "dongdoseogi" (동도서기 Theory of learning Western technology while fully preserving East Asian values) which was widely argued around East Asian countries in the 19th century. In fact, among the four nations of the East Asian cultural zone, no country succeeded in actualising this "dongdoseogi" theory. Self-strengthening Movement in China, Bukhak theory (북학론 Northern Learning) - one theoretical branch of "practical learning" (silhak) in Joseon, including the reform movements in Vietnam in the late 19th century were all deemed a failure in the flow of history of the East. The only East Asian country managing to hit the road to modernisation was Japan. But before that, Japan advocated the "Exit Asia" theory (탈아) which was typically reflected in Fukuzawa Yukichi's ideas of modernization.

3.2. Personal variability through historical and political perspectives

The objective distinction between the two reform thinkers of Vietnam and Korea in the mid-19th century is noted to have a slight differentiation in the adolescence background and in period, and the span of reform activities. Compared to the Vietnamese counterpart, living much longer than Nguyen Truong To, Yu Gil-jun had ample time to perform as a reform activist. As a result, Yu Gil-jun's influence did not stop at just theoretical debate, he had more opportunities to enforce his thoughts into reality. From this point, Yu Gil-jun was historically depicted differently in comparison with the Vietnamese thinker. Nguyen Truong To, on the other hand, was somewhat pessimistic about life until his death. Despite the short time of working as an interpreter for the French, Nguyen Truong To tormented himself for many years. It was said that because of the guilt, he inhibited himself from participating in public affairs to affirm his purity and integrity.

However, the above difference is not as noticeable as the difference in the inheritance of ideas of "practical learning" identified by the dissimilarity in the political mobilization of each country. Specifically, Nguyen Truong To was the earliest pioneering reformist who requested reforms to the Nguyen court. Before that, there were no harsh voices from the intellectuals which could strongly challenge the political foundation of the dynasty. The Nguyen dynasty was the last political force which successfully survived amid struggles with other major political clans after the Le Trung Hung period. Meanwhile, the Korean political situation during the Joseon period was chaotic. Apart from the Japanese invasion of Joseon (1592-1598) and the two conquests of the Qing Dynasty in the early and mid-17th century, Joseon's political foundation was relatively stable. However, such three upheavals were the premise for Joseon's academic revisionism to rise. One of those revisionist thoughts to be mentioned is Silhak (practical learning).

Since the birth of the "practical learning" theory, a number of Joseon innovative ideas in the 19th century originated from the idea of "practical learning". With longer historical development of "practical learning" ideas and a variety of divided sects, Yu Gil-jun was favored with a profound environment to grow into a truly influential thinker in Korea when compared to Nguyen Truong To in Vietnam. As a result, Yu Gil-jun "enjoyed" better conditions to "enter the world" than Nguyen Truong To - the first and "lonely" reform thinker.

Lastly, Nguyen Truong To was one of the very few Vietnamese intellectuals in the 19th century who had the opportunity to visit Western countries. During his trip, he happened to encounter Japanese people whose nation was thriving while on the path of "Exit Asia". Nguyen Truong To's interest in Japan - a country in East Asia was inevitable, but his understanding of Japan including the impact of the Meiji Restoration was unlikely to be as profound as compared to Yu Gil-jun who spent time studying and living in Japan.

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COMPETING INTERESTS

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Is the TRIPS Agreement a double-edge sword?

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Abstract:

Globally, the Agreement on trade-related aspects of intellectual property rights (TRIPS Agreement) is widely adopted as a prerequisite for World Trade Organisation (WTO) membership. This Agreement represents the first international benchmark for minimum intellectual property rights (IPRs) standards. It obliges the Member States to implement national laws that protect and enforce domestic IPRs, encompassing technology innovation, technology dissemination, access to healthcare, and biotechnology. However, the efficacy of the TRIPS Agreement in equitably benefiting all Member States, particularly those in the developing world, with regard to public health needs and healthcare access, remains questionable. Moreover, the TRIPS harmonisation project, a focal point in multilateral discussions, raises significant interest. Undoubtedly, the primary aim of this harmonisation is to enhance the efficiency, uniformity, and coherence of IPRs systems across Member States. Yet, the appropriateness of applying a 'one-size-fits-all' policy to nations at varying stages of development warrants scrutiny. This article employs the recent TRIPS Agreement provisions and comparative methodology to examine the fundamental impacts of the current TRIPS framework, alongside the practical benefits and challenges associated with its implementation.

Keywords: **biotechnology, harmonisation, healthcare, intellectual property rights, technology.**

Classification number: **6**

1. Introduction

In the contemporary global market, we observe rapid advancements in the creation of intellectual properties, such as designs, inventions, and artistic works. Consequently, an effective framework for the protection of IPRs is essential, not only to deter infringements but also to facilitate the recovery of compensation for any resultant losses and damages. The inception of the TRIPS Agreement [1] signifies a milestone in safeguarding and enforcing IPRs for Member States of the WTO.

Moreover, the significant success of the TRIPS Agreement lies in its requirement for Members to adhere to specified minimum standards for intellectual property protection [2]. Consequently, over a hundred nations, encompassing both developed and developing countries, have implemented the TRIPS Agreement [3]. The integration of the TRIPS Agreement within the WTO's framework represents arguably the most extensive and ambitious endeavour to harmonise IPRs globally, aiming to establish unprecedented international uniformity in this domain. Nevertheless, the impact of the TRIPS Agreement's harmonisation on countries at varying stages of development remains a contentious issue. This paper seeks to elucidate this matter by examining recent regulations and legal journals, thereby providing an overview of the principal effects and critical challenges posed by the TRIPS Agreement.

2. The Agreement on trade-related aspects of intellectual property rights

2.1. Background

To facilitate the reduction of international trade barriers and the promotion of high standards in intellectual property globally, the Uruguay Round of the General Agreement on Tariffs and Trade (GATT) [4] uniquely introduced multilateral negotiations on "trade-related IPRs" [5]. In 1994, the emergence of the Agreement on TRIPS Agreement was acknowledged as a key achievement in the trade negotiations that spanned eight years [6].

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The Preamble to the TRIPS Agreement clearly expressed the goal to 'reduce distortions and impediments to international trade' between developed and developing countries worldwide. In order to achieve its objectives, the TRIPS Agreement asks the WTO Members to provide the minimum standards of protection in each sector. Specifically, these standards encompass what should be protected, the rights granted, allowable exceptions to those rights, and the minimum duration for which protection should be ensured.

More significantly, Article 8 of the TRIPS Agreement ends with the provision on two principles. Firstly, Members to 'adopt measures necessary to protect public health and nutrition, and to promote the public interest in sectors of vital importance to their socio-economic and technological development, provided that such measures are consistent with the provisions of this Agreement'. Secondly, the principle allows Member States to introduce "appropriate measures, provided that they are consistent with the provisions of this Agreement, may be needed to prevent the abuse of IPRs by right holders or the resort to practices which unreasonably restrain trade or adversely affect the international transfer of technology". It can be seen that these principles have become a vital point of reference, which would allow domestic laws to address instances of dominant market position abuse or monopolistic practices by leading companies.

Unlike earlier IP conventions, the TRIPS Agreement attracted 160 WTO Member States, highlighting its global significance. Clearly, the TRIPS Agreement has set out minimum standards for the protection and enforcement of all significant IPRs, including copyrights, trademarks, and patents, under a single agreement [7].

2.2. The main effects of the Agreement on trade-related aspects of intellectual property rights

The TRIPS Agreement has prompted WTO Members to enhance domestic protection of IPRs. It provides legal frameworks for all WTO Member States to formulate standards that align with their IPR requirements [8]. However, the impact of the TRIPS Agreement varies across different sectors and is influenced by each nation's level of development. This paper will delve into the main effects of the TRIPS Agreement in various sectors.

Innovation of technology: 'Protection' is regarded as central to the current international intellectual property system, compelling Member States to prioritise IPR protection in national legislation [9]. Article 7 of the TRIPS Agreement, under its Objectives provision, identifies one of the goals of developing minimum standards for "the protection and enforcement of intellectual rights" as contributing to technological innovation [4]. In essence, the TRIPS Agreement prioritises technological advancement [7].

Most developing and least developed countries are seen to have limited scientific and technological capabilities [10], often due to inadequate facilities and underdeveloped infrastructure. Implementing the TRIPS Agreement in these States is likely to encourage technological innovation. Research indicates that robust IPR protections can attract more foreign direct investment [11]. Over 80% of pharmaceutical, chemical, and electrical equipment companies in industrialised nations like the United States and Japan consider the strength of IPR protection in a host country as a critical factor influencing investment decisions in research [12]. Recently, foreign direct investment in developing countries increased from 52.3 to 74.3% between 2020 and 2021 [13].

While foreign investment is not directly influenced by the TRIPS Agreement, it significantly impacts investment levels in a nation. Article 7 of the TRIPS Agreement underscores international investment protection by setting IPR protection standards [14]. These standards are seen as key elements considered by foreign investors when selecting locations for their manufacturing facilities.

The dissemination of technology: Article 7 of the TRIPS Agreement stipulates that "The protection and enforcement of IPRs should contribute to the transfer and dissemination of technology". It is incumbent upon developed states to promote and encourage technology transfer, technical cooperation, and legal assistance [15] to developing and least-developed nations to establish and develop "a sound and viable technological base" [4].

In practice, foreign investment and licensing are common methods for technology transfer between countries. For instance, Germany has exported solar panels and wind turbines to Pakistan [16], and Chinese investors have imported clean coal technology from the USA [17]. However, it is predominantly private companies, rather than developed countries, that effectively facilitate technology transfer. Some scholars argue that 'developed States are reluctant to transfer technology to developing and least-developed countries' [18], despite such transfer being a crucial prerequisite for these countries to build a technological foundation.

Presently, technology transfer tends to be conducted by small and medium-sized enterprises. By obtaining licensing for IPRs in new markets, such as developing or least-developed countries, these companies establish subsidiaries to introduce and transfer technology [19]. Yet, developed nations and multinational corporations tend to dominate licensing activities [20]. Specifically, only ten developing countries account for 91% of all cross-border technology license fees [21], and parent corporations and their international subsidiaries receive 70% of global royalties and license payments [20]. Although Article 66(2) outlines the responsibilities of developed countries concerning the transfer and dissemination of technology to developing and least-developed nations, some Member States limit their support to technical assistance in implementing the TRIPS Agreement, rather than actively encouraging technology transfer. Consequently, the TRIPS Agreement's impact on technology transfer faces challenges in bridging the technology gap.

Access to health care: Article 27(1) of the TRIPS Agreement mandates that all Member States grant patents for all inventions, "whether products or processes", in all technology sectors, including pharmaceutical patents. This requirement is highly controversial, as many pharmaceutical patents are directly linked to fundamental human rights, notably the right to life and the right to enjoy physical and mental health [22].

Prior to the TRIPS Agreement, both developing and developed States were reluctant to grant pharmaceutical patents, considering the health and developmental objectives of each nation [23]. The implementation of the TRIPS Agreement in developing countries' medical systems is likely to produce inconsistent effects. In some developing nations, the introduction of pharmaceutical patents could lead to exorbitant medicine prices, rendering them unaffordable for the majority of the population. Consequently, a primary concern for developing and least-developed countries is maintaining stable drug prices. For example, India, which experienced rapid expansion in its drug development sector from 1970, had some of the highest medicine prices among developing countries [24]. In response, India not only revoked protection for pharmaceutical patents but also regulated drug prices. Undoubtedly, by reducing pharmaceutical prices, India not only stimulated its local medical industry but also improved the health status of its population.

Additionally, a significant issue arises when pharmaceutical patents are protected: major pharmaceutical corporations such as Pfizer, Johnson & Johnson, and Moderna may consolidate power. Decisions regarding medicine costs will be controlled by these large corporations, impacting the developing world, particularly during health crises. Patent decisions over pharmaceuticals can have significant effects, especially when the world faces severe pandemics like COVID-19, Ebola, or HIV/AIDS.

Recognising the challenges in accessing healthcare in developing countries, Paragraph 6 of the Doha Declaration (2001) on the TRIPS Agreement and Public Health addressed this concern: "We recognise that WTO Members with insufficient or no manufacturing capacities in the pharmaceutical sector could face difficulties in making effective use of compulsory licensing under the TRIPS Agreement. We instruct the Council for TRIPS to find an expeditious solution to this problem and to report to the General Council before the end of 2002" [25]. After two years of negotiation, the WTO General Council declared that the TRIPS Agreement should be implemented to protect public health and promote access to medicines for all. Consequently, "the obligations of an exporting Member under Article 31(f) and 31(h) of the TRIPS Agreement shall be waived with respect to the grant by it of a compulsory license to the extent necessary for the purposes of production of a pharmaceutical product(s) and its export to an eligible importing Member(s)..." [26]. Thus, countries with limited capacity to produce generic medicine can import medicines from other states without paying royalties, as the exporting country has already compensated for this [27]. This measure has partially resolved the issue of medicine access in developing countries. For example, while an individual in the USA might pay 15,000 to US $20,000 annually for HIV/AIDS treatment using patented drugs, in South Africa, the cost is only $88 per year for generic treatments [28].

Biotechnology: Article 27 of the TRIPS Agreement mandates that patents be available in all technological sectors. Unlike traditional techniques, biotechnology is a costly endeavour, requiring significant research investment and being vulnerable to duplication by competitors through reverse engineering. Therefore, enhancing IPRs in biotechnology is prioritised under the TRIPS Agreement to protect innovators against risks.

Developed-country Members are experiencing a rapid increase in biotechnology protection. For instance, in 1930, the United States was the first country to protect asexually reproduced plant varieties [29]. In 1998, the United States Patent and Trademark Office (USPTO) issued patents for a mouse genetically altered to aid cancer research [27]. Although developed countries are striving to promote IPRs over biotechnological products, challenges exist. Ethically, some Member States' religions object to claiming ownership over living entities, leading these nations to develop intellectual property systems aligned with their religious values and beliefs. Environmentally, the effects of altering the genetic makeup of living organisms are largely unknown [19], necessitating careful regulation and testing of biotechnological innovations to prevent major environmental damage [19]. Consequently, the granting of biotechnology patents is a topic of ongoing debate and concern, with some arguing for delayed patent awards until a better understanding of the environmental consequences is achieved. Because of these reasons, the award of patent rights for biotechnological is raising concerns and discussions.

2.3. Some issues raised by the Agreement on trade-related aspects of intellectual property rights

The TRIPS Agreement is not considered a static legal document, as the TRIPS negotiators have included several regulations within the Agreement to formulate a future work plan, termed a 'built-in agenda' [30]. Enforcing the TRIPS Agreement requires WTO Member States to enhance their review processes and comply strictly with the Agreement to maximise IPR protection. However, some Member States, particularly developing states, face challenges in ensuring that the TRIPS Agreement reflects and meets their socio-economic needs. Issues raised and discussed in the 'built-in agenda' include four core areas: Article 27.3(b) of the TRIPS Agreement, Geographical indications (GIs), Traditional knowledge (TK) and Folklore, and Non-violation complaints (NVC).

Article 27.3(b) of the TRIPS Agreement: Article 27.3(b) allows Member States the option to exclude patents on biological inventions related to 'plants and animals other than micro-organisms' and 'biological processes for the production of plants or animals other than non-biological and microbiological processes'. Yet, it also mandates Member States to 'provide for the protection of plant varieties either by patents or by an effective sui generis system or by any combination thereof' [4]. As part of the 'built-in agenda', this subparagraph was subject to review four years after the entry into force of the WTO Agreement. During the review process, the TRIPS Council collected information from Member States on their approaches to these issues in national intellectual property law. Two primary concerns raised by Members were: (1) The patentability of certain life forms and whether there should be exclusions for any such invention; and (2) How to strike a balance in the protection of plant varieties between private and community interests and other issues such as farmers' rights and maintaining biodiversity [30].

Additionally, controversies among Member States exist concerning biotechnology patents. This provision is seen as lacking harmonisation between the TRIPS Agreement and the Convention on Biological Diversity (CBD) [31], as well as in the linkages between patent protection and the facilitation of technology transfer. Firstly, there is debate over potential conflicts between the TRIPS Agreement and the CBD [32]. While the CBD includes exclusive provisions on bio-piracy and bio-trade [31], the TRIPS Agreement does not provide a legal framework for access rights. Moreover, not all WTO Members are parties to the CBD, leading to legal challenges in cases of bio-piracy infringement for those who are signatories to the TRIPS Agreement but not the CBD. Secondly, concerns arise regarding whether the transfer of biotechnology might inadvertently facilitate bio-piracy, given the TRIPS Agreement's objectives include technology transfer and dissemination. Nevertheless, it appears there is no direct conflict between the TRIPS Agreement and the CBD, as Member States can implement both Agreements in a mutually beneficial manner through domestic intellectual property legislation [32].

Geographical indications: Under the TRIPS Agreement, GI is defined as a sign used on goods "originating in the territory of a Member, or a region or locality in that territory, where a given quality, reputation or other characteristic of the good is essentially attributable to its geographical origin" [4]. Examples include 'Champagne' from France and Jersey Royal potatoes, which received Protected Designation of Origin status in 1996 [33]. Although GIs are primarily used for food and drinks, the Doha Ministerial Declaration sparked debates about extending higher-level protection to other products. Currently, the TRIPS Agreement only provides protection for GIs for wines and spirits [4]. Some Member Nations, including the European Union, Switzerland, and several developing nations, advocate for more extensive protection in this area, arguing that enhanced GI protection can help these nations oppose the 'usurpation' of geographical phrases [30]. Also, a GI extension will encourage localized production, thus contributing to the preservation of traditional cultures and boost national identity.

Traditional knowledge and folklore: The protection of TK and folklore was highlighted in the Doha Declaration in 2022 [34]. The international community is debating the necessity of actions to protect TK and folklore. Although traditional knowledge and folklore issues do not fit well into the overall picture presented in the Conference programme, an increasing number of Member States express concerns about this issue. Concerns include the inappropriate granting of patents or other IPRs to entities without legitimate rights to these TK and folklore and the unauthorised use of TK and folklore by those who did not generate them [35]. Despite being part of the 'built-in agenda', discussions on this issue have been somewhat limited. However, the Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional knowledge and Folklore (IGC) is developing legal mechanisms to protect these valuable global resources.

Non-violation complaints: Article 64.2 of the TRIPS Agreement initially imposed a five-year moratorium on NVC from the WTO Agreement's entry into force. Article 64.3 tasked the Council of TRIPS with examining the scope and modalities for such complaints [4]. In practice, the moratorium on using NVC under the TRIPS Agreement has been extended several times by various Ministerial Conferences and the General Council in 2001, 2005, 2017, and 2019 [30].

There are ongoing debates among Member States regarding the applicability of NVC to the TRIPS Agreement. On the one hand, some members argue that NVC is a crucial part of the WTO dispute settlement system across all WTO agreements, playing a pivotal role in guaranteeing a balance of benefits during multilateral negotiations with WTO Members. They contend that the moratorium provision in the TRIPS Agreement should be removed. On the other hand, others believe that the TRIPS Agreement does not directly address issues of market access and tariffs. Consequently, incorporating NVC into the TRIPS Agreement system could potentially conflict with the general policies and goals of the national intellectual property system in each country [30].

3. The harmonising effects of the Agreement on trade-related aspects of intellectual property rights

Harmonisation has been a prevailing trend from the late nineteenth century through to the end of the twentieth century [36]. Through multilateral treaties such as the Paris Convention for the Protection of Industrial Property (the Paris Convention) in 1883 [37] and the Bern Convention for the Protection of Literary and Artistic Works (the Bern Convention) of 1886 [38], the movement for the harmonisation of IPRs is evident in both substantive and procedural aspects relating to creative works and industrial property. Particularly, the TRIPS Agreement has significantly influenced efforts to harmonise IPRs [39]. The TRIPS Agreement establishes global standards for the harmonisation of intellectual property, but these standards and procedures do not follow an ad hoc basis [40]. As a result, Member States, especially those from developing countries, may find it challenging to meet these international standards during the national adaptation process. While the implementation of the TRIPS Agreement has been ostensibly accepted by all WTO Members, there are ongoing complaints about the difficulty in meeting its requirements [41]. Debates persist over whether the harmonising effects of the TRIPS Agreement promote or hinder the sustainable development of Member States.

In practice, for development to be achieved, each nation should focus not only on boosting finances but also on increasing diversity and paying attention to the quality of achievements. Most IPR provisions focus on sustainable development, meaning that the TRIPS Agreement's harmonisation reflects a process of cultural adaptation for each nation. Rules including copyright, patent, or trademark under the TRIPS Agreement influence the dissemination or transfer of technology between developing and developed countries. Its harmonisation impacts community control over the protection of TK and folklore, and access to essential drugs and pharmaceuticals [42]. The TRIPS Agreement's efforts to narrow barriers and create new boundaries for the patent protection of life forms and biological materials are significant for both the developing and developed worlds. In a global context, some developing countries may apply the TRIPS Agreement based on their unique legal and cultural diversities, while considering public interests and overall community development [40].

However, in some cases, the TRIPS Agreement's harmonisation can hinder sustainable development due to the lack of flexibility in its implementation in developing states, limiting their freedom to customise IPR strategies to suit their national economies. The Doha Development Agenda highlights the role of global commerce in achieving sustainable development within the intellectual property system [43]. There are concerns that policy provisions on IPR offered by developed nations, which could affect rights, are prioritised in the development policies of developing and least-developed nations [44]. Consequently, instead of creating opportunities for these nations, the TRIPS Agreement's harmonisation can hinder development and exacerbate the challenges in adjusting and implementing the TRIPS Agreement in the developing world.

Unlike other WTO agreements, the TRIPS Agreement is the primary agreement harmonising IPRs, including trademarks, patents, copyrights, and trade secrets, and sets minimum standards. However, whether the TRIPS regime is effective depends not on vague terms such as 'adequate and effective,' 'fair and equitable,' as expressed in its objectives and purposes, but on its degree of acceptance in practice. To some extent, the TRIPS Agreement is also seen as a 'very mixed bag' [9], filled with numerous multilateral regulations to protect the international IPR system. Nevertheless, in the context of current unbalanced world economies, it would be significantly beneficial if the TRIPS regime were reformed to help "a country's IPR regime coevolve with its economy" [45] in response to changing global needs.

4. Conclusions

All WTO Members, including both the developing and developed world, have accepted the TRIPS Agreement as a global policy to reduce "distortions and impediments to international trade", while "promoting effective and adequate protection of IPRs" [4]. In practice, the TRIPS Agreement is effectively playing its role in maintaining balance and bringing together the long-term interests of Member States.

However, there are still issues arising during the implementation of the TRIPS Agreement that Member States must confront and address, such as biotechnology, GI, and the protection of TK. Additionally, concerns remain about the effects of the TRIPS Agreement's harmonisation on the development of Member States. Evidently, the evolving global IPR system, akin to a "double-edged sword" [40], has both stimulating and hindering effects on society as a whole.

COMPETING INTERESTS

The author declares that there is no conflict of interest regarding the publication of this article.

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School, family, and children's development in *Time Store* and *Be Friend with The Sky*

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Abstract:

In recent years, many South Korean children's literary works have been translated into Vietnamese. Meanwhile, some beautiful Vietnamese pieces are translated into Korean. The translation has led to cultural interactions through literature, expanding the horizon of young readers in the two countries. From that reality, the article applies the juxtapositional model of comparison to examine two pieces of work *Time Store* by L.N. Young (2015) [1] **(South Korea) and *Be Friend with The Sky* by N.N. Anh (2019)** [2] **(Vietnam) to explore new meanings of each work. If *Time Store* emphasizes the role of time pressure on children in modern society, *Be Friend with The Sky* affirms the healing role of love for children. By juxtaposing these two pieces of work and specifically analyzing child characters in their interactions with school, family, and their self-advocacy, the article shows dialogues in opposite directions, which eliminates the viewpoint of the role of adults towards children in the two pieces of work mentioned above. Besides, through the juxtapositional model of comparison, the article also discusses the interactions between Vietnamese and South Korean children's literature in the early 21st century.**

Keywords: **child's development, children's literature, juxtapositional model of comparison.**

Classification number: **9.2**

1. Introduction

"A complete work cannot be completed", this statement by N.V. Trung (2019) [3] means that the meaning of a work continues to expand along with the reception of its audience, especially the masterpieces. However, it seems to be hard to avoid subjectivity and take a certain stance when reading or criticizing a literary work. In particular, when practicing comparative literature, scholars often consider Western literature as "mainstream or canonized literature." Meanwhile, literature from non-European countries is easily viewed as "non-literature, unworthy of being the object of literary studies" [4]. The juxtapositional model of comparison proposed by scholar Susan Stanford Friedman in her article "Why not compare?" can be considered a new direction of comparative literature. It is an attempt to replace the usual way of canonical comparison through contrast and comparison. "This model looks for hidden connections and connections between works, regardless of the country where the work comes from and regardless of its place in the national or international literature" [4]. When "randomly juxtaposing unfamiliar works, allowing them to interact and converse with each other on topics," this model can "neutralize forms of hegemony, towards equality and mutual respect for knowledge and culture," so it is "especially useful for marginalized cultures in the world literary map" [4]. Thus, the juxtapositional model of comparison can be considered a useful approach to neutralize hegemony, expand the scope of meaning creation, and stimulate the possibility of dialogue between different works.

This model also demonstrates its advantages when applied to analyze literary works written for children, which are often considered "marginal" to literature written for adults. The article applies this model to explore South Korean children's literary works translated into Vietnamese and Vietnamese ones translated into Korean in the first two decades of the 21st century, focusing more on *Time Store* by

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L.N. Young (2015) [1] (South Korea) and *Be Friend with The Sky* by N.N. Anh (2019) [2] (Vietnam). Child characters from two completely different linguistic and cultural countries are juxtaposed to clarify their relationships with school, family, and themselves. The dialogue between the two pieces of work on these issues erases the crucial role of adults in children's lives, pointing out the necessity of eliminating the viewpoint of children as miniature adults who can shoulder the pressures of life and take responsibility for the future.

2. Some interactions between Vietnamese and South Korean children's literature in the early 21st century

As Aidan Chambers stated, "it is through literature that we most intimately enter the hearts and minds and spirits of other people" [5], children's literature may allow readers to enter the secret world of children where adults have no way to return to reality. Children's literature, therefore, has the power of a comeback with readers who are no longer children, accompanying readers who are children. In other words, children's literature has a dual impact on both adults and children, and therefore the best children's books are always those that simultaneously appeal to both children and adults throughout the ages. Translating and reading children's works from different languages always open up discoveries across borders, adding meaning to the discovery of literary works.

At the beginning of the 21st century, many Korean children's books were translated into Vietnamese, most of which are stories recommended for reading by the Ministry of Education in South Korea such as *Salmon* by Ahn Do Hyun (2015), *Bad Baby Voucher* and *Long-Haired Blue Dog* by Hwang Sun Mi (2015), *Father and Son of Stickleback Fishes* by Cho Chang In (2017), *The Escaped Hen* by Hwang Sun Mi (2019). In the opposite direction, *Diary of a Cricket* by To Hoai, *Give Me a Ticket to Childhood* and *I am Be To* by N.N. Anh, and *Opening The Window, Eyes Closed* by Nguyen Ngoc Thuan are Vietnamese children's works translated into Korean. This phenomenon is part of the movement of literary translation promoted in both countries in the early 21st century when a lot of South Korean literary works were translated into Vietnamese, such as *When Buckwheat Flowers Bloom* by Lee Hyo Seok (2011), *Somewhere There is a Phone Calling Me* by Shin Kyung-Sook (2014), *Sun Falls* by Ko Hyung-Ryul (2019), and many Vietnamese works were translated into Korean like *Proclamation of Victory* by Nguyen Trai, *Casual Records of Transmitted Strange Tales* by Nguyen Du, *The Tale of Kieu* by Nguyen Du, *Prison Diary* by Ho Chi Minh, *The Sorrow of War* by Bao Ninh, *Winter Poetry* by Huu Thinh, *Endless Fields* by V. Doan (2021) [6]. According to Nguyen Quang Thieu, president of the Vietnam Writers' Association, one of the causes of this phenomenon is that "South Korean culture, especially literature and arts, has increasingly been reaching out to the world, touching the hearts and minds of Vietnamese readers", "it has a significant status in Vietnamese literary life" [7]. South Korean writers themselves are aware of "bringing their literary works to the world" [8]. The fact that many Vietnamese works were translated into Korean also reflects the status of Vietnamese literature in South Korean literary life. The increasing number of translated works in the 21st century shows that the literary and cultural exchanges have increasingly been deepening between the countries which established diplomatic relations more than thirty years ago and have become "comprehensive strategic partners" in 2022 [9].

In the context of promoted cultural exchange between Vietnam and South Korea in the early 21st century, children's literary works translated from Vietnamese into Korean and vice versa reveal dialogues concerning the viewpoints of children and literature written for children. South Korean works show that children are under pressure from family, school, and society and are affected by family events from quite an early age. Children must share the difficulties and pressures of life with their parents and participate in creating the future. Even child characters face serious illness, death, and disaster. The plots of these works are often complicated and twisted. The writers highlight contrasting pictures or use fantasy and exaggeration. The works rarely have a happy ending. South Korean writers seem to see child characters as miniature adults and socially responsible citizens in the future, so they need to participate in dealing with civil society issues when they are young. Meanwhile, *Diary of a Cricket, Give Me a Ticket to Childhood, I am Be To,* and *Opening The Window, Eyes Closed* show a different viewpoint: Children are children, who can live according to their age, are seen in the present, and do not have to face mass trauma and losses. Vietnamese works do not use complex or complicated structures but delve into the beautiful world containing many secrets of children's souls, and they often have happy endings. Therefore, these works not only appeal to readers with their gentle and romantic content but also can heal, as pointed out by Dasanbooks Publishing House's representative in the introduction to the work *Give Me a Ticket to Childhood* by N.N. Anh: "This book gives adults warm memories of childhood and gives children the joy of viewing interesting diary entries of their same-age friends" [10].

Time Store and *Be Friend with The Sky* are two beautiful pieces of work in the children's literature in Vietnam and South Korea. L.N. Young's *Time Store* won the 13th Korean Munhakdongne Children's Literature Award. After being published in hardcopy form in a large quantity[1], N.N. Anh's *Be Friend with The Sky* was adapted into a play and released in audiobook form [12]. If *Time Store* focuses on exploring the issue of children and the pressure of academic achievements and time pressure, *Be Friend with The Sky* exploits the issue: how does a child live when time stops at the sickbed? Being a fantasy story, L.N. Young's work attracts readers with many elements of adventure and fantasy, especially adventure in space and time, between the past and the present. Meanwhile, *Be Friend with The Sky* impresses readers with its simple plot, realistic writing style, and the beauty of a child's imagination. Although there exist many differences, the two pieces of works aim to portray the image of children in their relationship with school and family as well as children's own choices to go through the events of childhood.

3. School and the joy of children's learning

The term "children" in the article refers to people of primary school age (6-12 years old) [13]. This is the first stage of every child's learning journey where children face many differences compared to later childhood, kindergarten, or adolescence. The Primary School stage, because it is the first level of education, has a great influence, leaving a deep impression throughout each child's future learning journey. Through studying at school, children not only learn knowledge and skills, but also develop their awareness, existing abilities, and potential. In today's schools, the goal of helping children learn to develop comprehensively is always set. Learning in the elementary school years is important in that it lays the foundation for future knowledge and skills, awakening joy and the desire for knowledge in children.

Time Store is about a girl named Yoon Ah, a fifth grader, while *Be Friend with The Sky* is about a boy, Teo, who is in third grade but had to quit school for medical treatment because he fell and injured his spine. Yoon Ah's life mainly revolves around going to school and most of Teo's lifetime passes in a small bed while he reads books, draws pictures, or looks at the sky. While Teo is tied to a fixed space (his sickbed) but completely free in time, Yoon Ah is always urged by notifications about time in every space, including home, school, tutoring center tutor, or fast food store. Many notifications can be found in *Time Store*, such as: "because the unexpected general cleaning of the classroom in which I finished school late", "Tomorrow there is a midterm exam", "a math exam will be in the second period"; "Today is a flute lesson. Even the flute has a proficiency test in a few days"; "The day has come for the contest for excellent math students"; "After the science test in the fourth period, the midterm exam officially ends" [1]. Associated with the time factor are the specific requirements and tasks of little Yoon Ah as well as her friends. The writer does not describe specifically and in detail the space, the school landscape, the architectural beauty of the school, or the beauty of the teachers, but mainly informs about the tasks each student needs to perform, which is associated with time pressure. Even though the clock is not present in the classroom, it is always ticking in each child's mind. Therefore, we often see images of girls and boys rushing, running, eating very quickly, and walking very quickly to be on time for school. Hurrying but still late. Even tutoring at the center is associated with time pressure. The teachers' lectures or the joy of studying are not described, but announcements about the time are always heard through the teacher's bright voice like: "Lee Yoon Ah, you're late!", "Yoo Young Hoon, you're late!" [1]. Coming late results in a penalty. The punishment is usually extra homework. That means students have to take more rest time to continue studying. Information about time creates the message that school cannot exist outside of time. Must speed up and hustle to be able to complete students' learning tasks. Highlighting the elements of time and blurring the elements of space, the writer makes the characters become small, blurred, and almost disappear in space.

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[1]*Be Friend with The Sky* was first published in 130 paperback copies and 20,000 hardcover special copies [11].

While Yoon Ah was always at the top in her old school, when she transfers to this new school, she struggles, no matter how hard she tries, she only ranks second behind her friend Soo Young. At the new school, the students' main job is to study and take exams. The pressure of exams makes her exhausted. On Saturday, she did not have a day off because she "had to attend a history presentation class and an invention class at school" [1]. The girl's appearance is described exactly once: "thin, short, with an ordinary face" [1]. The writer focuses on portraying the activity that dominates her entire time, which is studying, studying, and doing homework continuously, without stopping as a "machine." She is not an isolated case, at this new school, all fifth-grade students are racing against the program and time. With math alone, "it's natural to be familiar with 6th-grade math, many children even study the secondary school math program"[2] [1]. Of course, "those in the top 5 of the class always take advantage of their time to study or do homework" [1].

Those heavy pressures stem from the death of Yoon Ah's father, who was the family's breadwinner. Yoon Ah's mother, who was only concerned with housework, now struggles to earn money to support Yoon Ah and her. Worrying about the future makes Yoon Ah's mother work tirelessly, and she wants her daughter to study well so she can have a successful career in the future. In order not to fall behind, to please her mother, and to get first place in her school, Yoon Ah has to buy time with a special watch at the *Time Store*. Every ten minutes she buys costs her a happy memory. The metaphor of this watch which can buy time with happy memories is a symbol of children losing their childhood. To get high marks, students have to lose their real joy and happiness. Children whirled in the vortex of time, just like machines assembled to carry out learning tasks. Adults' worries about their children's future have become a burden placed on children's shoulders. Yoon Ah, like most of her friends in class, hardly finds joy in studying. Instead, they diligently, quietly, and alone complete their learning tasks, because her mother always reminds her that "Life is a series of exams" [1]. There is no other way but to try and try. In *Time Store*, the school image is blurred and replaced by information concerning students' time and specific tasks. Children are put in short, constantly changing periods such as the duration of a class, an exam, or ten minutes of testing new words, which creates a stuffy, stressful atmosphere for the work. There, children are helpless, not having enough time to complete the tasks set by their teachers. They have to "buy time" - a metaphor for children losing their childhood and present happiness to achieve the results expected by their parents. Being deep in Yoon Ah's story is a new concept about children that is being formed and applied in many countries, especially developed countries: Super Child. "Like Superman, Super Child has spectacular powers and abilities beyond his/her age, even as an infant. This allows us to think that we can motivate that little superpower machine without any consequences" [14].

In *Be Friend with The Sky*, the images of schools and teachers are sketched with only a few lines. Instead, N.N. Anh focuses on describing the games, conversations, and dreams of Teo and his friends. Because Teo has a spinal injury and has to lie motionless in bed, the main space depicted in the story is the world around Teo's bed. After school, fifth graders always run back to Teo's house to play and ask for his support, because Teo can help them solve math problems, draw pictures, and clarify something they do not understand in class. Although Teo does not go to school, he is considered a "treasure," the center of connection and sharing of sad and happy stories of the children in the town.

The two pieces of work show that school affects children in different ways. One work includes the dizzying, consecutive learning tasks that make children have to speed up and brace themselves to complete them. In the rest, learning is seen as a simple, everyday thing, mixed in with the rhythm of activities and play. Little Yoon Ah's school is associated with the modern pace of life in a developed country, requiring all the youngest citizens to keep up with the pace of development. In contrast, Nghi, Lam, and Hang's school is a town school with academic tasks that do not cause heavy pressure. Juxtaposing the schools in the two pieces of works also reveals questions about the role of schools with children. Should children learn under the pressure of Super Child's training? Or should children learn without any pressure? What is necessary for children?

Little girl Yoon Ah, at the end of the work, refuses to continue buying time, she breaks the special watch in the hope of returning to normal life. That ending

[2]According to the South Korean education system, primary school lasts from first grade to sixth grade, and from seventh grade to ninth grade is secondary school.

shows that school, although necessary, cannot place on children the burden of achievement and the burden of plans, which causes children to lose both memories and time in the present. *Be Friend with The Sky* shows a different perspective. Where one study does not matter. Learning can take place even when a child is bedridden and unable to go to school. Inherent in every child is the desire to learn which may help children learn gently and happily if it is awakened. The boy Teo does not go to school, nor go to any tutoring centre, but his loving uncle and brother became the best teachers to help him not only be good at math, good at writing, and like to read poetry, but also know how to dream and draw beautiful pictures. Thus, teachers, schools, curricula, and exam pressure can bring certain results in a short term, but educators and parents, instead of early educational intervention of finding ways to make children learn a lot of knowledge, should help children awaken the desire to learn and the potential available in each child. Thereby, the educational effect will be truly lasting. No matter where learning is conducted, in modern, comfortable conditions or a simple, deprived environment, it can bring happiness to children.

Through the character Yoon Ah in the South Korean work, a picture of academic pressure weighing heavily on children in many developing Asian countries such as China, Taiwan, Japan, and some other countries can be seen. Vietnam is probably behind the above countries in terms of economic and social development, so although the signs of time pressure and achievement pressure can be found in social situations, they have not yet appeared clearly in Vietnamese literature. This situation first comes from the fact that the above countries want to create a superpower region in education, so they have turned schools into fiercely competitive environments where children have to endure heavy pressures. This can be seen through news in the press, such as South Korea's popularity as a country where children "bear the burden of learning at a very early age" [15]. Education is considered the most optimal way to fulfill family's and society's expectations, that is why "when they were children, South Korean people are expected by their parents to be admitted to an elite university, becoming a civil servant or working at a South Korean *chaebol* (large corporation) like Samsung, LG, or Hyundai" [16]. Most South Korean people pursue these goals, so in reality, they are forced into a narrow path with fierce competition. The fact children are overwhelmed by academic pressure not only in Korea but also in Taiwan. A 2023 survey by the Taiwan Children's Welfare Federation found that "Taiwanese children do not get enough sleep, are sedentary, and are under heavy pressure in studying" [17]. It is remarkable that "15% of children 'felt lonely' and nearly 30% of children felt that 'the world does not matter without me'" [17]. In Japan, the leading developed country in Asia, the Ministry of Education statistics that "in 2000, the number of student suicides reached 1,207 cases per year. It means that on average, 3 students committed suicide per day" [18]. A report on March 2, 2023 in *Japan Times* informed that "there were 512 student suicide cases reported in 2022, including 17 primary school students, 143 secondary school ones, and 352 high school ones" [18]. Pressure from school, society, and at a macro level, pressure from national development have directly affected the childhood and spiritual development of children in many Asian countries. Literary works reflect what exists and typify a real situation: the happiness of children is gradually disappearing.

Time Store warns about the situation of children losing the present, losing their memories to pursue future goals through the story of a primary school student in South Korea. That situation can also come from another reason: the inferiority complex towards Europe and America has made Asian countries determined to accelerate economic growth. Many Asian countries aim for rapid development while ignoring several other important goals regarding culture, society, or issues of spiritual life. The desire to create a brilliant prospect through training excellent human resources for the future also brings downsides and mistakes in reality. The imbalance in education has caused many countries to pay high costs for damage to children's souls.

The ways the two pieces of work solve problems seem to contradict each other. N.N. Anh aims for a romantic, idealized solution: promoting the role of love. Thanks to the love of his uncle, foster mother, foster brother, and friends, the boy Teo, even though he was on a bed, could still study well and live happily. Paralyzed legs cannot prevent him from making friends with the free sky. This solution shows that on the one hand, the role of love is very important for children, but on the other hand, it is not easy to obtain in real life. Meanwhile, the South Korean girl solved her problem with a drastic protest: breaking the time clock, and refusing to buy time to return to ordinary life. The academic pressure is still there and children have to accept it. Thus, the reality has not changed even though children's attitudes have changed. It is difficult for readers to have faith in the change in the future schools.

The practical solution probably lies in the change in awareness and educational philosophy of each country. It is necessary to be aware of the limited power of educators and that the true meaning of education is for the development and happiness of children instead of setting non-for-children goals. Achievements, jobs, and the future are the destination, but are they everything? What is the price to pay if children's happiness is no longer, because of pursuing success in the future? The juxtaposition of the two pieces of work by N.N. Anh and L.N. Young raises educational questions that are current issues in Korea and Vietnam.

4. Family and children's development

Children's literature, as C. Fadiman's argument, is a piece of literature where "the 'discovery' of the child (…) is the most salient. It is independent to the degree that, while it must meet many of the standards of adult literature, it has also developed aesthetic criteria of its own by which it may be judged" [19]. Discovering children is considered one of the main and especially important tasks of this piece. Experiences show that no two children are the same, so there is no general formula or single model for the image of children in literary works. However, every child has fundamental needs, including: 1. The need for safety and affection; 2. The need for independence and freedom; 3. The need to be understood, according to French researcher T.G. Décarie in the book *The Secret World of Children* [20]. The three needs above reveal that families play a crucial role for children. Born and raised in peaceful, happy families, children will be safe and sound. If their parents are educated, knowledgeable, and loving, they will also have a certain respect and independence. The need for understanding will also be satisfied if children have a good learning environment. An elaborate American study shows that "during the period from when children go to school until they reach adolescence, the family plays an important role in the socialization process, although Its role is not so dominant as in the first years of life (…) During this time, parents negotiate on behalf of the child with these other agents of socialization, but their parenting function is mainly manifested through interaction with the child" [21]. Other research and reality shows that children always depend closely on their families. Family influences shaping a child's personality, lifestyle, and future. Nevertheless, children are independent individuals. Not only "receiving" impacts from their family, but children also have independent thoughts and actions, and affect to their family. As society develops, children's sense of independence and initiative increases. The bilateral relationship between children and adults in families demonstrates the movement and development of each child's awareness and personality.

The question of children in families lacking fathers and/or mothers can be seen in *Time Store* and *Be Friends with The Sky*. How does the lack affect the material and spiritual lives of children? Do children passively accept their circumstances or observe, adapt, and choose their behavior? Little girl Yoon Ah had lived in a happy, peaceful family till the time when "her father passed away from stomach cancer" [1]. That was a big shock for Yoon Ah and her mother. From then on, the lives of Yoon Ah and her mother completely changed. Yoon Ah comes home late because she has to attend extra classes, and her mother comes home even later because she works overtime to make money. The pressure of time weighs heavily on them. Despite being stressed, her mother is always conscious of making an accurate schedule, "stuffing" more knowledge into Yoon Ah when she has breakfast, which makes her chew rice like "chewing sand" [1]. Her peaceful family has disappeared, replaced by an increasingly profound loneliness and disconnection between Yoon Ah and her mother.

The situation of the character Teo in *Be Friend with The Sky* is also very miserable. He was abandoned by his biological parents when he was born. He thought the two people who raised him were his biological parents. Teo's foster father thought the boy was his wife's stepchild, so he always rejected and treated him cruelly. However, the boy loves his foster mother, foster brother, and even his foster father. One time, Teo's foster father was drunk and fell on the bridge. To save him, Teo fell into the stream. His spine was injured so seriously that he had to be bedridden. Teo's foster father regretted his previous cruel treatment, so he tried everything to cure and compensate Teo, but it was too late. Teo's space now shrinks around the bed, the room, and the window through which he sees the sky.

The two pieces of work show that turmoil from adults, especially parents, has a great influence on children. The absence of a parent or family member can leave huge voids in a child's soul. However, the two pieces of work show children's different reactions to losses and trauma from their families. Yoon Ah always feels lonely in the classroom, in the cold house, gradually losing memories of happiness and the ability to feel happiness while chasing higher and higher goals set by her mother. The little girl realizes that she wants to make her mother happy, but her feelings are not happiness but emptiness, worry, and confusion. By showing that family events have a great impact on children's lives, *Time Store* warns that the present cannot be exchanged for future goals. Meanwhile, *Be Friend with The Sky* shows that life's events, even being abandoned by parents, can hardly take away the good things in a child's mind and soul. N.N. Anh's romantic view affirms that as long as they are loved, children will be strong enough to overcome storms and obstacles as the way Teo overcomes his adversity. Teo receives endless love from his foster mother and brother. He is taught at home by his uncle and foster brother. Everyone loves him. That love makes the boy cheerful and happy, nurturing his dreams.

The stories of Yoon Ah and Teo show that family plays a crucial role in the development and happiness of children. However, they also reveal the independent role of children in the face of life's events. On the one hand, children must accept the situation, but on the other hand, they also have thoughts and the right to decide whether they will or will not accept the choices that adults have planned. The image of Yoon Ah fiercely breaking the time clock at the end of *Time Store* brings the message: "I will have to become the true master and use my own time" [1]. Yoon Ah's strong decision is a lesson for many adults who are losing the present and time because of fear of the future. Meanwhile, the fact that Teo knows that he was abandoned by his biological parents but he is not sad and still lives happily and loves those who raised him, attached and loved him very much at the end of the novel *Be Friend with The Sky* evokes the message: children need to be loved because love is an important fulcrum to help them overcome all obstacles and find happiness in life.

Both works have happy endings with brighter futures for the young characters. That ending conveys faith in children's strength on their journey to growing up. Little Yoon Ah realizes that she needs to be the true owner of her own time to have joy and happiness. Teo is a very special boy because he "always sees luck in an unlucky situation, is always cheerful in an unlucky fate, always lives well even though life doesn't always treat him well" [2], and it was his kind, loving and confident look at life that brought him many friends and luck, and gave him a new, better, and happier future.

In general, the two main characters of *Time Store* and *Be Friend with The Sky* show that their writers place deep and strong faith in children. Even though adults may be better, smarter, and better than their children, they still sometimes make mistakes in life decisions. Children themselves, with their pure hearts, kind hearts, and constant learning, in the process of observing and interacting with life and their surroundings, are always alerted to recognize what is necessary and what has real meaning to them. Therefore, as children's literature revolutionary Bang Jung-hwan once called for in a 1923 message, "do not look down at children, but look up at children" [22].

5. Conclusions

The increase in South Korean literary works translated into Vietnamese in the first two decades of the 21st century shows the growing influence of the South Korean cultural wave on the world as well as on Vietnamese readers. However, Vietnamese literature also has a position and influence on South Korean readers, as shown by the rise in the number and diversity of genres and content of Vietnamese works translated into Korean.

Juxtaposing *Time Store* (South Korea) and *Be Friend with The Sky* (Vietnam) in the context of deep cultural exchange between the two countries contributes to exploring new meanings to the two pieces of work. Their dialogue shows that although pressure on academic achievements, time pressure, and family events considerably affect children, children are also independent, imperfect individuals who do not depend on adults and situations. On the contrary, children have their perceptions and actions to determine their lives and happiness.

Juxtaposing the two pieces of work also clarifies David Elkind's statement: "No matter what philosophy of life we follow, it is important that we see childhood as a stage of life, not just a waiting room for life" [14]. With that awareness, every stage in life, especially childhood, is always cherished and respected.

COMPETING INTERESTS

The author declares that there is no conflict of interest regarding the publication of this article.

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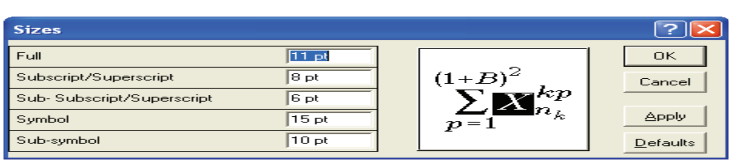

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