

## Do Financial Knowledge and e-Payment Awareness Affect Saving and Spending Behavior? The Mediating Role of Financial Risk Tolerance

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**Abstract:** This study investigates the role of financial risk tolerance in mediating the impact of financial knowledge and e-payment awareness on saving and spending behavior. A total of 400 questionnaires were distributed, with 396 completed by respondents and used for analysis. This research employs partial least squares-based structural equation modeling (PLS-SEM) to validate and estimate the proposed research models, with Smart-PLS software analyzing the data and estimating the relationships between its latent variables. Our study's estimation provides evidence of the positive and significant role of financial risk tolerance in mediating the impact of financial knowledge and e-payment awareness on spending and saving behavior. This study also reveals differences in the level of financial risk tolerance between male and female participants. Furthermore, the analysis results indicate that most younger people have a risk tolerance level (i.e., risk profile) that falls into the medium (i.e., risk-averse) category in terms of risk speculation, investment risk, and financial risk evaluation.

**Keywords:** financial knowledge, financial risk tolerance, e-payment, spending behavior, savings behavior

**JEL Classification:** G20, G41, G51, G53

## Introduction

Financial behavior is a critical issue in the welfare of individuals, and its effects are also felt by households, communities, countries, and globally. Recent developments in financial literacy suggest that financial behavior is explored as an interesting research topic and that it plays a crucial role in achieving financial well-being. Zulaihati & Widyastuti (2020) define financial behavior as behavior related to money management—that is, spending and saving behavior—that plays a crucial role in individuals' financial well-being. Moreover, Setiawan et al. (2022) state that the development of digital technology and e-commerce may change consumers' saving and spending behavior and the value of their transactions. Digital payment awareness is also important in today's increasingly cashless society. Individuals who are familiar with digital payment methods are more likely to track their expenses, make convenient and secure transactions, and take advantage of features such as automatic savings or budgeting applications (apps).

A previous study found that customer awareness of digital or e-payment also affects their financial behavior. Suraj (2017) states that electronic (e-)payment system awareness is affected by factors, such as convenience, cost, demography, processing charges, security, and risk. K. Garg et al. (2018) also find that customers' awareness of e-payment satisfies their needs for accessibility, convenience, and an alternative choice of payment system, while security and network issues are sources of dissatisfaction and act as barriers. Dewi et al. (2023) find that the three aspects of electronic payment adoption behavior rated the highest were alertness to security issues, ease of use, and ability to be readily adopted.

Another factor essential for enhancing responsible financial management behavior is financial knowledge. Gunawan et al. (2021) reveal that financial knowledge affects financial management behavior, such as saving behavior, shopping behavior, long-term planning, and short-term planning. Individuals with more financial knowledge are also more likely to engage in recommended financial behaviors (Hilgert et al., 2003). Knowing about and understanding financial products and services are important and can lead to the making of rational financial decisions. Individuals with a higher level of financial knowledge are more likely to make informed decisions about their spending and saving behavior.

Iram et al. (2023) state that financial literacy is a global issue, with poor financial behavior possibly having fatal impacts at both the individual and global economic levels. This issue needs to be understood and addressed, especially in developing countries with their comparatively low levels of financial literacy, poor digital platform security infrastructure, and significant presence of digital financial fraud (Sapulette & Dyana, 2020). Changes in consumer behavior and other related issues have created a chain reaction encouraging policymakers, especially those in the financial sector, to focus more on increasing financial literacy. Moreover, the financial literacy model proposed by the Organisation for Economic Co-operation and Development (OECD) mentions the following three comprehensive aspects of financial literacy: financial knowledge, financial attitudes, and financial behavior (N. Garg & Singh, 2018).

According to the studies cited above, financial knowledge and digital payment awareness are two factors that can greatly influence these behaviors. Moreover, risk tolerance is another factor that can mediate the relationship of financial knowledge and digital payment awareness with spending and saving behavior. Risk tolerance is frequently discussed in a financial decision context (Ali et al., 2023). Individuals with a higher risk tol-

erance may be more willing to make financial decisions that have the potential for greater returns but also come with higher risks. On the other hand, individuals with a lower risk tolerance may prefer safer and more conservative financial strategies, even if that means potentially lower returns.

Noman et al. (2023), in investigating the relationship between the financial risk-taking behavior of individual investors and their subjective and objective knowledge, reveal that individual investors' risk tolerance behavior is associated more with their subjective knowledge than their objective knowledge. Aslam et al. (2020) provide evidence that financial risk tolerance, as a mediating variable, strengthens the relationship between financial knowledge and investment decisions. Similarly, Bapat (2020) demonstrates that financial risk tolerance affects the relationship between financial knowledge and financial management behavior.

However, only a few studies investigate this topic from the perspective of an emerging economy or developing country (Aslam et al., 2020; Bapat, 2020; Dewi et al., 2023). Previous studies analyze financial knowledge as an antecedent of financial management behavior, but few studies analyze the key role of financial risk tolerance as an antecedent of financial management behavior (Goyal et al., 2021). Additionally, in discussing financial knowledge as an element of financial literacy, e-payment awareness, which has increased significantly in developing countries, must also be a central theme. Previous work is limited to the role of financial knowledge in saving and spending behavior or financial behavior. Despite this interest, to the best of our knowledge, no one has studied the issue of financial risk mediating the impact of financial knowledge and e-payment awareness on saving and spending behavior.

Therefore, the present study addresses the following questions. Firstly, does electronic payment awareness affect financial risk tolerance? Secondly, does financial knowledge affect financial risk tolerance? Thirdly, does financial risk tolerance affect saving behavior? Finally, does financial risk tolerance affect spending behavior? Our objective is to investigate the role of financial risk tolerance in mediating the impact of financial knowledge and e-payment awareness on saving and spending behavior. Subsequently, our study analyzes a comprehensive model based on existing ideas and generates a considerable opportunity to extend the theoretical implications. Accordingly, this research is essential in helping financial service providers and regulators to improve their policies to increase the utilization of digital financial services and products.

The main finding of this study is how financial risk tolerance mediates the relationships of financial knowledge and adoption of e-payments with spending and saving behavior. In practical terms, this finding contributes to financial institutions' ability to identify the type of customer risk profile before offering the financial product. An individual with an aggressive character will have a high-risk tolerance, tending to choose investment instruments with a high level of risk. In contrast, an individual with a conservative character and a low-risk tolerance will tend to choose low-risk investment instruments. Individuals can develop good saving and spending habits and behaviors with good knowledge and understanding of financial matters and products. This finding also contributes to the literature, with this study's results serving as a reference for developing a financial literacy research model.

The following section presents the literature review, along with the theory and conceptual framework. The development of hypotheses is then discussed, followed by the

study's data collection, methodology, results, discussion, limitations, conclusions, and implications.

## Literature Review

Financial management behavior (FMB) is one of the dimensions of financial literacy. Most previous studies define financial literacy as multi-dimensional, with Atkinson & Messy (2012) stating that financial literacy can be explained in three dimensions: financial knowledge, financial behavior, and financial attitude. Furthermore, Morgan & Long (2020) and Morgan & Trinh (2020) define financial literacy not only as financial knowledge but also as actual behavior, skills, and attitudes. Financial management behavior in the present study is assessed through saving and spending behavior, following the study conducted by Moenjak et al. (2020). Previous studies find that individuals with higher financial literacy scores are more likely to have a good saving habit (Morgan & Long, 2020). Nguyen & Doan (2020) and Peiris (2021) provide evidence that financial literacy is a factor that influences individual saving behavior. Azmi & Ramakrishnan (2018) demonstrate that financial knowledge has a positive relationship with spending habits. As these previous studies show, individuals with less financial management knowledge tend to have poor financial behavior; thus, financial knowledge has important implications for well-being.

### Financial Knowledge (*FIN*), Saving Behavior (*SVB*) and Spending Behavior (*SPB*)

Financial knowledge is a form of investment in human capital which has implications for individuals' well-being (Lusardi & Mitchell, 2014). The terms "financial knowledge" and "financial literacy" are frequently used interchangeably (Lind et al., 2020). Personal financial knowledge comprises two dimensions: (1) objective financial knowledge which refers to the individual's personal knowledge of specific financial matters, such as interest rates, effects of inflation on savings, time value of money, and benefits of diversification; and (2) subjective knowledge which comprises the individual's awareness of financial matters, pleasure in financial activities with financial matters, and confidence to make financial decisions (Robb & Woodyard, 2011; Woodyard, 2013; Woodyard et al., 2017). Lind et al. (2020); Heriyati et al. (2024) use subjective financial knowledge and objective financial knowledge to predict financial behavior. Their study employs objective financial knowledge to estimate relationships between financial literacy variables. The results of these previous studies show that financial knowledge has a significant impact on financial management behavior including saving and spending behavior. Robb & Woodyard (2011) and Woodyard et al. (2017) estimate the relationships of objective financial knowledge and subjective financial knowledge with financial behavior. They find that improving subjective and objective knowledge reinforces financial behavior. Furthermore, Nuris et al. (2023) and Khoirunnisaa & Johan (2020) state that financial behavior has various form including of saving and spending behavior. Moreover, Mahdzan & Tabiani (2013) and Peiris (2021) find that financial literacy had a positive impact on individual saving, and Azmi & Ramakrishnan (2018) find that financial knowledge has a positive relationship with spending behavior. Furthermore, Chavali (2020) reveal that the financial literacy of youth is significantly correlated with the saving and spending habits of youth. Therefore,

considering the findings of these previous studies on financial knowledge, saving behavior, and spending behavior, our study formulates the following hypothesis:

**H1:** Financial knowledge affects saving behavior.

**H2:** Financial knowledge affects spending behavior

### **e-Payment Awareness (EPA), Saving Behavior (SVB) and Spending Behavior (SPB)**

The term “e-payment awareness (EPA)” refers to awareness of products and services available using online payment methods. The adoption of electronic payments (e-payments) has been growing at a significant rate with developments in financial technology. Financial technology (fintech) is not only expected to encourage financial inclusion and financial literacy, but also to promote better financial management behavior. In Indonesia, the current level of financial inclusion and financial literacy on digital financial products and services indicates that areas can be potentially improved. Previous studies, conducted by Morgan & Trinh (2020) and Moenjak et al. (2020), use the adoption and awareness of fintech to investigate the impact on consumers’ financial behavior. Morgan & Trinh (2020) use e-banking services, e-payment services, and e-transfer services as elements of the adoption of fintech services and employ digital borrowing, digital lending, digital money (i.e., e-wallet), digital insurance, and digital financial advisors as elements of fintech awareness. In keeping with Nuris et al.(2023) and Khoirunnisaa & Johan (2020), this study examines saving and spending behavior as a form of financial behavior. Therefore, considering the findings of previous studies on e-payment awareness, saving behavior, and spending behavior, the present study proposes the following hypothesis:

**H3:** e-Payment awareness affects saving behavior.

**H4:** e-Payment awareness affects spending behavior.

### **Relationships of Financial Risk Tolerance (FRT) with Financial Knowledge (FIN), e-payment Awareness (EPA), and Saving and Spending Behavior (FMB)**

Financial risk tolerance (*FRT*) is related to the level of variability of return on investment (ROI) that investors are willing to accept as a risk. Risk tolerance is defined by general definitions that focus on either the amount of volatility one can tolerate or the number of losses one is willing to bear (Holzhauer et al., 2016). Risk tolerance is the converse of risk aversion, an economic term that describes an individual’s reluctance to accept a choice with an uncertain payoff when a more certain option is available (Grable, 2016). Grable (2018) further defines risk tolerance as “the willingness to engage in a risky behavior in which possible outcomes can be negative.”

The three types of people, based on their risk tolerance, are the averse type, the neutral type, and the risk seeker (Abidin et al., 2023). Pompian (2018) divides types of investors by their risk tolerance level into four types. The first type is conservative investors who have a low level of risk tolerance. Conservative investors are careful not to take excessive risks. They are focused on taking care of family members and future generations, especially by funding life-enhancing experiences, such as education and homeownership. The second type is moderate investors who have a moderate level of risk tolerance. They



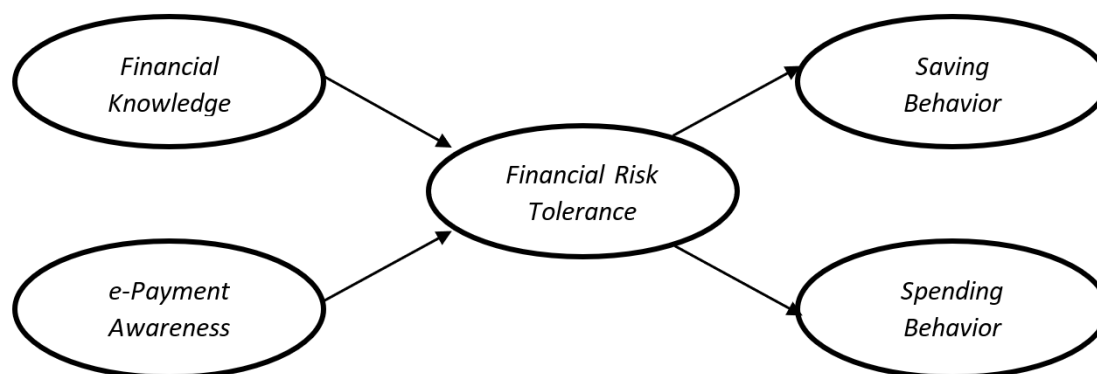
generally follow professional advice when they receive it, but they can experience difficulties at times as they neither enjoy nor have an aptitude for the investment process. The third type is growth investors who have a medium to high level of risk tolerance. They are the most likely to be contrarian which can sometimes work to their advantage. Some are obsessed with outperforming the market and may have concentrated portfolios. The fourth type is aggressive investors who have a high level of risk tolerance. They make quick decisions and may pursue higher-risk investments in which their friends or associates are investing. Some do not believe in basic investment principles such as diversification and asset allocation; they are frequently “hands-on” and want to be involved in investment decision making. Rahman (2020) states that risk tolerance is the key to the modern financial planning process and investment management decision-making model.

Financial behavior, which encompasses activities such as spending, saving, and borrowing, is influenced by interplay of financial knowledge and risk tolerance. By understanding these interconnections, individuals, financial educators, and policymakers can work to promote financial literacy, encourage appropriate risk-taking, and foster responsible financial behaviors, ultimately leading to improved financial well-being and security. In studies conducted by researchers to estimate the relationships of financial risk tolerance with financial knowledge and financial behavior, they employ financial behavior defined in terms of saving behavior and spending behavior. Samanez-Larkin et al. (2020) estimate that financial risk tolerance is associated with financial knowledge. In their study, Tavor & Garyn-Tal (2016) confirm that risk tolerance has a relationship with saving behavior for retirement programs, other savings programs, and real products with a high-risk tolerance preference for retirement savings and less tolerance for other financial risks and real products. People with more financial knowledge tend to be more risk-tolerant or to be risk seekers (Nguyen et al., 2022). Furthermore, the authors find that subjective financial knowledge is positively associated with risk tolerance but has no significant direct impact on saving behavior. Subjective financial knowledge is found to indirectly influence saving behavior through risk tolerance, risk perception, and saving intention (Bapat, 2020). Wang (2009) states that objective knowledge, subjective knowledge, and risk taking are highly correlated, while Noman et al. (2023) find that individual investors' risk tolerance behavior is associated more with their subjective knowledge than with their objective knowledge. Moreover, Dewi et al. (2023) reveal that financial knowledge and e-payment behavior affect financial risk tolerance. Nguyen et al. (2022); Song et al. (2023) argue that financial risk tolerance mediates the association between financial literacy and financial behavior. Finally, financial risk tolerance plays a significant role in shaping individual financial behavior (Grable, 2016; Grable, 2018). Therefore, considering findings in the previous studies, the present study formulates the following hypothesis:

**H5:** Risk tolerance mediates the relationship between financial knowledge, e-payment awareness, and financial saving and spending behavior.

Figure 1 presents the conceptual framework that explains the relationships between financial knowledge (FIN), e-payment awareness (EPA), financial risk tolerance (FRT), and financial management behavior (FMB). Figure 1 is constructed based on theoretical concepts and previous studies. Regarding the associations between variables, it can be hypothesized that *FIN* and *EPA* affect *FRT* which, in turn, affects spending and saving behavior, thus reflecting financial behavior.

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**Figure 1.** Conceptual Framework

## Methods

The present study used partial least squares-based structural equation modeling (PLS-SEM) (Hair et al., 2021) to estimate the model of the relationships between financial knowledge, e-payment awareness, financial risk tolerance, saving behavior, and spending behavior. All variables were constructed as latent variables. Therefore, each variable was constructed using relevant indicators as shown in Table 1. To measure financial knowledge, this study used two approaches from Singh & Berwal (2021), namely, objective financial knowledge (OFK) and subjective financial knowledge (SFK). Objective financial knowledge (OFK) was measured by five indicators, comprising compounding interest (Atkinson & Messy, 2012; Singh & Berwal, 2021); inflation (Atkinson & Messy, 2012; Singh & Berwal, 2021); saving; investment risk; and mutual funds. True or false questions were used to measure objective financial knowledge (OFK). The correct answer was calculated by the mean percentage of correct scores and then grouped into a range from 1–4 (comparatively very high to comparatively very low) where 1 = very low and 4 = very high, while subjective financial knowledge (SFK) was measured through self-assessment of financial knowledge. The study proposed to measure e-payment awareness by eight indicators derived from Dewi et al. (2023) and using the forced 4-point Likert scale, where 1 = strongly disagree, 2 = disagree, 3 = agree, and 4 = strongly agree. Financial risk tolerance was measured by employing the risk-tolerance measure items derived from Dewi et al. (2023). Total risk-tolerance scores were obtained by summing (adding up) the individual scores from the four questions (Table 5). These were then scaled using a range of 1–4, with 1 being most risk-averse and 4 being most willing to take a risk (Gilliam et al., 2010). The investor type was next divided into four: 1 = conservative investor (risk avoider) (risk tolerance level is low); 2 = moderate investor (i.e., risk-averse) (risk tolerance level is medium); 3 = growth investor (risk-tolerant) (risk tolerance level is high); and 4 = aggressive investor (risk seeker) (risk tolerance level is very high) (Pompian, 2018; Grable et al., 2020).

Saving behavior (SVB) had four indicators and spending behavior (SPB) had three indicators measured using the 4-point Likert scale, where 1 = strongly disagree and 4 = strongly agree. The indicators were derived from Dew & Xiao (2011); Zulaihati et al. (2020); and Gunawan et al. (2021). This research gathered 396 responses from a sample of young adults in Indonesia. The age of the respondents was from 18–24 (Jekielek & Brown,

2005). Respondents were found through the convenience sampling technique with data collected using an online survey. The study distributed 400 questionnaires, but only 396 respondents completed the questionnaires with valid responses. The number of responses fulfilled the minimum sample size, as suggested by Hair et al.(2021). With 30 indicators, the minimum sample size is 300; consequently, sample of 396 meets the minimum sample size requirement.

## Results

In terms of gender, 36.36% of respondents were male and 63.64% were female. About 55.30% of respondents were aged 20–21. Most respondents earned income in the following ranges: from Indonesian rupiah (IDR) 1.5–IDR 2.5 million (31.83%) and less than IDR 1.5 million (31.57%). In our study's sample, the top three financial products owned by respondents were e-money (91.67%); deposit and saving accounts (76.52%); and digital banking (61.87%) (Table 1). The adoption of e-financial products was ranked the highest, followed by digital banking. The frequency of using the e-payment method in the past month showed that most respondents used server-based e-money and rarely used SMS banking (see Table 2). The study results showed the top three choices for the first financial goal in the next five years. Most respondents had goals of saving to establish an emergency fund, buying their first house, and saving to start a business (see Table 3). The study also found that Millennials used electronic money and e-commerce platforms mostly due to their practicality and the promotion of these services. The current study revealed the promotional and practical factors that influence the adoption of electronic money and e-commerce platforms (Table 4). An interesting point was that respondents reported a high level of disagreement with the attribute that the e-payment system saves their money.

**Table 1.** Demographic and Socio-Economic Data

Criteria	N	%
<b>Gender</b>		
Male	144	36.36
Female	252	63.64
<b>Age</b>		
18–19	73	18.43
20–21	219	55.30
22–24	104	26.27
<b>Income</b>		
< Indonesian rupiah (IDR) 1,500,000	125	31.57
IDR 1,500,001–IDR 2,500,000	130	31.83
IDR 2,500,001–IDR 3,500,000	91	22.98
> IDR 3,500,000	50	12.63
<b>Financial products holding</b>		
e-Money/Wallet	363	91.67



Deposit and Saving Account	303	76.52
Digital Banking	245	61.87
Traditional Insurance	164	41.41
Mutual Funds	150	37.88
Insuretech	46	11.62
Gold	45	11.36
Cryptocurrency	44	11.11
P2P (Person to Person) Lending	38	9.60
Bitcoin	26	6.57

Source: Computed using Microsoft (MS) Excel

**Table 2.** Frequency of Using e-Payment Methods in the Past Month

	e-Money Server- Based	Cash	Mobile Banking	Debit Card	e-Money Chip- Based	Internet Banking	Credit Card	SMS Banking
<b>Never</b>	6%	7%	16%	20%	46%	78%	92%	93%
<b>1–4 times</b>	26%	37%	20%	55%	36%	12%	6%	5%
<b>5–9 times</b>	44%	40%	34%	17%	12%	6%	1%	1%
<b>10–14 times</b>	14%	5%	17%	4%	2%	2%	0%	0%
<b>15–19 times</b>	4%	2%	7%	2%	1%	1%	0%	0%
<b>20–24 times</b>	3%	1%	2%	1%	2%	1%	1%	1%
<b>25–30 times</b>	2%	1%	2%	1%	1%	1%	0%	0%
<b>more than 30 times</b>	2%	6%	2%	1%	1%	0%	0%	0%
	100%	100%	100%	100%	100%	100%	100%	100%

Source: Computed using Microsoft (MS) Excel

**Table 3.** Top-Ranked Financial Goals in the Next Five Years

Statement	N	%
<b>Saving for an Emergency Fund</b>	125	32%
<b>Buying First Home</b>	120	30%
<b>Saving to Start a Business</b>	98	25%
<b>Vacation</b>	19	5%
<b>Buying First Car</b>	19	5%
<b>I don't have a financial goal yet</b>	15	4%
	396	100%

Source: Computed using Microsoft (MS) Excel

**Table 4.** e-Payment Awareness

		1	2	3	4
Code	e-Payment Adoption Behavior Statements*	SD	D	A	SA
<b>EPA1</b>	e-Payment systems save my time	3%	6%	40%	52%
<b>EPA2</b>	e-Payment systems save my money	27%	21%	8%	43%
<b>EPA3</b>	e-Payment systems are better than cash	3%	21%	23%	54%

<b>EPA4</b>	Being alert to e-payment security issues	3%	7%	32%	57%
<b>EPA5</b>	e-Payment offers a greater choice for consumers	3%	13%	20%	64%
<b>EPA6</b>	e-Payment systems can be readily adopted	3%	11%	17%	69%
<b>EPA7</b>	e-Payment systems can be easily used	2%	8%	25%	65%
<b>EPA8</b>	Aware of the potential risks of e-payment	3%	10%	25%	62%

**Notes:** SD = strongly disagree; D = disagree; A = agree; SA = strongly agree. \* adopted from Dewi et al. (2023).

**Source:** Computed using Microsoft (MS) Excel.

As shown in Table 5, financial risk tolerance (*FRT*) covers the areas of speculative risk, investment risk, and evaluated financial risk. In all, 39.9% of respondents scored a low *FRT* level, while 25.76% had a high *FRT* level on speculative risk. This shows that most respondents were conservative (i.e., risk-avoiding investors), as opposed to aggressive investors (i.e., risk takers). In terms of investment risk and evaluated financial risk, most respondents (75% and 69.96%, respectively) had a medium *FRT* level (i.e., moderate investors). Tables 6 and 7 provide a descriptive analysis of *FRT* variables and their dimensions in relation to the four basic types of investors, gender, and level of income.

**Table 5.** Dimensions and Indicators of Financial Risk Tolerance (*FRT*)

Dimensions and Indicators	Risk Tolerance Level and Four Basic Investor Types			
	Conservative investors	Moderate investors	Growth investors	Aggressive investors
	(1)	(2)	(3)	(4)
	Low = risk avoider	Medium = risk-averse	High = risk-tolerant	Very high = risk seeker
<b>FRT1-Speculative Risk (%)</b>	39.90	28.28	6.06	25.76
<b>1. Suppose that before tossing a coin (side A: Fish head, side B: Fish tail), you are asked to choose one of the following options for the prize you will receive:</b> <b>A. Guess which side (A or B) will appear and, if correct, you will receive IDR 100,000</b> <b>B. Guess if side A will appear and, if correct, you will receive IDR 200,000. If side B appears, you will not receive anything.</b>				
<b>2. Suppose you won a quiz with a cash prize of IDR 500,000. You are given the opportunity to choose either:</b> <b>A. IDR 500,000 which you have won, but without being able to have the second quiz round opportunity.</b> <b>B. Take the second quiz round with an 80% chance of winning IDR 1 million: if you lose, you will receive nothing at all</b>				
<b>FRT2-Investment Risk (%)</b>	12.12	75.00	8.59	4.29
<b>If you unexpectedly received IDR 100 million to invest, what would you invest in the funds?</b> <b>A. 100% savings and deposits</b> <b>B. 50% savings and term deposits, 50% mutual funds</b> <b>C. 50% mutual funds and 50% stocks</b> <b>D. 100% stocks</b>				
<b>FRT3-Evaluated Financial Risk (%)</b>	6.06	69.96	20.96	3.03
<b>How many losses can you accept in investing?</b> <b>A. 0%</b> <b>B. Up to 50%</b> <b>C. Up to 75%</b> <b>D. 100%</b>				

**Source:** Computed using Microsoft (MS) Excel

**Table 6.** Financial Risk Tolerance (FRT) by Gender

Gender	Risk Tolerance Level and Four Basic Investor Types			
	Conservative investors (1) Low = risk avoider	Moderate investors (2) Medium = risk-averse	Growth investors (3) High = risk-tolerant	Aggressive investors (4) Very high = risk seeker
<b>FRT1-Speculative Risk Level (%)</b>				
<b>Male</b>	9.60	9.34	1.77	15.66
<b>Female</b>	30.30	18.94	4.29	10.10
<b>FRT2-Investment Risk (%)</b>				
<b>Male</b>	2.27	25.25	5.30	3.54
<b>Female</b>	9.85	49.75	3.28	0.76
<b>FRT3-Evaluated Financial Risk (%)</b>				
<b>Male</b>	1.01	24.49	9.09	1.77
<b>Female</b>	5.05	45.45	11.87	1.26

Source: Computed using Microsoft (MS) Excel

**Table 7.** Financial Risk Tolerance (FRT) by Income

Income	Risk Tolerance Level and Four Basic Investor Types			
	Conservative investors (1) Low = risk avoider	Moderate investors (2) Medium = risk-averse	Growth investors (3) High = risk-tolerant	Aggressive investors (4) Very high = risk seeker
<b>FRT1-Speculative Risk Level (%)</b>				
< IDR 1,500,000	10.35	11.87	2.78	6.57
IDR 1,500,001–IDR 2,500,000	15.66	8.59	1.77	6.82
IDR 2,500,001–IDR 3,500,000	10.61	5.30	0.76	6.31
> IDR 3,500,000	3.28	2.53	0.76	6.06
<b>FRT2-Investment Risk Level (%)</b>				
< IDR 1,500,000	7.83	19.44	3.28	1.01
IDR 1,500,001–IDR 2,500,000	1.77	27.53	2.27	1.26
IDR 2,500,001–IDR 3,500,000	1.52	19.19	1.52	0.76
> IDR 3,500,000	1.01	8.84	1.52	1.26
<b>FRT3-Evaluated Financial Risk Level (%)</b>				
< IDR 1,500,000	3.28	18.18	9.09	1.01
IDR 1,500,001–IDR 2,500,000	1.26	25.25	6.06	0.25
IDR 2,500,001–IDR 3,500,000	0.76	19.19	2.27	0.76
> IDR 3,500,000	0.76	7.32	3.54	1.01

Source: Computed using Microsoft (MS) Excel

Tables 8–10 show the results from measuring the level of financial knowledge on the objective and subjective aspects of financial knowledge. Subjective financial knowledge (SFK) was measured using indicators of perceived level of financial knowledge. As shown in the results, 67.93% of respondents considered that they were in the low category.

ry of investment knowledge. Only 2.02% considered themselves to know about investment at the very high level (Table 8). Table 9 shows the percentages of correct answers to each question on objective financial knowledge (OFK), comprising compounding interest (76.26%), inflation (82.32%), saving (79.04%), investment risk (85.61%), and mutual funds (63.13%). Meanwhile, Table 10 shows that 40.66% of respondents were rated as having a very high level of objective financial knowledge (OFK), with these results indicating that young people had a good understanding of financial knowledge. Financial knowledge is one of the important factors shaping good financial management behavior, especially in saving and spending behavior. The results shown in Table 10 reveal that a high level of financial knowledge at a young age plays an important role and is a positive move towards sound financial management. This outcome shows the importance of financial knowledge dissemination to people in general, besides younger people, given that knowledge about financial aspects, irrespective of age category, is imperative for overall financial management.

**Table 8.** Subjective Financial Knowledge (SFK)

<b>SFK: How would you assess your knowledge of investment (on a 4-point scale; 1 meaning very low and 4 meaning very high)?</b>					
<b>Scale</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>Total</b>
<b>N</b>	21	269	98	8	396
<b>%</b>	5.30	67.93	24.75	2.02	100

*Note:* Number and percentage of respondents (N = 396).

*Source:* Computed using Microsoft (MS) Excel

**Table 9.** Objective Financial Knowledge (OFK)

<b>Answer</b>	<b>Compounding Interest</b>	<b>Inflation</b>	<b>Saving</b>	<b>Investment Risk</b>	<b>Mutual Funds</b>
<b>Correct</b>	76.26	82.32	79.04	85.61	63.13
<b>Incorrect</b>	23.74	17.68	20.96	14.39	36.87

*Note:* Number and percentage of respondents (N = 396).

*Source:* Computed using Microsoft (MS) Excel

**Table 10.** Level of Objective Financial Knowledge (OFK)

<b>OFK Index</b>	<b>N</b>	<b>%</b>	<b>Male</b>	<b>Female</b>
<b>1-Very Low</b>	68	17.17	5.05	12.12
<b>2- Low</b>	65	16.41	6.06	10.35
<b>3-High</b>	102	25.76	10.35	15.40
<b>4-Very High</b>	161	40.66	14.89	25.76
<b>N</b>	396			

*Source:* Computed using Microsoft (MS) Excel

Tables 11, 12, 13, and 14 show the measurement model (outer model) used to evaluate validity and reliability. Tables 15 and 16 show the results of the structural model evaluation (inner model) which explains the relationship between the following variables: *FIN*, *EPA*, *FRT*, *SVB*, and *SPB*. The evaluation of the outer model shows the results for the

evaluation of indicator reliability (factor loading value), composite reliability (CR), and convergent validity (AVE). The evaluation of the outer model comprised the evaluation of indicator reliability (loading factor value), composite reliability (CR), collinearity statistics (VIF), Cronbach's alpha, and average variance extracted (AVE) (see Table 11 and 12). Table 12 provides the outer model estimations, showing that the model is reliable and valid, as no composite reliability (CR) values are less than 0.7 and no convergent validity (AVE) values are less than 0.5 (Hair et al., 2021; Ringle et al., 2018). As shown in Table 11, all indicators have a factor loading of more than 0.6. The present study used a latent variable indicator with a factor loading of 0.6, based on Setiawan et al. (2022). The inner model estimations show that no indicator had a collinearity problem, with the results of the collinearity test shown in Table 11. All indicators have a variance inflation factor (VIF) value of less than 5 (Hair et al., 2021), suggesting that multicollinearity is not a problem.

The results of tests for discriminant validity (using the heterotrait–monotrait [HTMT] ratio and Fornell–Larcker criterion correlation) are shown at Tables 13 and 14. In the first iteration, four heterotrait–monotrait (HTMT) ratio matrix values were more than 0.9 (between *FIN* and *FRT* [1.167]; *FIN* and *SVB* [1.236]; *FIN* and *SPB* [1.199]; and *EPA* and *FIN* [0.995]), which leads to *OFK*, the manifest variable of *FIN*, needing to be removed from the model. After *OFK*'s removal from the model, all the heterotrait–monotrait (HTMT) ratio matrix values were less than 0.9 (see Table 13), meaning that all constructs used in the model had good convergent consistency (Hair et al., 2021). Tables 15 and 16 present the results for the significance and relevance of path coefficients and effect size ( $f^2$ ) in Table 15, and evaluation of the prediction model ( $Q^2$ , root mean squared error [RMSE] and mean absolute error [MAE]) in Table 16. As shown in Table 16, the  $Q^2$  values for financial risk tolerance (*FRT*), saving behavior (*SVB*), and spending behavior (*SPB*) were 0.231, 0.104, and 0.048, respectively, with more than zero being the cut-off value. This indicates that the model has predictive relevance (Chin, 2010; Jamal et al., 2016). The mediation analysis, presented in Table 17, shows *FRT* as having a complementary partial mediation role in the relationships of e-payment awareness with both saving and spending behavior. In the relationship between financial knowledge and saving behavior, *FRT* has a full mediation role. Furthermore, in the relationship between financial knowledge and spending behavior, *FRT* has a competitive (partial mediation) role: The direct effect is negative and significant, but the indirect effect is positive and significant.

Figure 2 shows the estimation of the structural model and the relationships between the variables and their indicators, along with the factor loading for each one. The present study finds positive relationships between financial knowledge, e-payment awareness, financial risk tolerance, and saving and spending behavior. Figure 2 illustrates the path coefficient of each independent variable and the effect on its dependent variable. Meanwhile, Tables 16 and 17 explain the *t*-test of each indicator and independent variable.



**Table 11.** Measurement Model Evaluation – Factor Loading of the Outer Model

Variables and Indicators	Code	VIF	Factor Loading First iteration	Factor Loading Second iteration	t-test
<b>Criteria</b>		< 5	> 0.6	> 0.6	> 1.960
<b>Financial Knowledge</b>					
Objective financial knowledge (OFK)	OFK	1.011	0.669*	delete	-
Subjective financial knowledge (SFK)	SFK	1.011	0.810	1.000	N/A
<b>e-Payment Awareness</b>					
e-Payment systems save my time (EPA1)	EPA1	2.188	0.824	0.824	46.341
e-Payment systems save my money (EPA2)	EPA2	1.437	0.625	0.624	18.179
e-Payment systems are better than cash (EPA3)	EPA3	1.801	0.714	0.713	19.724
Being alert to security issues of e-payment (EPA4)	EPA4	2.237	0.762	0.763	20.787
e-Payment offers a greater choice (EPA5)	EPA5	2.104	0.763	0.762	22.371
e-Payment systems can be readily adopted (EPA6)	EPA6	2.522	0.784	0.784	24.885
e-Payment systems can be easily used (EPA7)	EPA7	2.624	0.818	0.818	32.996
Aware of the potential risks of e-payment (EPA8)	EPA8	1.912	0.739	0.740	20.153
<b>Financial Risk Tolerance</b>					
Speculative risk (FRT1)	FRT1	1.175	0.758	0.752	24.318
Investment risk (FRT2)	FRT2	1.204	0.807	0.802	27.937
Evaluated financial risk (FRT3)	FRT3	1.226	0.639	0.656	10.465
<b>Spending Behavior</b>					
Searched for information about the product item before purchasing it (SPB1)	SPB1	2.110	0.843	0.841	22.928
Comparison shopped when purchasing a product or service (SPB2)	SPB2	2.157	0.845	0.844	21.079
Kept a written or electronic record of your monthly expenses (SPB3)	SPB3	1.315	0.805	0.806	19.336
<b>Saving Behavior</b>					
Saved for a long-term goal (SVB1)	SVB1	2.222	0.866	0.866	48.790
Invested money (SVB2)	SVB2	1.911	0.859	0.859	42.870
Began or maintained an emergency savings fund (SVB3)	SVB3	1.631	0.732	0.733	18.885
Saving money regularly (SVB4)	SVB4	1.771	0.759	0.759	22.996

**Source:** Present study's SEM analysis: calculation using the partial least squares (PLS) regression method

**Notes:** \*objective financial knowledge (OFK) taken from the model; VIF = variation inflation factor: if a collinearity statistic is less than 5, no collinearity problem is present; p-value is less than a significance level of 5%

**Table 12.** Measurement Model Evaluation Validity and Reliability

	CR	AVE
Electronic Payment Awareness (EPA)	0.914	0.571
Financial Risk Tolerance (FRT)	0.782	0.547
Saving Behavior (SVB)	0.881	0.650
Spending Behavior (SPB)	0.870	0.690

**Source:** Present study's SEM analysis: calculation using the partial least squares (PLS) regression method

**Notes:** AVE = average variance extracted; CR = composite reliability

**Table 13.** Discriminant Validity Heterotrait–Monotrait (HTMT) Ratio Matrix

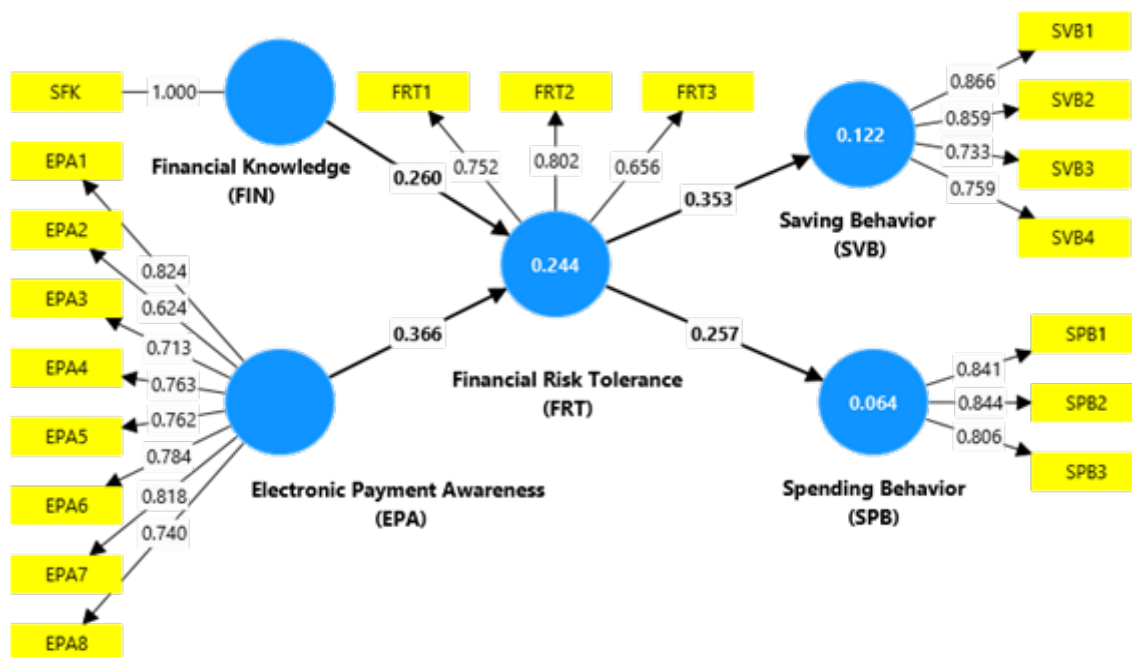
	<i>EPA</i>	<i>FIN</i>	<i>FRT</i>	<i>SVB</i>	<i>SPB</i>
<b>Electronic Payment Awareness (<i>EPA</i>)</b>					
Financial Knowledge ( <i>FIN</i> )	0.242				
Financial Risk Tolerance ( <i>FRT</i> )	0.538	0.445			
Saving Behavior ( <i>SVB</i> )	0.465	0.168	0.447		
Spending Behavior ( <i>SPB</i> )	0.390	0.035	0.335	0.887	

Source: Present study's SEM analysis: calculation using the partial least squares (PLS) regression method

**Table 14.** Discriminant Validity Fornell–Larcker Criterion Correlation

	<i>EPA</i>	<i>FIN</i>	<i>FRT</i>	<i>SVB</i>	<i>SPB</i>
<b>Electronic Payment Awareness (<i>EPA</i>)</b>	0.756				
Financial Knowledge ( <i>FIN</i> )	0.242	1.000			
Financial Risk Tolerance ( <i>FRT</i> )	0.429	0.348	0.740		
Saving Behavior ( <i>SVB</i> )	0.409	0.173	0.353	0.806	
Spending Behavior ( <i>SPB</i> )	0.335	0.021	0.257	0.710	0.831

Source: Present study's SEM analysis: calculation using the partial least squares (PLS) regression method



**Figure 2.** Structural Measurement Model:  
Adjusted R-Squared, Path Coefficients and Loadings

**Table 15.** Structural Model Evaluation

Direct Effect	Original sample (O)	t-statistic > 1.960	p-value	Sig	f <sup>2</sup> value
Electronic Payment Awareness → Financial Risk Tolerance	0.366	8.687	0.000	significant	0.168
Financial Knowledge → Financial Risk Tolerance	0.260	4.768	0.000	significant	0.084
Financial Risk Tolerance → Saving Behavior	0.353	8.804	0.000	significant	0.142
Financial Risk Tolerance → Spending Behavior	0.257	6.078	0.000	significant	0.071

**Source:** Present study's SEM analysis: calculation using the partial least squares (PLS) method.

**Notes:** Effect size criteria:  $f$ -squared ( $f^2$ ) = 0.02 (low);  $f^2$  = 0.15 (moderate);  $f^2$  = 0.35 (high); sig = significance

**Table 16.** Prediction Model Evaluation PLSpredict, Q<sup>2</sup>, RMSE, and MAE

	Q <sup>2</sup>	RMSE	MAE
Financial Risk Tolerance (FRT)	0.231	0.884	0.687
Saving Behavior (SVB)	0.104	0.952	0.758
Spending Behavior (SPB)	0.048	0.980	0.830

**Source:** Present study's SEM analysis: calculation using the partial least squares (PLS) regression method

**Notes:** Predictive relevance criteria: Q2 is more than zero ( $Q2 > 0$ ) (Hair et al., 2022; Ringle et al., 2018); root mean squared error (RMSE) is less than 1; MAE = mean absolute error

**Table 17.** Mediation Test

	Direct effect	t-value	Sig	Indirect effect	t-value	Sig	Conclusion
Electronic Payment Awareness → Saving Behavior	0.371	9.987	Yes	0.129	5.518	Yes	Complementary (partial mediation)
Electronic Payment Awareness → Spending Behavior	0.351	9.622	Yes	0.094	4.427	Yes	Complementary (partial mediation)
Financial Knowledge → Saving Behavior	0.016	0.333	No	0.092	4.168	Yes	Indirect only (full mediation)
Financial Knowledge → Spending Behavior	-0.110	2.386	Yes	0.067	3.859	Yes	Competitive (partial mediation)

**Source:** Present study's SEM analysis: calculation using the partial least squares (PLS) regression method.

If the sign of the direct effect is positive, the partial mediation is complementary, and if the sign of the direct effect is negative, it is a competitive partial mediation (Hair et al., 2022);(Zhao et al., 2010); (Nitzl et al., 2016).

## Discussion

This study offers a valuable opportunity to enhance our understanding of person-

al financial behavior. It makes a major contribution to research on financial literacy by demonstrating the relationships between financial knowledge and e-payment adoption with saving and spending behavior, with financial risk tolerance as the mediating variable. The study's findings show that financial knowledge (*FIN*) has a positive effect on financial risk tolerance (*FRT*) at a 5% confidence interval level. The coefficient of *FIN* at 0.296 indicated that the direct contribution of *FIN* to *FRT* was approximately 7% ( $= 0.260$ ). This result is consistent with the findings of Tavor & Garyn-Tal (2016); Samanez-Larkin et al. (2020); Nguyen et al.(2022) who established the relationship between financial knowledge and risk tolerance. Our findings also align with a study in China, which demonstrated that financial knowledge has a significant positive effect on risk tolerance levels (Zhang et al., 2022) as well as with a study in the United States showing that individual investors' risk tolerance behavior is associated with their subjective financial knowledge (Noman et al., 2023). Additionally, the present study found that individuals with higher financial knowledge tend to be more risk-tolerant (Nguyen et al.,2022).

This study also found that e-payment awareness positively affected financial risk tolerance. This study confirms our earlier findings that e-payment behavior positively affected financial risk tolerance (Dewi et al., 2023). It aligns with a study in Japan that found a relationship between risk tolerance and e-payment services awareness (Long et al., 2023). The coefficient of *EPA* at 0.366 indicated that the direct contribution of *EPA* on *FRT* was 13% ( $= 0.3662$ ), showing that *EPA* significantly affected financial risk tolerance (*FRT*). The findings also indicated that young people would have a higher level of risk tolerance if they had a higher level of awareness of the e-payment system, as shown by *EPA* significantly affecting financial risk tolerance (*FRT*). Furthermore, financial risk tolerance (*FRT*), in turn, has positive effects on saving behavior (*SVB*) and spending behavior (*SPB*). The coefficient of *FRT* at 0.353 indicated that the direct contribution of *FRT* on *SVB* was 12.5% ( $= 0.3532$ ), while the coefficient of *FRT* on *SPB* at 0.257, thus indicating that the direct contribution of *FRT* on *FSB* was 7% ( $= 0.2572$ ). This study produced results that corroborate the findings of a great deal of the previous work in this field, both in the context of developed and developing countries. Nguyen et al.(2022) conducted a study in Vietnam, revealing that financial literacy indirectly influences saving behavior through risk tolerance, and Almas et al.(2020) found that risk tolerance has a correlation with saving behavior in China. Another interesting finding of this research is the competitive (partial mediation) role of financial risk tolerance on the relationship between financial knowledge and spending behavior: The direct effect is negative and significant, but the indirect effect is positive and significant. This finding indicates the role of *FRT* in encouraging better spending behavior. Higher financial knowledge alone does not necessarily ensure better spending behavior. Our finding suggests that higher financial knowledge must be balanced with more risk-tolerant behavior (i.e., higher *FRT*) to achieve better spending behavior, which is consistent with the previous findings of Azmi & Ramakrishnan (2018). All in all, The findings of the current study are consistent with those of Bapat (2020) and Nguyen et al.(2022), who revealed that subjective financial knowledge is found to influence saving behavior through risk tolerance indirectly. This finding supports previous research that links risk tolerance and subjective financial knowledge in context-developed countries such as the U.S. (Noman et al.,2023) and developing countries such as Vietnam (Nguyen et al., 2022). However, the current study's findings do not support the previous research by Peiris (2021), who found that financial literacy has a direct and positively significant influence on savings behavior.

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This study provides further evidence of the important link between young people's level of risk tolerance and their financial behavior. Finally, financial risk tolerance plays a role in shaping an individual's financial behaviors (Grable, 2016; Grable, 2018). A higher level of risk tolerance would be significant, in the individual achieving good financial behavior.

## Conclusion

This study reveals the positive relationships of financial knowledge, e-payment awareness, and financial risk tolerance with saving and spending behavior. Based on the study's findings, financial knowledge and e-payment awareness are factors that are important in the development of a higher level of risk tolerance among young people which, in turn, can affect both saving and spending behavior. The study also reveals that financial knowledge and e-payment awareness play roles in shaping the individual's financial behavior through financial risk tolerance. This study provides evidence that financial risk tolerance has a complementary partial mediation role in this relationship. The relationship of financial knowledge and e-payment awareness with saving behavior can be either direct or indirect. At the same time, the relationship of financial knowledge and e-payment awareness with saving behavior is direct only.

The findings of this study reveal three important insights into the relationships between financial knowledge, e-payment awareness, financial risk tolerance, and financial behavior among young adults: (1) Financial knowledge positively impacts financial risk tolerance. Individuals with higher financial knowledge are more likely to have a higher tolerance for financial risks, aligning with previous research indicating that knowledgeable individuals are more comfortable with risk in financial decisions. (2) E-payment awareness influences both saving and spending behavior, with awareness of e-payment systems leading to better financial risk tolerance and encouraging saving habits. This suggests that familiarity with digital payment systems can promote more cautious financial behavior by enhancing individuals' comfort with managing financial transactions electronically. (3) Financial risk tolerance serves as a mediator in the relationship between financial knowledge and spending behavior. While financial knowledge alone may not directly lead to better spending habits, when combined with higher risk tolerance, it positively influences spending behavior. This highlights the importance of balancing financial knowledge with risk tolerance for optimal financial behavior.

Based on this study's findings, this study highlights the critical role of financial knowledge, digital payment awareness, and risk tolerance in shaping financial behaviors. The implications for research are that future research could expand on these findings by exploring how these factors interact in different demographic contexts or across diverse economic conditions. The practical implication is financial institutions and educational organizations can leverage these findings to design programs that increase digital payment awareness and financial knowledge, especially among young people. By promoting financial literacy programs incorporating digital finance components, financial institutions can help individuals make more informed decisions and build sustainable saving and spending habits. Moreover, by identifying risk profiles, financial service providers can offer tailored products that align with customers' risk tolerance levels, ultimately improving customer satisfaction and financial stability. Finally, the implication for society is

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improving financial literacy and digital payment awareness can lead to more financially responsible behavior, fostering economic stability within communities. As individuals become more aware of managing their finances and understanding risk tolerance, they are likely to contribute to a more resilient economy. Enhanced financial knowledge and digital competency also align with national goals of increased financial inclusion, supporting a well-informed and economically active society.

These implications underscore the importance of targeted financial education and inclusive financial policies to promote responsible financial behavior in a digital era.

## Limitations

Although the present study successfully demonstrated the relationships between financial knowledge, e-payment awareness, financial risk tolerance, saving behavior and spending behavior, one limitation is the lack of balance in terms of the number of responses by age, gender, and income level. The researchers were limited by time and the limited number of respondents willing to fill out the survey. This meant that the researchers had insufficient time to collect more responses. Despite this, the sample size met the minimum requirements for statistical validity, ensuring reliability in the core findings.

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## Appendix

### The questionnaires

#### **Financial Knowledge**

##### ***Subjective financial knowledge***

SFK1. How would you assess your knowledge of investment

- |             |        |         |              |
|-------------|--------|---------|--------------|
| 1. Very Low | 2. Low | 3. High | 4. Very High |
|-------------|--------|---------|--------------|

##### ***Objective financial knowledge***

I would like to know whether you think the following statements are true or false.

OFK1: If you save Rp1,000,000.00 today at an interest rate of 4% for one year, your balance in one year will be Rp1,040,000.00.

OFK2: High inflation has a negative impact on investments.

OFK3: Dewi routinely saves in a monthly term deposit to prepare education funds for the next 5 years. What Dewi does is aimed at achieving long-term financial goals.

OFK4: It is usually possible to reduce the risk of investing in the stock market by buying a diverse range of stocks and shares.

OFK5: The type of investment in stock mutual funds is a mutual fund with higher risk than bond or money market mutual funds.

#### ***E-Payment Awareness***

EPA1: Transacting using an electronic payment system (E-Payment) saves me time.

EPA2: Transacting using an electronic payment system (E-Payment) saves me money.



EPA3: Transacting using an electronic payment system (E-Payment) is better than using cash.

EPA4: Digital payment users should be aware of security issues when using electronic payment systems.

EPA5: E-Payment offers more options for me.

EPA6: Electronic payment systems are easily adaptable.

EPA7: Electronic payment systems are easy to use.

EPA8: I am aware of the potential risks of using the E-Payment platform, such as personal data theft, account misuse, and fund security concerns.

### ***Spending Behavior***

SPB1: If I want to buy something, I always look for information about the product before purchasing it.

SPB2: If I want to buy something, I always compare prices first and do comparison shopping before purchasing a product or service.

SPB3: I keep a written or electronic record of my monthly expenses.

### ***Saving Behavior***

SVB1: I have started saving for long-term goals.

SVB2: I have started investing in mutual funds, stocks, or other securities.

SVB3: I have prepared an emergency fund for unexpected needs.

SVB4: I save money regularly.

### ***Financial Risk Tolerance***

FRT1. Speculative Risk

1. Suppose that before tossing a coin (side A: Fish head, side B: Fish tail), you are asked to choose one of the following options for the prize you will receive:

A. Guess which side (A or B) will appear and, if correct, you will receive IDR 100,000

B. Guess if side A will appear and, if correct, you will receive IDR 200,000. If side B side appears, you will not receive anything.

2. Suppose you won a quiz with a cash prize of IDR 500,000. You are given the opportunity to choose either:

C. IDR 500,000 which you have won, but without being able to have the second quiz round opportunity.

D. Take the second quiz round with an 80% chance of winning IDR 1 million: if you lose, you will receive nothing at all

FRT2. Investment Risk

If you unexpectedly received IDR 100 million to invest, in what would you invest the funds?

A. 100% savings and deposits

B. 50% savings and term deposits, 50% mutual funds

C. 50% mutual funds and 50% stocks

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D. 100% stocks

FRT3. Evaluated Financial Risk

How many losses can you accept in investing?

A. 0%

B. Up to 50%

C. Up to 75%

D. 100%



## Attitudinal Factors Influencing Digital Collaborative Consumption Among Internet Users: A Confirmatory Study in Indonesia

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**Abstract:** There has been a substantial surge in people participating in collaborative consumption (CC) over the past few years, particularly on digital platforms. This phenomenon has encouraged some researchers to explore the motivational factors affecting user intention to use CC. However, the previous research has predominantly concentrated on identifying these factors in the context of CC service, with limited attention specifying the digital platform where the interaction among users is different. Hwang and Griffiths's model of intention that predicts the behavioral intention of millennials' participation in CC is unique in a way that it recognizes both attitude and empathy as the main factors affecting intention to use a CC platform. The model could be relevant for CC, as it covers different values such as utilitarian, hedonic, and symbolic values. This study has developed a model to make it comprehensive by adding several factors from past research: perceived behavioral control and online initial trust. We tested the model in the Indonesian context using partial least squares regression. One of the world's most populous countries, Indonesia provides a thought-provoking digital CC practice opportunity. The results show that empathy and online initial trust are not significant predictors of intention to participate in CC. In addition, utilitarian value is not a significant predictor of attitude toward participating in CC. Thus, attitude is the critical factor affecting intention to participate in CC, and perceived usefulness, perceived ease of use, and hedonic and symbolic values are significant predictors of the effect of attitude on participation in CC. This study can provide valuable insight for those startup practitioners who create this type of business model, characterized by its rapid change and volatile nature. The results could play a role in guiding marketers specializing in CC to enhance their apps using effective tactics or strategies, thereby improving the customer's participation on their platform.

**Keywords:** collaborative consumption, digital, technology, e-commerce, startup, sharing economy, user intention

**JEL Classification:** M300, M310

## Introduction

The development of digital technology has created innovative business models that broaden customer reach, expand market opportunities, and enhance operational efficiency (Astuti & Nasution, 2014). Among those models, the platform-based digital business has emerged as the most popular one, notably the collaborative consumption model (CC) (Barnes & Mattsson, 2017). Digital CC has been applied to various activities from selling and buying (e.g., *olx.co.id*, *bukalapak.com*, and *tokopedia.com*), to renting (e.g., *Ru mah123.com* and *Urbanindo.com*), and offering services (e.g., Gojek and Grab) (Noviantoro et al., 2020; Fauzi & Sheng, 2020; Pratama, 2018). Generally, collaborative consumption aims to maximize the utilization of products and reduce the financial burden of ownership through the collaborative use of the products among the involved parties (Benjaafar et al., 2019).

The PWC report by Lieberman (2015) presents data indicating a rising trend of individuals participating in CC as evidenced by increasing numbers year after year. The report projects substantial growth within the sharing economy sector, an interchangeable concept associated with CC (Minami, et al. 2021). The report forecasts a potential global revenue escalation from USD 15 billion in 2014 to an estimated USD 355 billion by 2025. The trend of sharing, which enables individuals and groups to generate income from underused assets, is facilitated by digital platforms that foster unique user interactions. In the realm of digital CC, the motivational factors that drive users to engage in CC are not solely influenced by the service offered but also by the platform itself. The majority of existing research mostly focuses on identifying the influential factors in the context of CC services, with limited exploration specifically in the digital domain, such as the study conducted by Mayasari & Haryanto (2018).

A study conducted by Hwang and Griffiths (2017) is considered a notable contribution to the field of CC research. They proposed a model that predicts the behavioral intention of millennials' participation in CC. They suggested that users' cognitive perception and affective attitude will be the main drivers of the intention. The PWC research data suggests that a significant proportion of potential users of CC fall within the millennial age range, which accounts for the majority of the respondents in this study. The current research could also benefit from incorporating relevant constructs as stated by Goyal, Maity, Thamizhvanan, & Xavier (2013), Chen & Barnes (2007), Kim & Ahn (2007), Pavlou & Gefen (2004), Sun (2010), Shadkam (2012), Becerra & Korgaonkar (2011), Kim (2012), Schlaegel (2015), and Hsu, Chuang, & Hsu (2014), which highlight that online initial trust and perceived behavioral control are significant drivers of intention to use digital platforms. Moreover, given the current research's emphasis on CC users' participation in digital platforms, it is appropriate to consider the applicability of the technology acceptance model (TAM) as a suitable dimension. The perceived usefulness and perceived ease of use of digital platforms play essential roles in influencing people's intentions to use digital platforms according to the TAM (Cheah, Phau, & Liang (2015); Dakduk, Ter Horst, Santalla, Molina, & Malavé (2017). Therefore, Hwang and Griffith's (2017) model will be more comprehensive if we add those constructs.

Our study aims to enhance the existing model of CC by Hwang and Griffiths (2017) by incorporating other relevant variables, namely online initial trust (OIT) and perceived behavioral control (PBC), as well as the TAM, to reinforce the digital CC participation theory that provide valuable insight for the startup practitioners who create this



type of business model. We tested the model in the Indonesian context. The country is one of the world's most populous countries and is considered to provide a thought-provoking opportunity for digital business, particularly in terms of CC practice, as reported by the Indonesian Ministry of Communications and Informatics (2018). Several startups in Indonesia have emerged within the context of CC realms. For instance, social crowdfunding (Kitabisa), peer-to-peer lending (Investree, Amartha), ride-hailing (Gojek, Grab), educational (Ruangguru, Rumah Belajar), and healthcare (Halodoc, Alodokter) (Barnes & Mattsson, 2016; Santoso & Erdaka, 2015; Sevisari & Reichenberger, 2020).

This paper is organized into six sections. Section 2 discusses the literature review and hypotheses development. Section 3 outlines the method of study. Section 4 describes the analysis. The findings are then discussed in Section 5. Finally, Section 6 concludes our studies, discusses the implications, provides directions for future research, and explains the limitations of our work.

## Literature Review

In line with its aim to enhance and use the research model previously used by Hwang and Griffiths (2017), this study draws on other research that is relevant to this investigation. Their research is based on two theoretical frameworks: the cognitive hierarchy model and the theory of reasoned action, both of which explore the value-attitude-intention relationship, which plays a crucial role in all marketing activities (Holbrook, 1982). Additionally, empathy is included in the model because this variable is highly correlated with prosocial behavior, one of the motivating factors to participate in a sharing economy activity. Furthermore, the model incorporates two relevant theories related to the acceptance of technology by users, the technology acceptance model (TAM) and the unified theory of acceptance and use of technology (UTAUT). The TAM primarily focuses on the ease of use and usefulness of the technology (Davis, 1985), while the UTAUT emphasizes the attainability of the technology itself through the construct of perceived behavior control (PBC) (Venkatesh et al., 2003.). Additionally, given that digital CC is a social activity facilitated by a digital platform, anonymity becomes crucial as it acts as a barrier for users to use this service. Consequently, this research includes online initial trust (OIT) as the control variable that potentially influences users' intention of digital CC.

## Online Collaborative Consumption

The term CC describes a socio-economic model implemented with technology where a group of people shares the use of the products or services to reduce the economic cost of ownership (Piscicelli et al., 2015; Raice, 2011). The practice might refer to renting, sharing, borrowing, bartering, lending, swapping, and gifting (Piscicelli, Cooper, and Fisher, 2015). In other words, CC is the share of usage of products or services through a digital platform. Sharing, in Belk's (2014) definition, refers to a public act that ties us to other people and the way we connect with others and the solidarity and connection that emerge. Botsman & Rogers (2010) propose three CC models: product/service system, redistribution markets, and collaborative lifestyles. The difference between them lies in the company's role (i.e., profit, non-profit, or public), the ownership transfer level, the type of trading activity (i.e., lending or renting), and whether economic transactions take place or not (Botsman & Rogers, 2010; Hamari et al., 2016).

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## Intention to Use Collaborative Consumption

Several studies have reported the motivation for participation in CC practices. Hwang & Griffiths's (2017) study assesses the intention to use CC among millennials and points out that cognitive value perceptions and affective attitudes affect users' intention to use CC. Nelson, Rademacher, & Paek (2007) identify four motives for people sharing their economic properties with others: decluttering, financial factors (e.g., saving money, obtaining bargains), environmental concern, and desire for social value. Another study by Lamberton and Rose (Lamberton and Rose, 2012) suggests that product availability is a key influencing factor affecting CC initiation. When the participants believe the item they are looking for is unavailable, they will participate in a CC activity. Then, Belk (2014) mentions product affordability as another critical factor. He states that some relatively unaffordable items, like cars, motivate people to participate in CC to be able to utilize the car without having to own it. Finally, our study on the motivation behind individual participation in CC results in the conceptual model as presented in Figure 1.

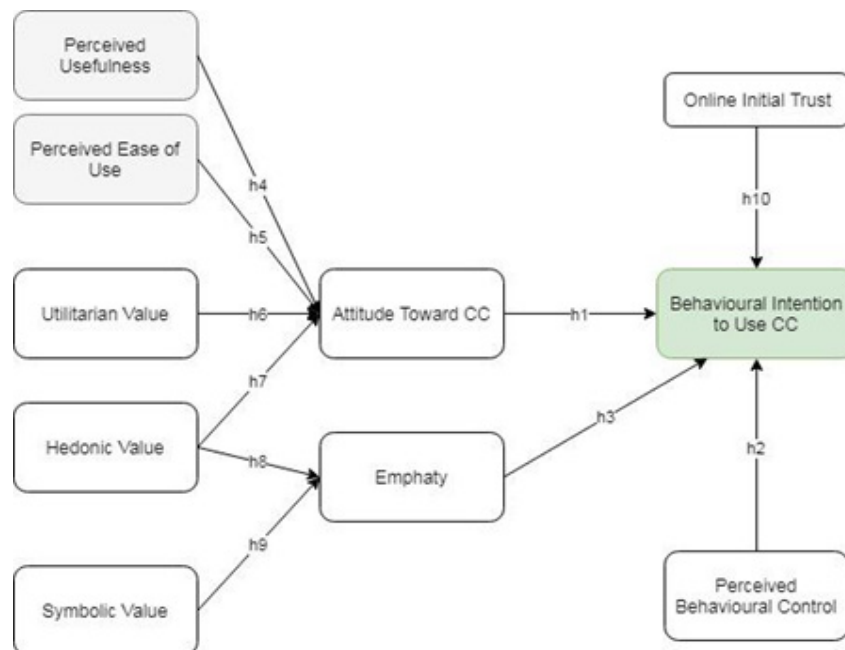


Figure 1. Conceptual Model

### Attitude towards Collaborative Consumption

Due to the strength of its empirical support and theoretical basis, the technology acceptance model (TAM) (Davis, 1985) has been extensively adopted by several researchers to describe the intentions of a user and his/her actual behaviors on a particular technology (Al-Emran et al., 2018; Keen et al., 2004). Behavioral intention refers to the strength of one's intention to engage in a particular behavior (Fishbein and Ajzen, 1977). Meaning that identifying the intention to use can help determine actual behavior in users' decision-making process to use a technology or platform (Y. Wang et al., 2020; J. Hwang & Griffiths, 2017; L. Zhang et al., 2012). Besides, consumers' use intention is strongly considered to become a market penetration indicator when a startup establishes a new product (Merhi, Hone, and Tarhini, 2019).

According to the TAM, consumers' intention on particular technology is influenced by the consumers' attitude toward that technology (Khare & Sadachar, 2014; Wu & Chen, 2017). One's attitude toward any technology can be predicted with a high degree of accuracy from the knowledge of the user's beliefs about the technology and the evaluation aspect of these beliefs (Fishbein and Ajzen, 1977). In other words, consumers are more likely to use new technology, in this case, the digital CC platform, when they believe that the platform will benefit them, i.e., increase work performance. Hence:

**H1:** Attitude toward the online CC platform positively correlates with the behavioral intention to use the platform.

### ***Perceived Behavioral Control***

The unified theory of acceptance and use of technology (UTAUT) puts perceived behavioral control (PBC) as one variable indicating a person's trigger to act on intention to behavior (Venkatesh et al., 2003.). UTAUT defines PCB as an individual's has perceived difficulty or ease to do a specific behavior, according to the theory of planned behavior (TPB) proposed by Ajzen (1985). It is believed that the total of obtainable control beliefs could determine perceived behavioral control. PCB describes how easy or difficult the user can do behavioral intentions (Al-Emran et al., 2020). Control beliefs are explained as the existence of an element that can facilitate or hinder action in behavioral reason. When the PBC is higher, the more chance the behavior will arise (Chien et al., 2014; Dakduk et al., 2017). According to Mathieson, Peacock, & Chin (2001) and Sembada & Koay (2021), PCB is related to the person who thinks their power can manipulate control. In this research, from the perspective of user control, PCB variables can complete the model while using a digital-based platform. The person who is more experienced with the digital platform (digital natives) will certainly have a higher degree of CC use compared to non-digital natives due to their computer technical skills when using it (Mittendorf, 2018) Another higher PBC level can also be seen from the resources perspective (Roos & Hahn, 2019; Sembada & Koay, 2021). This 'resource' can refer to the type of user's gadget when connected to the network or how capable the connectivity supports them when using the digital platform. The ability to use the digital platform and the resource to access its CC platform are essential.

**H2:** Perceived behavioral control positively correlates with the behavioral intention to use the online CC platform.

### ***Empathy***

Hwang and Griffiths's (2017) model regarding CC's behavioral intention states that empathy is the critical factor influencing a CC user's intention. Empathy is a prosocial behavior that arises from a user attaching to another individual's feelings (Eisenberg and Miller, 1987). Other research explores empathy in the individual motivation contexts to help others who need altruistic action based on attaching to others' perspectives (Hwang and Griffiths, 2017). Empathy has multidimensional variables, according to Escalas & Stern (2002). Another dimension alongside the person's feeling of attachment, empathy, could refer to an outcome of cognitive or perceptual practices (Eisenberg, Wentzel, and Harris, 1998) and also feeling sympathy, concern, and compassion (Batson, 2014; Stürmer

et al., 2005). The various perceptions of empathy's position also serve to divide the item into two: emotional empathy and cognitive empathy (Parra, 2013). Emotional empathy is considered to be allocating the emotion, while cognitive empathy is more considered to be the capability to adapt to the other's perspective.

Marimon, Llach, Alonso-Almeida, & Mas-Machuca's (2019) and Hwang and Griffiths's (2017) studies assimilate empathy to understand how consumers intend to use and buy or rent the CC of services/products served by the venture from the emotional aspect. Meanwhile, in this study, we propose empathy as a construct indicating the user's emotional feeling to attach with other users through the platform, and it can release feelings of concern toward it according to CC in the digital platform. An experiment related to ad response conducted by Escalas and Stern (2002) shows that consumer empathy affects the customer's attitude toward the advertisement. Therefore, connecting the line with this prosocial behavior of CC, the following statement is hypothesized.

**H3:** Empathy influences the behavioral intention to use CC through an online platform.

### ***Online Initial Trust***

Trust in online platforms is categorized into three perspectives: technical-based dimension, the uncertainty of transaction, and competency-based reputation (Yoon, 2002; Doney & Cannon, 1997; Heijden et al., 2003; Koufaris & Hampton-Sosa, 2004). The technical-based perspective correlates with the technical aspect of an online platform and how the users can obtain it, such as web searching, website or app presentation, and the technology itself. The uncertainty of transactions is more related to how online apps assure security. The competency-based perspective will be tightly correlated with the brand reputation of the website or application, interaction, and fulfillment. Trust is a set of beliefs, including ability, integrity, and benevolence (Svare et al., 2020; Mayer et al., 1995). It is an eagerness of an individual to be indefensible to others' behavior. In comparison, Pappas (Pappas, 2016) and Rempel, Holmes, & Zanna (1985) state there is a feeling of confidence and security that responds to other parties. When trust exists, the organization do not have to invest on expensive and complex infrastructures as security can be attained through simpler means due to mutual trust among individual (Susilo et al, 2022). Therefore, trust in the model will complete the factor influencing the digital user's intention to use the CC platform.

**H10:** Online initial trust positively influences the behavioral intention to CC through an online platform.

### **Factors Influencing Attitude toward Collaborative Consumption *Perceived Ease of Use and Perceived Usefulness***

Perceived ease of use refers to the technology acceptance model proposed by Davis (Davis, 1985); perceived ease of use is correlated with an individual's belief that the technology usage will offer an effortless experience that will directly or indirectly affect the intention. Another study conducted by Hansen, Saridakis, & Benson (2018), Inegbedion (2018), and Hsieh, Rai, & Keil (2008) finds that perceived ease of use has a significant influence on driving the continuance of technology use. In this study, the ease of use will be

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correlated with the user's comfortability and effortless usage.

According to Chu & Lu (2007), whose research is related to the music platform, perceive usefulness as being how users believe that listening to music will fulfill a particular purpose. Chiu, Lin, & Tang (2005) state that several empirical studies confirm the significance between perceived ease of use and perceived usefulness with intention. Davis (1985) also proposes that perceived usefulness is a highly significant predictor construct of attitudes to implement new technology at two distinct periods in the word processing software context. Other similar studies conducted by Mathieson, Peacock, & Chin (2001), Venkatesh, Morris, Davis, & Davis (2003), Szajna (1996), Agarwal & Karahanna (2000), and Adams, Nelson, & Todd (1992) also support the idea. The modification of the TAM used for information technology (IT) is also validated by Yoon (2002). Therefore, if we correlate those previous studies with this research in the CC context, we might say that using the CC platform will fulfill the user's purpose.

**H4:** Perceived ease of use positively influences the attitude toward CC through an online platform.

**H5:** Perceived usefulness positively influences the attitude toward CC through an online platform.

### ***Utilitarian Value, Hedonic Value, and Symbolic Value***

According to Blackwell, Miniard, and Engel (Blackwell et al., 2006), the motivation to purchase is separated into two distinct perspectives: intrinsic and extrinsic motivation. Intrinsic motivation, similar to utilitarian and hedonic value, is the judgment of the consumers on the benefits from their consumption experience, while extrinsic factors will be identified as security and privacy that correspond to the influence of external resources (Ozturk et al., 2016; L. C. Wang et al., 2007). In this study, we try to focus on the intrinsic perspective. According to Kim & Han (2011), the consumer's feelings acquire hedonic value. It is more personal as a fun feeling than task fulfillment. Hedonic value is reflected as entertainment and emotion when shopping rather than the purpose of shopping itself, which is a utilitarian value (Bettiga et al., 2020). For example, a consumer who is more into hedonic value will search for the pleasure of shopping rather than the utilitarian value related to the essential purpose of buying goods. It is interesting to bring these two values into this study because they can be identified from the features that are offered from the CC platform (Benoit et al., 2017; J. Hwang & Griffiths, 2017). For instance, one of the most popular Indonesian ride-hailing services, Gojek, can offer more practical benefits such as effort saving and utility which are vital determinants of users' satisfaction because the users can save energy to travel within the city with competitive pricing (Hwang and Griffiths, 2017). On the other hand, the CC platform focusing on video sharing like youtube will deliver more hedonic value because users can enjoy watching videos from millions of users (T. C. Zhang et al., 2019). Therefore, this study finds the correlation between two intrinsic factors, like utilitarian and hedonic value, which strengthens the previous research. The symbolic value is related to altruistic or social value: the sustainability awareness to consume (Činjurević et al., 2019). For example, we can minimize our carbon footprint when we use a product. In the context of the current study, Zipcar emphasizes that using certain services can reduce environmental footprints; this benefit can lead young consumers to perceive the symbolic value of the practice (Catulli et al., 2017). According to a study



by KRC Research and Zipcar, 45% of consumers between the ages of 18 and 34 years consciously choose to use alternative forms of transportation, and 16% of them acknowledge that they drive less because they want to protect the environment (B. Davis et al., 2012).

**H6:** Utilitarian value positively influences the attitude toward CC through an on-line platform.

**H7:** Hedonic value positively influences the attitude toward CC through an online platform.

### **Factors Influencing Empathy toward Collaborative Consumption**

As mentioned above, empathy in this research is defined as a user's emotional feeling to attach himself or herself to other users through a platform that releases feelings of concern. Keeble (2013), in his study, states that CC would probably induce value perceptions (utilitarian, hedonic, and symbolic value). When the platform offers more benefits of sharing usage than ownership, the utilitarian value exists (S. Lee & Kim, 2018; J. Hwang & Griffiths, 2017). For example, Gojek provides ride-sharing (bike or car), bringing more benefits than owning it. Unlike utilitarian value, hedonic value can appear when the CC platform brings experience to entertain users (Babin & Attaway, 2000; Benoit et al., 2017). One example that represents this variable can be seen when Gojek offers a helpful food delivery experience through a smartphone and gives an exciting way to select menus featuring many discounts. On the other hand, symbolic value appears when the CC platform elicits positive feedback as part of a prosocial movement (Činjurević, Kožo, and Berberović, 2019). For example, using environmentally friendly products or services such as sharing transportation can indicate the existence of individual prosociality or, in this case, a signaling effect of the benevolence of symbolic value (Bird and Smith, 2005). Holbrook (1994), in his research, states that empathy is influenced by the consumer's value perception, which is studied because it has a significant effect on marketing activities. On the other hand, the study by Hwang and Griffiths's (2017) shows that symbolic value increases empathy, but not attitude, and utilitarian value increases attitude but not empathy; the influence of empathy's value alongside attitude suggests that increasing awareness of prosocial issues converts into empathetic feelings about CC (Benoit et al., 2017; Botsman & Rogers, 2010; Prothero et al., 2011).

**H8:** Hedonic value has a positive influence on the empathy toward CC through an online platform.

**H9:** Symbolic value positively influences the empathy toward CC through an on-line platform.

## **Methods**

### **Data Collection**

The sample population for this study is internet users from various cities in Indonesia. This country was selected because its collaborative economy has been proliferating (Paundra et al., 2020). According to the World Economic Forum, 87% of Indonesians are inclined to utilize products or services within a shared community, surpassing the global average of 66% (Liem, 2016). Moreover, the rise of the economy is also indicated by



the widespread use of Gojek which has become the first Indonesian unicorn company in the ride-hailing business (Pratama, 2018); Kuncoro, 2017). The population was limited to digital users who have experience using digital CC platforms such as ride-hailing services (Gojek, Grab), peer-to-peer accommodation (Airbnb), crowdfunding platforms (KitaBisa), sharing economy-based e-commerce (Bukalapak), and so forth. The selected population for this study is Indonesian internet users who have prior experience with digital CC. An online questionnaire was distributed to this population taken from the researcher's database and relatives, primarily residing in several big cities across Indonesia. The online survey was conducted using Google Forms where participants were provided with clear instructions beforehand. The study period commenced in April 2018 and ran for approximately two and a half years until its completion.

## Measures

The questionnaire used for data collection contained scales to measure the ten constructs of the current study's research model. They are Attitude Toward CC (3 items), Intention to Use CC (3 items), Empathy (1 item), Hedonic Value (3 items), Online Initial Trust (5 items), Perceived Behavioral Control (3 items), Perceived Ease of Use (4 items), Perceived Usefulness (3 items), Symbolic Value (2 items), and Utilitarian Value (2 items). A 6-point Likert scale was administered, in which 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = slightly agree, 5 = moderately agree, and 6 = strongly agree.

**Table 1.** Measurement Item

Construct	Questionnaire Item	References
Attitude Towards CC	<ol style="list-style-type: none"> <li>Using a digital CC platform would be a good idea (A1)</li> <li>Using a digital CC platform would be more interesting than traditional CC (A2)</li> <li>Using a digital CC platform would be fun (A3)</li> </ol>	(Hwang and Griffiths, 2017)
Intention to Use CC	<ol style="list-style-type: none"> <li>I intend to continue using a digital CC platform in the future (IU1)</li> <li>I will always try to use a digital CC platform in my daily life (IU2)</li> <li>I plan to continue to use a digital CC platform frequently (IU3)</li> </ol>	(Hwang and Griffiths, 2017)
Empathy	I felt as if I needed to participate in a digital CC platform when there was crucial or intense discussion over a digital CC platform (E1)	(Hwang and Griffiths, 2017)
Hedonic Value	<ol style="list-style-type: none"> <li>While using a digital CC platform, I felt a sense of fun (HV1)</li> <li>I enjoyed the exposure to new information during a digital CC platform discovery (HV2)</li> <li>I had a good time because I was able to act on the spur of the moment (HV3)</li> </ol>	(Hwang and Griffiths, 2017)
Online Initial Trust	<ol style="list-style-type: none"> <li>I use web site/apps if it is trustworthy and honest (OIT1)</li> <li>I use web site/apps if it is the website wants to keep promises and obligations (OIT2)</li> <li>I use web site/apps if the information on this website is plentiful and of sufficient quality (OIT3)</li> </ol>	(Doney & Cannon, 1997), (van der Heijden, 2003) and (Koufaris and Hampton-Sosa, 2004)

	<ol style="list-style-type: none"> <li>4. I use web site/apps if the website offers secure personal privacy (OIT4)</li> <li>5. I use web site/apps if It is thought that this website keeps my best interests in mind (OIT5)</li> </ol>	
Perceived Behavioral Control	<ol style="list-style-type: none"> <li>1. Whether or not I use a digital CC platform is entirely up to me (PBC1)</li> <li>2. There are likely to be plenty of opportunities for me to use a digital CC platform (PBC2)</li> <li>3. I have total control over the use of a digital CC platform (PBC3)</li> </ol>	(Ajzen, 1985)
Perceived Ease of Use	<ol style="list-style-type: none"> <li>1. Interaction with a digital CC platform would be clear to understand (PEU1)</li> <li>2. Navigating a digital CC platform would be easy (PEU2)</li> <li>3. A digital CC platform will be easy to learn to use (PEU3)</li> <li>4. A digital CC platform will make it easy to perform a task (PEU4)</li> </ol>	(Davis, 1985)
Perceived Usefulness	<ol style="list-style-type: none"> <li>1. Using a digital CC platform would make it easier to do my job (PU1)</li> <li>2. A digital CC platform would be helpful for my job (PU2)</li> <li>3. Using a digital CC platform would increase productivity (PU3)</li> </ol>	(Davis, 1985)
Symbolic Value	<ol style="list-style-type: none"> <li>1. Using a digital CC platform would make me feel more responsible (SV1)</li> <li>2. Using a digital CC platform would make me feel like a part of a more significant cultural movement (SV2)</li> </ol>	(Činjurević, Kožo and Berberović, 2019)
Utilitarian Value	<ol style="list-style-type: none"> <li>1. I found the information I was looking for in a digital CC platform (UV1)</li> <li>2. I accomplished what I wanted to do in a digital CC platform (UV2)</li> </ol>	(Hwang and Griffiths, 2017)

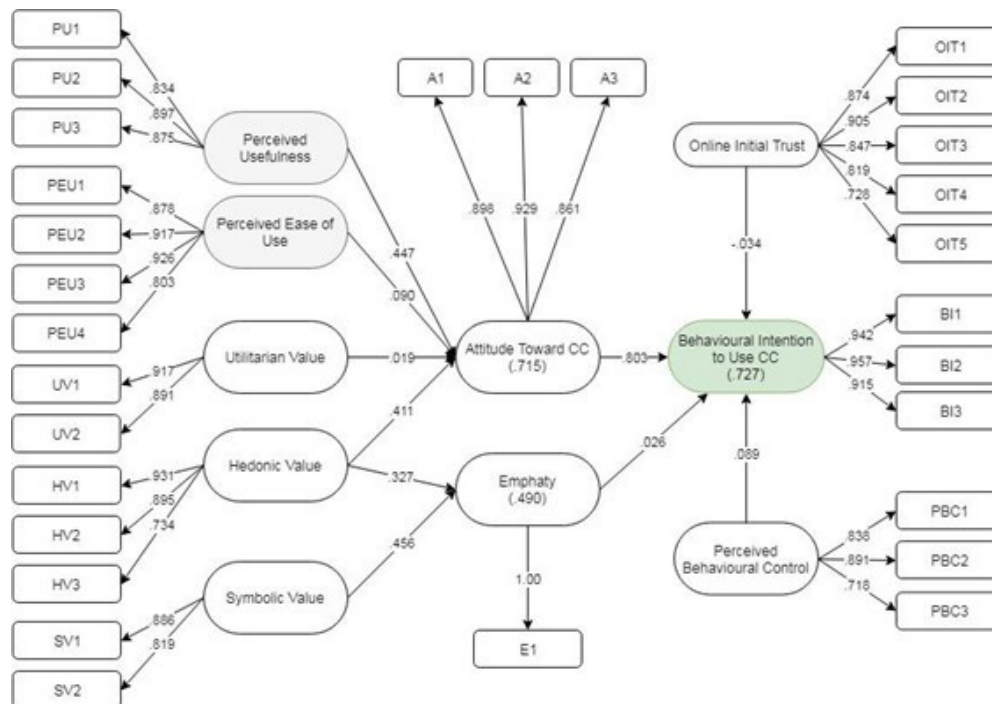
## Result

The study sample follows non-probability sampling with a convenience sampling approach because of its affordability, easy accessibility, and time flexibility. Besides, the respondents were considered to have an equal opportunity to use any application or website they were interested in. A pilot questionnaire was distributed to the first 30 respondents to check validity and reliability. Three hundred twenty questionnaires were gathered and retained for further analysis for the final survey.

To analyze the data collected, we examined the proposed conceptual development model, and tested the study's formulated hypotheses; the partial least squares structural equation modeling (PLS-SEM) technique was used. PLS-SEM is a powerful tool to measure a model because it can measure with a robust result without a lot of assumptions and requirements such as multicollinearity (Wold et al., 2001). This study employed the PLS-SEM method using SmartPLS version 3.0 to validate the proposed model and assess the hypotheses (H. Hwang et al., 2010).

## Validity and Reliability Analysis

The result shows all indicators are valid and reliable, with each of the Cronbach alpha values being more than 0.6 and each of the average variance extracted (AVE) values being higher than the acceptable score of 0.5 (Larcker, 1981; Hair et al., 2009). Moreover, the factor loadings of all measures are more significant than their construct on any other factors. Thus, the validity and reliability of the proposed model have been achieved to a satisfactory level. The validity, reliability, and factor loading summary is presented in Figure 2 and Table 1.



**Figure 2.** Result of Reliability and Factor Loading

**Table 2.** Result of Validity and Reliability Test

	Cronbach's	rho_A	Composite Reliability	Alpha Variance Extracted (AVE)
Attitude Towards CC	0.868	0.869	0.919	0.791
Intention to Use CC	0.932	0.933	0.957	0.880
Empathy	1.000	1.000	1.000	1.000
Hedonic Value	0.819	0.871	0.892	0.736
Online Initial Trust	0.891	0.895	0.921	0.701
Perceived Behavioral Control	0.757	0.815	0.858	0.671
Perceived Ease of Use	0.904	0.910	0.933	0.778
Perceived Usefulness	0.837	0.840	0.902	0.755
Symbolic Value	0.631	0.650	0.843	0.728
Utilitarian Value	0.777	0.786	0.899	0.817

The result of the structural model equation could be obtained by evaluating the

R-squared (determinant coefficient) and the path coefficient (effect size). The R-squared indicates that the variance of the exogenous construct can explain the endogenous construct. The results of R-squared can be classified into a good model ( $R^2$ : 67%), a moderate model ( $R^2$ : 33%), and a poor model ( $R^2$ : 19%). The path coefficient/effect size indicates how the exogenous construct influences the endogenous construct. The level of influence usually has three classifications: poor (0.02), average (0.15), and a strong level of influence (0.35). Based on the structural model's data analysis as presented in Table 3, the R-squared value for variables affecting attitude is 70.6%, and for variables affecting intention to use is 72.2%, indicating that these variables effectively account for a significant proportion of endogenous variables. In addition, hedonic and symbolic variables demonstrate a moderate level to explain the empathy construct, as the R-squared value is 48.9%. The bootstrap test in SmartPLS 3 was used to calculate the result of the study with 5000 iterations with a one-tailed test type.

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**Table 3.** Result of R-Squared and Effect Size

Relationship between Variables	Effect Size	T-Value	R <sup>2</sup>
H4 : Perceived Usefulness → Attitude towards CC	0.032	1.8.4	70.6%
H5: Perceived Usefulness → Attitude towards CC	0.000	7.29	
H6: Utilitarian Value → Attitude towards CC	0.294	0.54	
H7: Hedonic Value → Attitude towards CC	0.000	6.91	
H1: Attitude towards CC → Intention to Use CC	0.00	21.2	72.6%
H3: Empathy → Intention to Use	0.235	0.72	
H2: Perceived Behavioral Control → Intention to Use CC	0.013	2.224	
H10: Online Initial Trust → Intention to Use CC	0.143	1.068	
H8: Hedonic Value → Empathy	0.000	4.59	48.9%
H9: Symbolic Value → Empathy	0.000	6.62	

## Hypothesis Testing

The analysis suggests strong support for our seven posited hypotheses, H1, H2, H4, H5, H7, H8, and H9. For five of those hypotheses (H1, H5, H7, H8, and H9), the relationship is significant, with p-values below 0.001. By contrast, the research results show

that for three hypotheses the relationship is not significant. The three rejected hypotheses are empathy's effect on intention to use CC (H3, p-value 0.292), online initial trust's effect on intention to use CC (H10, p-value 0.273), and utilitarian value's effect on attitude toward CC (H6, p-value: 0.376).

**Table 4.** Result of T-Value and P-Value

	Original Sample (O)	Sample Mean (M)	Standard Deviation	T Value	P Values	Result
Attitude Toward CC → Intention to Use CC	0.803	0.801	0.038	21.377	0.000	Supported
Empathy → Intention to Use CC	0.026	0.021	0.047	0.547	0.292	Rejected
Hedonic Value → Attitude Toward CC	0.411	0.411	0.056	7.280	0.000	Supported
Hedonic Value → Empathy	0.327	0.329	0.070	4.640	0.000	Supported
Online Initial Trust → Intention to Use CC	-0.034	-0.026	0.056	0.604	0.273	Rejected
Perceived Behavioral Control → Intention to Use CC	0.089	0.089	0.058	1.520	0.064	Supported
Perceived Ease of Use → Attitude Toward CC	0.090	0.093	0.046	1.967	0.025	Supported
Perceived Usefulness → Attitude Toward CC	0.447	0.444	0.067	6.709	0.000	Supported
Symbolic Value → Empathy	0.456	0.455	0.066	6.904	0.000	Supported
Utilitarian Value → Attitude Toward CC	0.019	0.023	0.062	0.316	0.376	Rejected

## Discussion

The variables that come from the TAM are perceived usefulness and perceived ease of use, and they positively influence attitude toward CC. This means that the users evaluate whether the platform can fulfill their purpose (S. G. Lee et al., 2018; Chiu et al., 2005) or whether it can bring ease when the users use it so they will engage in an effortless process (Hansen et al., 2018; Davis, 1985). According to the statistical result, both are highly significant, as seen from their p-values (PEU: 0.025 and PU: 0.000). As mentioned above, many researchers agree regarding the significance of the relationship between perceived ease of use and perceived usefulness on intention in various implementations such as word processing software, music applications, and other digital platforms for which the result are the same (Bendary & Al-Sahouly, 2018; Lu et al., 2019; Waddell & Williamon, 2019).

The variables linked to the attitude are utilitarian value and hedonic value. These two constructs refer to how the users can get the purposive (utilitarian) or pleasure (hedonic) values. Completing the whole construct, besides the two previous variables, utilitarian and hedonic values will enrich attitude's antecedents since attitude is highly related

to the motivational behavior, especially in terms of product purchase, in this case, is to use the platform (Dhar & Wertenbroch, 2000; Moon et al., 2017). Conversely, this research reveals that utilitarian and hedonic values do not positively influence attitude. This difference is still questioned and leads to some assumptions as to whether it is correlated with the different sample taken for this research or the context being digital platforms. These findings also suggest the need for further research to shed light on this area.

Online initial trust (OIT) is related to a secure feeling of the users when using the platform. It is a user's feeling of confidence and security that responds to other parties in the digital CC platform (Fondevila-Gascón et al., 2019; Rempel et al., 1985). The result rejects the hypothesis that OIT positively influences the intention to use CC. Trust is a variable mentioned in previous studies regarding purchase intention, especially in the digital market. In this research, we considered trust as a variable that can influence people's intention to use the platform, yet the result does not support the idea (p-value = 0.273). Despite trust being recognized as a crucial factor influencing purchase intention, its significance diminishes when its relationship regarding digital CC using intention is tested in this context. This observation leads to the assumption that users who participate in using CC may not consider the associated risks before making financial transactions through this platform. In addition, it is assumed that escalating OIT, such as building a company's reputation can convert users to paying customers, which has not been covered in this research context.

As mentioned above, empathy is a user's emotional feeling to attach himself or herself to other users through a platform, which releases feelings of concern toward them. According to Cano Murillo, Kang and Yoon (2016) and Eisenberg and Miller (1987), empathy is strongly related to prosocial behavior that utilizes feelings between individuals. In the context of CC platforms, empathy can be correlated with the user's capacity to feel in accordance with another user's sense and feeling, which is translated into information served like a comment, narration, service offered, or discussion on a CC platform. Since the digital collaborative platform serves as a place where internet users gather to utilize the service, empathy will emerge. Empathy also makes symbolic values emerge because they correlate with social impact. The result shows that empathy does not influence the intention to use the CC platform (p-value: 0.292). The researchers considered that this might happen because our survey focuses on a particular CC context and general types. As previously mentioned, the inclusion of empathy in this research is justified due to its potential to be a determining factor affecting users' engagement in digital CC within the context of prosocial behavior in the sharing economy domain. Addressing this result in light of the study by Hwang and Griffiths (2017), which demonstrates a positive influence between empathy and purchase intention, one might assume that empathy plays a role in people's buying behavior in the context of altruistic behavior. However, the current result shows that empathy doesn't emerge in the same way in the context of how users intend to use the apps as it does in the purchasing behavior. This result can contribute to the body of research, like the study by Hwang and Griffiths (2017), which finds that empathy does have a robust relational effect on purchase intention.

One hypothesis that is rejected is that utilitarian value significantly influences attitude, although it has not been rejected in previous research. The two variables from the TAM—perceived usefulness and perceived ease of use—that are the point of this research have been demonstrated to be significant. The high significance level in this research is further evidence to prove the model. Furthermore, the result shows that perceived behav-



ioral control (PBC) significantly affects the intention to use CC. However, the result also indicates that the online initial trust (OIT) variable that influences the intention in the model is rejected.

A more comprehensive understanding of how CC is adopted across diverse populations would be enriched by research conducted in distinct demographic contexts. For instance, intrinsic motivations like enjoyment significantly influence positive attitudes in Finland, while extrinsic motivations like financial benefits are more crucial for continued participation (Hamari, Sjöklint, and Ukkonen, 2016). In Korea, shared goals serve as the strongest drivers, affecting enjoyment, sustainability, and economic benefits, with social interaction ties and reciprocity norms playing indirect roles (Kim and Yoon, 2021). In Latin America, both intrinsic factors (e.g., enjoyment, sustainability) and extrinsic factors (e.g., reputation, financial benefits) drive participation, with personal satisfaction being the strongest motivator (Alzamora-Ruiz et al., 2020). Among Generation Z in Vietnam and Spain, attitudes, social norms, and trust are key, with interpersonal influence and electronic word-of-mouth (WOM) shaping intentions in Vietnam, while trust links internal and external variables in Spain's tourism-sharing economy (Pham et al., 2021; Martínez et al., 2021). In Türkiye, environmental factors such as economic crises, urban mobility, and WOM influence psychological barriers and financial gains, which ultimately shape intentions to engage in CC (Güngördü Belbağ, 2024). By exploring these diverse demographic and regional variations, the study could yield insights that are more broadly applicable, providing a clearer picture of the drivers of CC adoption across different populations. In addition, the various demographic studies have identified several external factor themes, such as regional economic conditions, cultural values, and technological advancements that shape CC behaviors. In the future development of CC, these factors could shed light on creating a sustainable business in this domain, such as increasing attractiveness by using financial incentives, improving cultural values to enhance willingness to adapt to the technology, and improving user engagement through technological advancement.

## Conclusion

This study on CC on a digital platform explored how the cognitive value perceptions and practical attitudes of millennial users are related to the intention to use CC. Since this research focuses on the type of digital platform which offers a CC process in general, we propose two variables from the TAM and two other variables that influence the context of intention to use a digital CC platform. Even though only three additional variables are significant (perceived ease of use, perceived usefulness, and perceived behavioral control), this research has five highly significant variables ( $p < 0.001$ ) compared to the prior research, which only has three highly significant variables. The result also shows utilitarian value is not significant, and empathy does not directly influence the intention to use digital CC platforms.

As for its theoretical implication, this research can carry out the empirical testing of intention to use in the digital CC context. The researchers attempted to find out the antecedents of how the user can gain the intention to use the digital CC platform. Besides, the researchers inserted some variables, including attitude as the consumer's beliefs or feelings toward an object and empathy as the user's emotional feeling to attach themselves to another user through a platform that releases a feeling of concern about it. Perceived

behavioral control means how easy or difficult users can develop the intention to use CC, which directly impacts the intention to use CC on a digital CC platform. Therefore, the present research can contribute to a further theoretical foundation for a quantitative study and a conceptual model that can depict the intention to use digital CC with the proposed sample in Indonesia.

E-businesses that offer a CC platform have the economic potential for innovation that implements the rapid development of information technology through the internet (Hamari, Sjöklint, & Ukkonen, 2016). Referring to this research, practitioners can improve their platform to attract more users and gain profit or understand how digital users intend to use the service/feature in the platform they create. Our proposed conceptual model can help project managers develop new features in their digital CC platform in order to enhance the user's participation. Achieving the best result from CC can be accomplished by strengthening the customer perception through attitude as well as building perceived behavioral control through the apps. First, managers can create advertisements which deliver hedonic value-oriented messages, such as highlighting how CC can bring joy and happiness while using it. Such an approach is likely to create positive consumer perception regarding the platform. In addition, managers can develop a lean user experience (UX) and user interface (UI) in order to affect a customer's preference and thereby boost the user's intention. Second, marketers should also convince the consumers that the application can be easily accessed by everybody. By making the apps light in memory, low cost, and accessible even for the elderly, managers can increase the perceived behavioral control, further escalating a user's intention to use the platform.

## Limitations

As mentioned above, the researchers inserted some variables, including empathy. However, empathy has only one indicator to calculate the result, and this is a limitation of this study. As observed in other indicators of empathy in the study by Hwang and Griffiths (2017), it is primarily assessed based on environmental motivation. However, this current study considered that the users in digital CC are not always prioritizing the environmental issue, but rather the service offered (for example, financial technology, digital product marketplace, etc.). Nonetheless, from a business point of view (instead of a user point of view), those other indicators might have a relational impact. Further research regarding empathy in CC needs to be conducted more as complementary research. The sample of this study is also limited to Indonesian users only. Therefore, more global samples are necessary to understand how the global market responds to CC. Furthermore, to provide a more robust and well-rounded analysis, further research could be enhanced by using a qualitative method such as behavioral observation or longitudinal studies which involve tracking data over time, and interviews or focus group discussions to gain deeper understanding in terms of emotional or cognitive aspects.

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## An Ethical Leadership Style and Pro-Environmental Behavior: The Mediating Role of Moral Efficacy

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**Abstract:** To better comprehend the strategies that leaders follow in shaping their organizations, the study of ethical leadership has become increasingly relevant. This study investigates pro-environmental behavior and ethical leadership using a survey of 420 employees from various manufacturing organizations. It examined moral efficacy's role as a mediator between ethical leadership style and environmental behavior, drawing on insights from the social learning theory. The study employed structural equation modeling to test hypotheses. The findings indicate that there is a significant association between ethical leadership, pro-environmental behavior, and moral efficacy. The moral efficacy of employees serves as a mediator in the association between ethical leadership and pro-environmental behavior. It is important to note that moral efficacy does not act as a significant mediator in the relationship between ethical leadership and pro-environmental behavior. This analysis is specifically focused on the manufacturing sector; however, additional research may be performed in the context of service sector enterprises. It is recommended that moderating and mediating variables such as self-esteem, job involvement, and moral courage be explored in future studies to enhance the comprehension of the construct of ethical leadership.

**Keywords:** ethical leadership, environmental behavior, moral efficacy, social learning theory, manufacturing industry

**JEL Classification:** M1, Q5

## Introduction

Goal 13 of the UN's 2030 Agenda for Sustainable Development calls for immediate action in order to halt climate change and its effects through developing both individual and institutional capability, as well as systems that allow effectual ecological management (Kirkby et al, 2023, Ahmad & Kaleem, 2021; Islam et al., 2020). The World Health Organization estimates that heat caused by carbon emissions causes around 4.3 million deaths annually and an annual economic loss of between USD 2 billion and USD 4 billion (WHO, 2018). For these reasons, the UN's Sustainable Development Goals (SDGs) for 2019 devote significant attention to combating climate change (Hameed et al., 2020). Human activity in corporate organizations is a major contributor to the worldwide threat of climate change (Chowdhury et al., 2019; Gilal et al., 2019; Robertson & Barling, 2013). Attitude and conduct on the job are strongly influenced by the quality of employees' relationships with their supervisors and managers. It is possible they will take all they have learned from their interactions and use it to guide their future decisions and behaviors (Su et al., 2021). In the same way, researchers agree that leadership is important for followers to change their behavior "towards more pro-environmental behaviors." Ahmad and Kaleem (2021) say that empirical studies are needed to find out how to encourage pro-environmental behavior (PEB) in the workplace (Ahmad & Kaleem, 2021). For instance, when people do industrial and factory work, greenhouse gases are released into the air. Organizations are setting up eco-management systems as a response to the alarming effects of climate change. On the other hand, as pointed out by Robertson and Barling (2017), this is only a partial solution, as the success of such programs depends heavily on the green actions of the organization's employees (Ahmad & Kaleem, 2021). Because human actions have caused climate change by wasting resources and polluting water and air, the primary focus of many organizations has switched to encouraging the development of "green" actions (Islam et al., 2020). The subject of how to encourage environmentally conscious and ethical behavior in the workplace has received surprisingly little attention in the academic literature (Ahmad & Kaleem, 2021). Ethical behavior is promoted by a belief in one's own moral efficacy (ME). The "belief in one's own ability" to succeed in ethical issues is crucial for determining whether or not an individual would engage in ethical behavior when faced with an ethical challenge. This study broadens the scope of the ethical environment by including the concept of ethical leadership (EL) in its investigation into the possible connections between the variables mentioned above (Peng et al., 2017). In this research, we address this constraint by exploring the role that moral efficacy might play in enabling leaders to encourage environmentally conscious behavior among their staff.

This study emphasizes the significant impact of EL on ME, which in turn promotes PEB at work. The research explains the potentiality of EL in boosting ME at work and can have a knock-on effect of encouraging environmentally responsible actions on the job. This study addresses EL, considering that it is a widely acclaimed strategy for managing an organization (Fahim et al., 2019), in which leaders are held accountable for their decisions and actions in affecting the world around them (Ahmad & Ahmad, 2020; Kalshoven et al., 2011). Findings shed new light on how EL might motivate environmentally conscious actions among staff. This research investigates the relationship between ME and followers' adherence to moral leadership and environmental responsibility (Ahmad & Kaleem, 2021). EL facilitates not just the social exchange of ethical principles throughout the workplace but also the development of a sense of ME among employees (Lemoine et al., 2019).



According to earlier research, ME serves as an impulse connecting EL to ethically acceptable outcomes (Huang & Paterson, 2017). Integrity in leadership, according to Erkutlu and Chafra (2019), can boost employees' ME and hence reduce the likelihood that they will engage in antisocial behavior on the job (Su et al., 2021). Few researches have been conducted in this area, making them essential. We're investing in this research because ME may be demonstrated by an organization's leadership (ethical leaders), which in turn can inspire PEB among their staff.

EL makes a distinctive contribution to PEB through the promotion of value-based decision-making, inclusive procedures, clear communication, accountability, a focus on long-term goals, and empowering individuals within organizations (Islam 2020). Through the incorporation of ecological concerns into leadership approaches, ethical leaders play a crucial role in cultivating a sustainable culture and facilitating favorable environmental results.

Leaders who are devoted to acting ethically and responsibly are regarded as ethical leaders because of their honesty, integrity, and high ethical standards (Bukhari et al., 2019; Nawafleh, 2020). Ethics can be broadly defined as a moral framework that encompasses principles of goodness, righteousness, and propriety. In essence, ethics offers guidance on behavior, attitudes, and actions that are deemed acceptable and appropriate within specific contexts of human activity (Marina & Wahjono, 2017). However, previous studies on EL have not fully explored the question of how ethical leaders influence PEB. In light of this, the current investigation aimed to discover how ethical leaders may encourage their staff to engage in environmentally conscious activities. Prevailing theories suggest that safety consciousness and ethnicity (Khan et al., 2018), psychosomatic-related ownership and perception (Avey et al., 2012), leader-member exchange quality (Walumbwa, 2011), task-related stress (Aksoy, 2012), and trust (Lee et al., 2016) all act as intermediaries between EL and employee behavior on the job. According to recent research by Ahmad and Umrani (2019): "People assume that ethical leaders will encourage environmentally friendly policies and practices within their organization," which has a beneficial effect on workers' outcomes on the job. ME contributes a significant mediating variable between EL and workers' PEB. This supports the claim made by Ahmad & Umrani, (2019), and the requests for future research made by Ayu et al. (2019) and Khan et al. (2018), that it is still essential to discover the system by which EL might influence a person's job-related outcomes.

Therefore, considering the significant implications of PEB, existing scholarly works focus on identifying its predictors, such as perceived organizational support, organizational environmental policies, conscientiousness, environmental knowledge, environmental-specific servant leadership, and human resource management practices. Previous studies have also highlighted the indirect pathways through which employees engage in environmentally friendly behaviors and the established mechanisms that can promote such behaviors among employees. This emphasizes their ethical obligation towards environmental preservation. Employees' voluntary, humane, and altruistic efforts are deemed more suitable for addressing environmental challenges. Despite these inquiries, research on the precursors of PEB is still in its nascent stages, particularly lacking in emerging and developing contexts like India. Thus, the understanding of how organizations can promote PEB remains limited and inadequate. Additionally, existing literature falls short in elucidating the theoretical foundations of the relationship between organizations' environmental strategies and PEB (Norton et al., 2012). Nevertheless, Robertson et al. (2013)

noted the insufficiency of current research in explaining how immediate leaders stimulate employees to exhibit PEB. There is a growing demand to explore how EL influences followers' perceptions of the organizational environment to impact their behavior at work. It has been observed that there are few studies on PEB research. For instance, there appears to be a lack of research on the debate surrounding EL and PEB. In a broader sense, this current study aims to address these gaps in the literature by investigating the mechanisms through which EL can promote PEB within organizations. Prior studies have not thoroughly investigated the specific effects of EL on employee conduct. Moreover, the intricate role of ME in mediating the influence of EL on environmentally friendly behavior has not been sufficiently explored, particularly within the manufacturing sector. This study intends to explore how EL fosters PEB by utilizing ME as a mediating factor.

## Literature Review

### Theoretical background and hypotheses development

#### *Ethical leadership and pro-environmental behavior (PEB)*

To date, most studies on ethical leadership have shown that it can control followers' non-green attitudes and actions, such as employee job satisfaction, commitment, and behavioral fallouts. The literature has shown that ethical leadership has a positive effect on the moral behavior of followers (Ahmad & Umrani, 2019; Islam et al., 2020), but there needs to be more research on how it might affect their PEB. The behavior of supervisors could influence their subordinates to act positively or negatively because supervisors have significant control over their subordinates and a large impact on their work demands and social support (Rantika & Yustina). There has been a significant surge of interest among researchers and practitioners regarding the subject of PEB. This heightened focus has emerged particularly due to the recognition of PEB as essential for enhancing organizational effectiveness (Wijayanto & Kismono, 2004). PEB aims to "reduce the negative impact of one's actions that are harmful to the environment" (Anja & Agyeman, 2010). Such environmentally conscious actions by employees add worth to businesses by enhancing ecological acts (Ramus & Killmer, 2007; Kim et al., 2019). Ahmad and Umrani (2019) have recently argued that "people assume that ethical leaders will push for green policies and practices within their organization." However, they could not find proof in their studies to support their assertion. Therefore, this research investigates how ethical leadership might inspire employees to adopt eco-friendly workplace practices.

According to Eisenbeiss (2012), responsibility and sustainability have been the guiding principles of ethical conduct in Western and non-Western cultural and rational traditions. Ethical behavior considers how one's choices may affect the quality of life in the future (Eisenbeiss, 2012). Ethical behavior promotes eco-ethical living by protecting nature through the responsible use of resources and ensuring the survival of future generations. According to these viewpoints, ethical leadership is believed to favor employee behavior and the environment since it is dedicated to achieving benefit for everyone via eco-ethical methods. The social learning theory (SLT) describes how a leader's ethical compass affects the eco-friendly actions of their followers (Bandura, 1977). A fundamental tenet of this theory is that managers, supervisors, and other positions of authority within an organization serve as exemplars for their subordinates. They learn from the actions of their role models because they watch, mimic, and experience the outcomes of those

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actions (Bandura, 1977). The SLT is most applicable when the leader is modeling environmentally friendly or pro-green behavior as the desired outcome. For instance, workers learn from watching their managers conserve energy by turning off the lights, ACs, fans, and laptops when they are unused. The “social learning perspective” has been utilized to clarify the beneficial impact of ethical leadership in regulating followers' moral behavior (Aris et al., 2018) and extra-role behavior (Arain et al., 2016; Jordan et al., 2011) despite the paucity of research on the effects of ethical leadership on green behavior. Hence, the first hypothesis is derived from this discussion, as follows:

**H1:** Ethical leadership style will significantly influence pro-environmental behavior.

### ***Ethical leadership and moral efficacy***

By investigating moral efficacy's mediating role, it is possible to thoroughly explain the connection between ethical leadership and pro-environmental behavior. That is, the degree to which followers' judgments of a leader's ethicalness result in a shift in the moral efficacy of those followers. Lee et al. (2017) argue that ethical leadership will have a constructive effect on pro-environmental behavior.

Ethical leaders can help their followers be more moral by being good examples of ethicalness, having knowledge of ethics, and focusing on people (Bandura, 1991; Lee et al., 2017; Dirks, 2002; Jordan et al. 2011). One can consider a leader's stature as the outward manifestation of authority that has the potential to shape the beliefs and actions of followers in two primary areas: (1) morale and (2) productivity. First, an ethical leader who is reliable and truthful and who respects workers by providing them with autonomy and opportunities will make those workers feel required to reciprocate in terms of care, respect, and support through favorable job-related attitudes. Second, impartiality in evaluations of work performance and promotions fosters optimism and dedication among employees, thereby increasing their productivity (Kouzes & Posner, 2013) and making them more efficient (Ashfaq & Abid, 2021). According to Hannah & Avolio (2010), the ability to motivate intellectual resources and provide a plan of action to achieve ethical acts within a particular moral area, while facing moral adversity, is defined as moral efficacy. Employees with higher levels of self-efficacy will improve the performance level of a company as a whole (Hadi et al., 2023). Individuals' specific behaviors should be consistent with their thoughts, intentions, effectiveness, and confidence, and numerous studies have demonstrated the importance of the link between moral leadership and people's outward behavior. In this approach, one's psychological resources—particularly one's belief (confidence) in performing an ethical action—may also be a precursor to ethical leadership, and this kind of effectiveness may be seen as moral efficacy. Bandura (1991, 1997) reveals that social elements such as leadership foster efficacy beliefs, which have been shown to be positively associated with employee confidence, such as perceptions of self-efficacy (Peterson, 2010). Following the preceding reasoning, we expect for the present study that leaders' ethical behavior is positively associated with employees' moral efficacy (Peng et al., 2017). Although the association between ethical leadership and moral efficacy has been the subject of limited empirical research, there is evidence to support the relationship. For instance, Schaubroeck & Hannah (2012) have discovered that ethical leadership style indirectly influences employee moral efficacy by fostering an ethical culture (Lee et al., 2017).

Thus, we hypothesize the following:

**H2:** Ethical leadership significantly correlates with an employee's moral efficacy.

### ***Moral efficacy and pro-environmental behavior***

Moral efficacy refers to an individual's confidence in their ability to make a positive impact on society (Chou, 2014; Bandura, 2020). In the context of environmental conservation, moral efficacy plays a crucial role in promoting pro-environmental behavior. This study examines how moral efficacy might help achieve pro-environmental behavior. Within the specific framework of environmental conservation, the construct of moral efficacy assumes an indispensable function in the facilitation and encouragement of behaviors that are deemed pro-environmental, thereby contributing to the broader objective of ecological sustainability. Research has shown that individuals with high moral efficacy are more likely to engage in pro-environmental behaviors, such as reducing energy consumption and recycling (Paillé & Boiral, 2013; Kim et al., 2022). This is because individuals with high moral efficacy believe that their actions can make a difference in protecting the environment. A study by Lee and Kim (2023) finds that moral efficacy was a significant predictor of pro-environmental behavior, even after controlling for other factors such as environmental concern and knowledge. Similarly, a study by Wang et al. (2024) finds that moral efficacy is a key factor in promoting sustainable transportation behaviors. Moreover, research has also shown that moral efficacy can be enhanced through various interventions, such as environmental education and community-based initiatives (Chaudhary, 2020; Chen et al., 2025). For example, a study by Zhang et al. (2022) finds that an environmental education program increases participants' moral efficacy and pro-environmental behavior. Finally, research has revealed that individuals with high levels of moral efficacy can engage in pro-environmental behaviors because they are more likely to follow through on their desires to do so (Kim et al., 2016; Katz et al., 2022).

**H3:** Pro-environmental behavior and moral efficacy have a significant relationship.

### ***Moral efficacy as a mediating variable***

Self-efficacy, a crucial concept in the SLT, describes how someone perceives and assesses his or her capacity to do a given job (Bandura, 1977). As a distinct form of self-efficacy, moral efficacy is described as a person's level of assurance in their capacity to act morally. Self-efficacy is the belief that a person or group can successfully do a job or a set of behaviors (Bandura, 1997; Bandura, 1986). Numerous studies have demonstrated the construct's significant and positive impact on attitudes, intentions, behaviors, outcomes from education, and performance in various settings, including educational and work environments (Stajkovic & Luthans, 1998; Judge and Bono, 2001). Our definition of moral efficacy is based on previous research. It implies "the belief a person has in his or her own skills" to actively and constructively confront any moral challenges that may arise at work and to surmount any barriers to create and execute ethical solutions to issues of ethics (Hannah and May 2011). May et al. (2003) contend that a leader's self-confidence is essential for translating ethical intentions into actions, particularly in circumstances where there may be competing interests or opposition. They also assert that leadership activities

may increase moral efficacy and bravery (May et al., 2014). According to Brown et al. (2005), ethical leaders exhibit moral personal behaviors in professional settings and mutual interactions, which may strengthen or weaken their influence on subordinates through management style and communication. Ethical leadership has two significant features: an individual who acts as the leader must be a role model to their followers, and he should behave ethically. Second, an ethical leader should be a leader who promotes ethical values and provides rewards and punishments. Integrity displayed by ethical leaders in the workplace can strengthen both the moral efficacy and the moral identity of employees (Erkutlu & Chafra, 2019). Leaders' ethical actions, such as enforcing higher standards, encouraging suitable behavior, and penalizing workplace violators, can boost followers' moral efficacy views and capacities. The intention to act morally will increase as moral efficacy increases (Hannah and May 2011). When the moral efficacy is higher, employees are more likely to convey moral perception and propensity to prosocial activity (Zhou et al., 2011; Huang and Paterson, 2017). In other words, people with higher moral efficacy levels will be ready to act sustainably around their coworkers and vice versa. Based on the premise of the SLT and the findings of earlier research, this study proposes the following hypothesis:

**H4:** Moral efficacy mediates the association between ethical leadership and pro-environmental behavior.

### Theoretical Underpinning

This study primarily extends the framework of Bandura's social learning theory (SLT) (Bandura, 1997) by proposing that ethical leadership can have a significant impact on pro-environmental behavior (PEB). According to SLT, individuals acquire appropriate behavioral patterns through observation and modeling. Ethical leaders serve as credible role models for moral behaviors, influencing employees' perceptions of organizational norms and values related to environmental sustainability efforts and encouraging greater commitment to Pro-Environmental Behaviors (PEB). Employees who perceive a supportive organizational climate towards environmentally friendly actions are more likely to engage in PEB. Additionally, heightened moral efficacy can reinforce this relationship, as morally conscious employees are more inclined to adopt PEB when they observe ethical leadership behaviors within the organization.

Consequently, this research adds to the understanding of PEB and SLT by exploring a novel pathway in which ethical leadership fosters PEB with the intermediary role of ME. Furthermore, this research contributes to empirical knowledge concerning ethical leadership outcomes. It enriches the organizational behavior literature in developing nations where investigations into PEB, ME, and EL still need to be completed.

### Methods

To fulfill the study's objectives and test the suggested theoretical model, using the survey approach, data were gathered from the employees of different manufacturing companies; a total of 420 questionnaires were distributed. We ensured that all of the survey participants' information was kept confidential and anonymous (Saleem et al., 2020).

Respondents with a minimum of two years of experience were selected because at least this amount of experience was essential to understanding the style of leadership and



significance of PEB. Of the 420 questionnaires that were distributed for this survey, 388 were collected. Twelve surveys were discarded because of inaccurate or missing data.

## Measures

To measure ethical leadership (EL) style, this study employed a 10-item scale developed by Brown et al. (2005), the reliability value of which was reported to be 0.90. Ali (2019) utilized the same scale and reported a reliability value of 0.83.

The 13-item measure created by Graves et al. (2013) was effective at capturing pro-environmental behavior (PEB). Every response was graded on a 5-point scale (0 = never and 5 = always). Some example items incorporated "I recycle and reuse materials" & "I try to reduce my energy use." Cronbach's alpha was 0.912.

Additionally, the three items' loading values were below the threshold value. Therefore, following Byrne's (2010) instruction, three items were deleted, i.e., "Perform environmental tasks that my company does not require" and "Join in environmental activities that are not required by my job," while the reliability of the remaining nine items was reported to be 0.912. A sample item was "Apply new ideas for reducing our impact on the environment".

Scholz et al. (2002) proposed a 10-item scale, with responses ranging from "strongly disagree" to "strongly agree," was used to measure moral efficacy (ME). The sample items included "I can always manage to solve difficult problems if I try hard enough" and "I am confident that I could deal efficiently with unexpected events." The Cronbach's alpha was 0.935.

## Results

### Data analysis

In order to analyze the research model utilized in this research, the Smart PLS 3 program was utilized to perform the partial least-square analysis (Ringle et al., 2015). First, the measurement model was tested, followed by the structural model.

The results section summarizes the data collected for the study in the form of descriptive statistics and also reports the results of relevant inferential statistical analysis (e.g., hypothesis tests) conducted on the data. You need to report the results in sufficient detail so that the reader can see which statistical analyses were conducted and why, and to justify your conclusions. Mention all relevant results, including those that are at odds with the stated hypotheses (American Psychology Association 2001: 20).

There is no fixed recipe for presenting the findings of a study. We will, therefore, first consider general guidelines and then turn our attention to options for reporting descriptive statistics and the results of the hypothesis test.

### Reporting Research Results

#### *Measurement model (outer model)*

The measurement model was examined before testing the hypotheses. AVE, CR, and factor loading were employed to assess convergent validity (CV). Four items were eliminated because they had factor loadings that were less than 0.60 (Nisar et al., 2021; Ullah, 2021). Hair et al. (2009) assert that the consistency and reproducibility of the measures determine an instrument's reliability. Table 1 lists two reliability metrics ranging from



0.884 to 0.966: composite reliability and Cronbach's alpha( $\infty$ ). The construct reliability and internal consistency were confirmed by the hazard ratio values, which varied from 0.919 to 0.969 ( $>0.70$ ) (Fornell and Larcker, 1981).

**Table 1.** Reliability and Validity

Constructs	Outer loadings	$\infty$	rho_A	CR	AVE
Ethical Leadership(EL)		0.941	0.952	0.949	0.653
EL1	0.764				
EL2	0.836				
EL3	0.882				
EL4	0.862				
EL5	0.782				
EL6	0.786				
EL7	0.749				
EL8	0.765				
EL9	0.817				
EL10	0.828				
Moral Efficacy (ME)		0.935	0.940	0.945	0.659
ME1	0.763				
ME2	0.726				
ME3	0.770				
ME4	0.768				
ME5	0.864				
ME6	0.853				
ME8	0.809				
ME9	0.901				
ME10	0.837				
Pro-environmental Behavior (PEB)		0.912	0.926	0.926	0.558
PEB1	0.781				
PEB2	0.824				
PEB3	0.827				
PEB4	0.706				
PEB5	0.850				
PEB6	0.671				
PEB9	0.717				
PEB10	0.674				
PEB12	0.724				
PEB13	0.663				

### ***Discriminant validity (DV)***

Henseler et al. (2015) suggest a new method for assessing DV. They claim that although the Fornell and Larcker criteria accurately assess discriminant validity, they may need help determining when it is present. Therefore, HTMT was used to determine discriminant validity. Table 3 displays the HTMT values for the factors being studied. According to the HTMT criterion, all variable HTMT values must be below 0.90 (Gold et al., 2001). Table 3 shows that all variables have HTMT values below 0.90, proving their discriminant validity.

Discriminant validity measures how unrelated one construct is to another (Alarcón et al., 2015). In order to evaluate this study's discriminant validity, two criteria were applied. According to the criterion established by Fornell and Larcker (1981), discriminant validity is considered to have been established when the AVE values' square is more significant than their corresponding correlations. The Fornell and Larcker criterion (Fornell & Larcker, 1981) was used in this study to prove discriminant validity, as indicated in Table 2. Second is the HTMT in Table 3; construct values must be lower than 0.85 to prove DV (Henseler et al., 2015b). All construct values in Table 3 are less than 0.85, as shown in Table 2 below (Li et al., 2023).

**Table 2.** Discriminant validity

	EL	ME	PEB
EL	0.808		
ME	0.371	0.812	
PEB	0.468	0.458	0.747

**Table 3.** HTMT

	EL	ME	PEB
EL			
ME	0.378		
PEB	0.493	0.454	

### ***Inner model***

For hypothesis testing, an estimation of the PLS inner model is done. PLS employs a series of single or multiple OLS regression studies together with an iterative estimation algorithm (Chin, 1998). Thus, the evaluation of the formative measurement models can be compared to the representation of the path coefficients as constant regression coefficients, while external invisible variable scores are used to calculate VIF values (Hair et al., 2019). VIF values above 5 indicate the possibility of predictor construct collinearity; however, collinearity may also happen at low VIF values between 3 and 5 (Becker et al., 2015; Mason & Perreault, 1991; Ringle et al., 2015). The values in this study are all under 5; hence, there is no multicollinearity issue. The  $R^2$  measures how much variation each endogenous concept exhibits and, as a result, how well the model explains things (Shmueli & Koppius, 2011). The range of  $R^2$  values from 0.565 to 0.586 in Table 4 indicates that a moderate to large proportion of the difference is explained (Hair et al., 2011; Henseler et al., 2009). The  $f^2$  effect size also quantifies how the  $R^2$  value changes when an external construct is excluded from the model. Impact size values less than 0.02 indicate that there is no impact

(Cohen, 1988). Nevertheless, the results showed values above 0.02. Estimating the value of  $Q^2$  is another way to evaluate the prediction ability of the PLS path model (Geisser, 1974; Stone, 1974). This component indicates the degree of dependency between variables, with values of 0.02, 0.15, and 0.35, indicating modest, moderate, and significant influence levels of a single factor upon another, respectively. The  $Q^2$  values for this study range from 0.518 to 0.722, demonstrating considerable predictive importance as expressed in Table 4. The standardized root-mean-square residual, abbreviated as SRMR, is the statistic used in this study to evaluate the model's fitness.

**Table 4.** R<sup>2</sup>, F<sup>2</sup>, VIF, Q<sup>2</sup>

R square	Endogenous variables	R 2	R square adjusted	0.26: Substantial 0.13: Medium 0.02: Small (Hair et al., 2017)
	ME	0.138	0.125	
	PEB	0.313	0.291	
Effect size (F-square)	Exogenous variable	ME	PEB	0.26: Substantial 0.13: Medium 0.02:Small (Hair et al., 2019)
	EL	0.160	0.149	
	ME		0.137	
VIF (Inner VIF)	Exogenous variable	ME	PEB	VIF< = 5.0 ( Hair et al 2017)
	EL	1.000	1.160	
	ME		1.160	
Q2 (Predictive Relevance)	Endogenous variables	CCR Q <sup>2</sup> (=1-SSE/SSO)	CCC Q <sup>2</sup> (=1-SSE/SSO)	Values greater than zero indicates predictive relevance
	ME	0.080	0.567	
	PEB	0.150	0.445	
CCR: “Constructs Cross-Validated Redundancy”; CCC: “Constructs Cross-Validated Communalities”				

Table 5 shows statistics indicating that EL positively affected PEB (p-value = 0.001). The data below show that the study's results mean that **H1 was supported**. Meanwhile, EL influenced ME positively (p-value = 0.003). This value confirmed that the statistical test results show that **H2 was supported**. Testing H3 revealed a p-value of 0.007, proving that ME significantly influenced PEB. This study therefore has emphasized that ME is a mediator between EL and PEB. Table 6 presents the indirect influence of statistical test results.

**Table 5.** Path coefficient (Direct effect)

Constructs	$\beta$	m	std	T	P Values	Decision
EL -> ME	0.371	0.396	0.125	2.979	<b>0.003</b>	<b>Supported</b>
EL -> PEB	0.345	0.365	0.107	3.225	<b>0.001</b>	<b>Supported</b>
ME -> PEB	0.330	0.332	0.123	2.687	<b>0.007</b>	<b>Supported</b>

Mediation result

Table 6. Indirect effect

Constructs	$\beta$	m	std	T	LL	UL	P Values	Decision
EL -> ME -> PEB	0.122	0.134	0.076	1.618	0.021	0.323	0.106	Not supported

However, the mediating impact of ME between EL and PEB was insignificant. ME did not positively mediate the relationship between EL and PEB as the following values indicate : $\beta = 0.100$ ,  $t = 1618$ :  $LL = 0.023$ ,  $UL = 0.328$ ,  $p < 0.106$ ; here, the t-values are less than the threshold value  $>1.96$ , so it does not show any significant impact on the dependent variable. Table 6 above shows that the t-values of all relations are below  $>1.96$ ; also, the p-values are greater than 0.05, and the outcomes of LL and UL are both positive, indicating that the mediation effect is not confirmed (Preacher and Hayes, 2008); hence, **H4 was not supported** (Alam et al., 2021).

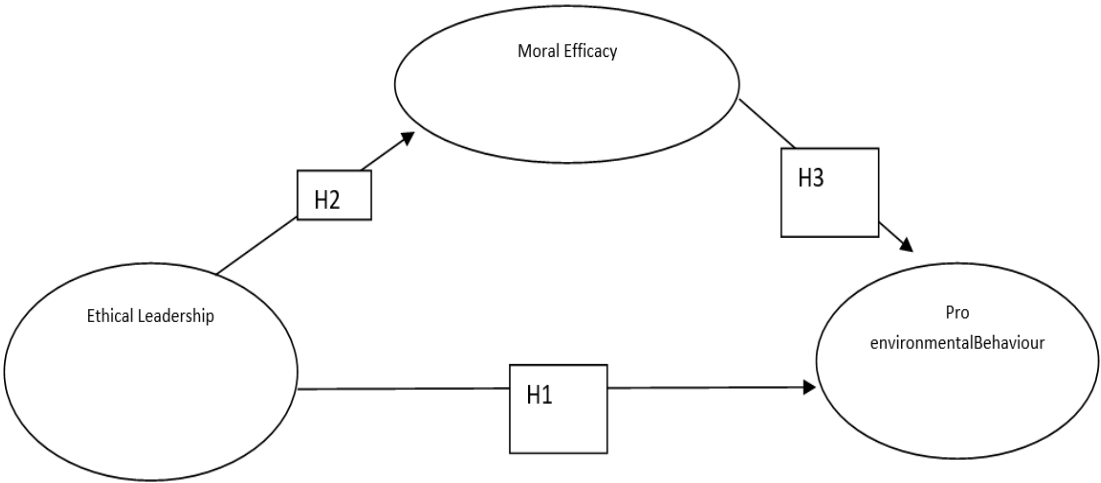


Figure 1. Proposed Model

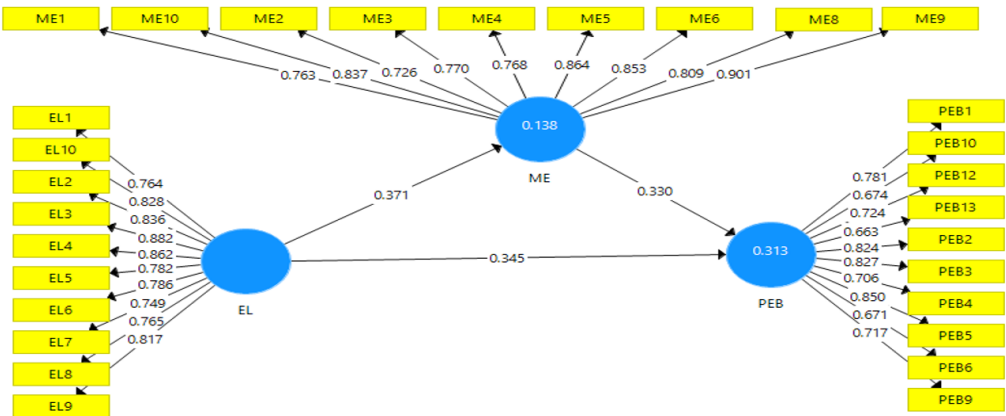


Figure 2. Path Model

## Discussion

This study conceptualized and investigated the effect of moral efficacy (ME) as a bridge between ethical leadership (EL) and pro-environmental behavior (PEB). According to the findings, there is a significant connection between ME and PEB and between ME and EL. However, ME does not mediate the association between EL and PEB. Except for one, the data analysis results show that all three hypotheses are supported. The first hypothesis's prediction that EL and PEB are positively correlated is supported. Previous research has also shown an association between EL and PEB (Khan et al., 2018). Our findings and prior research both support the second hypothesis' prediction that EL positively impacts ME (Almutairi, 2020; Demir, 2020). As previously shown, ME is significantly related to PEB, supporting the third hypothesis (Rameshkumar, 2020). Hypothesis 4 does not significantly substantiate the mediating role of ME.

The results are consistent with the hypotheses and demonstrate that EL behavior positively affects employee PEB. Credible leaders serve as exemplar models for their followers, who seem to them to provide direction in knowing how to complete their tasks. Their self-confidence is boosted by this learning experience, which boosts their ability to handle new problems successfully. The ME of followers is increased by the legitimacy and support of moral leaders, which enhance learning and confidence. Walumbwa (2011) points out that ME is noteworthy in this relationship. Zhou et al. (2011) find that leaders' actions and organizational resources have a more significant influence on followers' behaviors.

Furthermore, the conservation of resources theory contends that resources in an organization are invested in creating new resources (Hobfoll, 2014). Since ethical leaders give followers resources—both material and emotional—which are appreciated, followers can give back by using these resources to create other resources according to expectations. Leadership creates a positive climate that encourages people to act sustainably within their organizations (Kouzes & Posner, 2013). Aquino & Reed (2002) contend that psychological and environmental factors influence behavior, shedding light on the significance of a leader's behavior and creating an atmosphere that encourages ME.

EL in the service and manufacturing sectors influences the PEB of employees, with some distinctions due to the nature of operations. The service sector focuses on a culture of environmental responsibility, green practices integration, and empowerment through communication. Service-sector companies have less environmental impact than manufacturing, making green initiatives easier to implement. Ethical leaders in the service sector emphasize sustainability, transparency, and support for eco-friendly practices to maintain a positive reputation and competitiveness. Manufacturing operations have greater environmental impacts, requiring sustainable practices, waste reduction, and minimization of environmental harm. EL in manufacturing companies involves sustainability in decision-making, eco-friendly technologies, and stakeholder engagement for transparency. Leaders in manufacturing face challenges in changing practices, overcoming resistance, and balancing environmental goals with efficiency and profitability. While EL principles may be consistent, their application and emphasis will vary in the service and manufacturing sectors based on specific challenges. Both sectors benefit from EL's promotion of PEB, and its contribution to environmental sustainability and organizational success.



## Practical Implications

This study offers valuable insights for management. Through an examination of the connections between EL, ME, and PEB, this research offers several practical implications. First and foremost, the concept of EL has garnered significant importance and attention in emerging economies like India. The process of industrialization in India has resulted in various environmental challenges, including the emission of CO<sub>2</sub>, depletion of natural resources, and shortages of water and electricity (Ansari, Farrukh & Raza, 2021). The adoption of green behaviors by EL can have a positive impact on PEB and motivate individuals to refrain from engaging in practices that harm the environment. Notably, leaders play an increasingly influential role in predicting the green behaviors of employees. Our findings demonstrate that ethical leaders guide their followers towards environmentally friendly actions. Consequently, appointing a leader with high ethical standards can yield desired outcomes from employees. Aselage & Eisenberger (2003) emphasize that a leader is not a solitary entity but rather a representative of an organization who contributes to aligning the values of both the organization and its individuals. In this context, employees willingly follow their leaders and adhere to organizational practices, as a leader's role is aligned with the strategic directions and practices of the organization (Ahmad & Umrani, 2019). Based on these findings, it can be assumed that when organizations and leaders embrace PEB through ME from the outset, employees are more likely to exceed their conventional roles. Furthermore, leaders can influence the PEB of employees by implementing robust ethical rules and regulations. These rules and regulations are essential for encouraging green behaviors such as waste reduction, paper conservation, recycling, and energy-saving, all of which contribute to environmental protection. Secondly, leadership plays a crucial role in fostering a commitment to environmental protection among employees. When leaders demonstrate their commitment to engaging in pro-environmental behaviors, their followers also exhibit a commitment to adhering to environmental regulations and policies (Safari et al., 2018). Consequently, organizations can benefit from EL by enhancing employee commitment to environmental sustainability and PEB. Lastly, this study holds great significance for managers and policymakers who are concerned about environmental issues. It offers solutions for companies operating in India and elsewhere in the world by highlighting the importance of EL in enhancing employee ME and PEB, both of which are crucial for environmental sustainability.

## Conclusion

In summary, this study concludes by addressing the questions of what, why, when, and how EL promotes PEB while being morally effective as a facilitator. We propose that PEB is significant for the success of business. To better understand PEB, this study examined how the employee's ME and the immediate supervisor's environmental and ethical leadership interact to predict PEB. In order to advance the understanding of encouraging PEB in organizations, the findings of this research will inspire future potential researchers to create and test further new intricate models involving numerous mediators and facilitators. The study suggests that EL is critical in supporting PEB.

## Limitation

Although this research makes several contributions, a few limitations should be noted as they provide valuable information for future research. The first caveat is that it considers only one constraint, namely ME, which reinforces the impact of EL on the PEB. Finding out more about additional personality qualities or contextual elements that might have an impact on this connection, such as ethical identity, ecological values, and perceived organizational support, would be exciting (Kuenzi et al., 2020; Shen et al., 2018). This research has established a mechanism for achieving PEB. It would be fascinating to research how EL affects PEB. It might also be unusual to examine further factors that influence the relationship between EL and PEB, such as the awareness of employees and a harmonious passion for the environment. This research has contributed to the social learning theory, but it is possible to consider further theoretical frameworks to understand the introduction of PEB. For instance, the social information processing theory (Salancik et al., 2013), the organizational "embodiment" of supervisors (Eisenberger et al., 2010), and "lookout" information notices, which may be more relevant in this regard (Saleem et al., 2020). Ashforth (2009) and Hameed et al. (2022) used the social identity theory, according to which context-specific organizational initiatives and regulations that considered stakeholder demands and the performance of the economy, society, and environment enhance organizational identification and reduce unproductive employee behavior. Investigating the consequences of EL on a wider scope of organizational outcomes, such as employee well-being and innovation, may provide valuable insights for future research.

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## The Impact of Perceived Physician Communication Skills on Revisit Intention: A Moderated Mediation Model

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**Abstract:** This study aims to evaluate the impact of perceived physician communication skills on patients' revisit intention, focusing on the mediating role of two dimensions of trust and the moderating role of gender. While several studies on revisit intention examine the effect of service quality as a whole, this is one of the few that not only focuses solely on physician-patient communication but also examines both dimensions of trust and revisit intention with the same physician. A cross-sectional survey was employed via questionnaire distribution. A total of 265 valid responses were used for data analysis. The findings revealed that perceived physician communication skills impact trust and revisit intention. Emotional trust was seen to have a full mediating effect on the relationship. Gender had no moderating effect on the proposed relationship, which suggests that irrespective of gender, patients' expectations and preferences for effective communication are similar. By cultivating a supportive and empathetic attitude, physicians can create a positive emotional environment that enhances patient trust and positive behavioral intentions.

**Keywords:** cognitive trust, emotional trust, physician communication skills, revisit intention

**JEL Classification:** I1, M1



## Introduction

The physician-patient relationship is acknowledged as fundamental to effective healthcare delivery and positive health outcomes. The healthcare industry relies significantly on the physician-patient relationship to achieve positive health outcomes (Nwosu et al., 2023). Research in health communication primarily focuses on physician-patient interactions due to several compelling factors. The challenge originates from the differences in the roles of patients and physicians. There have historically been variations in circumstances between a physician who has constraints in time or opportunities to enhance their communication abilities and a patient who expects more time for increased interaction with the physician (Lee, 2021b). Bridging the communication gap between physicians and patients is essential for building trust, meeting expectations, and enhancing the quality of care.

The healthcare system is undergoing significant transformation, and there has been a notable increase in patient empowerment. Changes in the healthcare sector have provided consumers with a wider range of choices when selecting a hospital. Patients increasingly seek greater involvement in their healthcare and demand better access to comprehensive health information (Bombard et al., 2018; Amjad et al., 2023). The importance of effective communication cannot be overstated when it comes to meeting changing expectations and delivering patient-centered care. Patient safety is essential in healthcare, as medical errors resulting from miscommunication between patients and healthcare providers can negatively influence patients' well-being (Kwame & Petrucka, 2021). Park et al. (2021) point out that physician-patient communication has a positive association with patients' intention to revisit, which is a major indicator of patient loyalty.

Patient trust has been receiving increased attention for years. The term refers to a patient's confidence in the healthcare system and providers (Li et al., 2022). Trust is commonly categorized into cognitive and emotional dimensions and is widely recognized as a key component in developing interpersonal and transactional relationships. Patient trust is a fundamental element in the healthcare sector, serving as the foundation of the physician-patient interaction. It leads to perceptions of physicians as reliable, acting in the patient's utmost welfare, and offering guidance to address their health concerns (Krot & Rudawska, 2021). When patients receive care that meets their expectations, they likely build trust (Nuhu et al., 2025). Based on the level of trust established, there is an increased likelihood that individuals will actively pursue the services of the same healthcare provider in subsequent instances, hence augmenting the financial gains of the medical institutions (Krot & Rudawska, 2021). Research has shown that gender differences in communication preferences and trust formation significantly influence physician-patient interactions (Surchat et al., 2022).

Numerous academic studies have been undertaken to establish a relationship between patient trust and the intention to revisit healthcare facilities (Yuniarti & Hidayat, 2021; Güçer & Çakmakoglu, 2018); however, only a limited number of studies have explored emotional and cognitive trust, which are the inner components of trust (Rigo et al., 2022; Lee & Kim, 2020). Multiple studies have been conducted to investigate the influence of service quality on revisit intention with a comprehensive approach; however, limited attention has been given to the specific aspect of physician-patient communication in this context (Lai et al., 2020; Woo & Choi, 2021; Kim et al., 2021). The aim of this research is to investigate the mediating effect of cognitive and emotional trust on the relationship

between physician-patient communication and revisit intention as well as the moderating effect of gender between physician-patient communication and the dimensions of trust. The perception of physician communication influences patient revisit intention as it directly impacts trust, with quality interactions and strong communication skills enhancing emotional trust and cognitive trust. Gender further impacts this relationship, as women may prioritize empathetic and supportive communication, while men might focus more on the physician's expertise and clarity, highlighting the need for tailored communication approaches to build trust effectively and enhance revisit intentions. The findings of the study have the potential to benefit multiple stakeholders. Healthcare providers can use these insights to tailor communication strategies, enhancing patient trust and loyalty. Policymakers and healthcare administrators may benefit from the research findings to inform policies and interventions aimed at improving the quality of healthcare delivery. Additionally, researchers and academics can build upon this knowledge to further explore the complexities of patient-physician interactions and their impact on healthcare outcomes.

## Literature Review

### Physician-patient Communication

Communication is an interaction wherein the roles of the transmitter and the receiver are interchanged. Effective communication involves the clear exchange of information, active listening, empathy, and understanding between parties. In a healthcare setting, effective communication between physicians and patients is essential for building trust, ensuring accurate diagnoses, enhancing patient adherence to treatment plans, and improving health outcomes. It enhances a sense of partnership and empowers patients to actively participate in their care, which is essential for achieving optimal results. Unfavorable judgments and attitudes frequently arise due to a lack of understanding regarding the potential of communication. It is imperative for physicians to carefully consider the usage of medical terminologies during their interactions with patients. This is because patients often attribute different meanings to the information they receive or, in more severe cases, struggle to fully comprehend the intended meaning, particularly when conveyed by the healthcare provider. Consequently, emotional stress increases and hinders effective physician-patient communication (Nwosu et al., 2023). Caring, problem-solving, and counseling have been identified as the basic categories of communication often observed in the physician-patient relationship. While these forms of communication can occur anytime during the interaction, they are most commonly utilized in the following order: caring to set a positive tone, problem-solving to diagnose, and counseling to offer relevant health information (Mohd Salim et al., 2023; Omole et al., 2011). However, if the forms of communication are ineffective, it may create patient misinterpretations. Therefore, it is crucial to examine the extent of effective physician-patient communication.

### Trust

Developing trust is essential to maintaining long-term sustainable relationships between service providers and consumers. It is a psychological and emotional reliance on the integrity and character of an individual, group, or system (Cardoso et al., 2022; Ansori & Nugroho, 2024). The presence of trust between the customer and a provider is associated with favorable behavioral outcomes, such as an increased intention to revisit,

irrespective of the strength of their connection (Maduretno & Junaedi, 2022). Patient trust is defined as the belief that doctors have the required skills for diagnosis and treatment and that they can prioritize patients' interests so that patients confidently accept medical services (Croker et al., 2013; Liu et al., 2021). Trust is essential in healthcare as it reinforces the provider-patient relationship and fosters a greater sense of commitment towards the medical institution (Shaughnessy et al., 2023). Hence, trust facilitates better communication, increases patient satisfaction, and drives patients to follow their treatment plans, all of which contribute to better health outcomes. Regarding this study, trust is conceptualized based on two dimensions (emotional and cognitive).

### **Emotional Trust**

Emotional trust, also called affective trust, pertains to the subjective assessment of trust. It involves the reliance on an individual based on impressions developed through the degree of care and concern they display (Legood et al., 2022; Waskito et al., 2023). It encompasses the range of emotions associated with feelings of security and the perceived level of strength in interpersonal interactions. Additionally, it pertains to the degree to which individuals believe in the trustworthiness of someone's intentions, the soundness of their values, and the genuineness of their integrity (Šimić et al., 2021). Emotional trust is based on the conviction that the other party will do its best regardless of policy restrictions. The basic concept of emotional trust is a reliance based on emotions and is closely linked to the idea that one's behaviors are naturally driven. It is therefore argued that emotional interactions are a vital and continuous component of consumer-level service relationships and serve as the foundation for trusting partnerships. It is formed by interactions with a partner and changes over time, depending in part on the frequency of contact (Liu et al., 2021).

The establishment of emotional trust between doctors and patients is widely recognized as an important element in the patient-doctor relationship within healthcare settings, as it has an impact on the patient's tendency to adhere to the physician's advice and comply with their prescribed treatment plan. It can also impact the patient's overall satisfaction with their healthcare experience and intention to revisit (Ai et al., 2022). The findings of Alnawas and Hemsley-Brown (2018) indicate that emotional trust has a considerably greater impact on customers' value perceptions compared to cognitive trust, which suggests that a patient-physician interaction that shows benevolence is expected to result in improved perceptions of treatment and greater satisfaction, ultimately enhancing a long-term relationship. Furthermore, establishing emotional trust in doctors holds significant importance, particularly for individuals suffering from chronic or severe medical conditions, as it is essential in fostering a sense of security and support throughout challenging periods. Developing emotional trust can also benefit healthcare providers by improving patient outcomes and fostering positive working relationships (Arakelyan et al., 2021).

### **Cognitive Trust**

Cognitive trust, associated with technical competence, revolves around an individual's confidence in another person's abilities, competencies, and reliability (Shamim et al., 2023). It is built on the patient's perception of the physician's knowledge, skill, and judgment. It can affect the patient's level of satisfaction with care and the possibility of re-

turning for future medical needs (Stalnikowicz & Brezis, 2020; Zhao & Mao, 2021). Cognitive trust is commonly associated with decision-making as it impacts how individuals analyze and choose from various alternatives. To foster cognitive trust, physicians must stay current on recent developments in medical research and best practices, communicate openly and honestly with their patients, and actively involve them in decision-making. Given that the patient-physician relationship can be considered a contractual agreement involving the exchange of financial resources and medical services, cognitive trust is essential in such corporate interactions, as one party trusts the other based on rational reasons (Shamim et al., 2023).

In the doctor-patient interaction, both dimensions of trust (emotional and cognitive) are essential. The former contributes to the development of a strong rapport, while the latter ensures that patients have confidence in the physician's ability to make informed decisions regarding their health. These dimensions of trust must be built and maintained for shared decision-making and positive health outcomes.

### **Revisit Intention**

Revisit intention refers to the possibility that a customer will return to a service in the future (Manyangara et al., 2023). It refers to the voluntary intention of the patient to continue visits to their healthcare provider for future needs. It differs from actual usage in that it refers to the patient's willingness to use the service again in the future. It also reflects their cognitive decision-making process and commitment to maintaining the relationship with the provider (Pighin et al., 2022). Patients are either satisfied or dissatisfied with the physician's services based on their comparative assessment of the perceived performance and the pre-experience expectations. This implies that the benefits expected by the consumer are crucial for influencing the revisit intention. The intention to reuse or revisit is a fundamental aspect of marketing and is fundamental in maintaining customer relationships and generating long-term earnings for the institution. Assessing patient revisit intention is essential for healthcare professionals as it identifies and resolves any hurdles that might impede a patient's inclination to seek future medical treatment. Moreover, it can provide valuable insights into the overall treatment quality and facilitate determining improvement (Pighin et al., 2022). When it comes to cost analysis, it is evident that the cost associated with acquiring new consumers surpasses that of retaining current ones.

Consequently, hospitals and healthcare providers must prioritize building patient loyalty by fostering revisit intentions to ensure continued patronage. The findings of Soare et al. (2022) revealed that word of mouth (WOM) is essential in enhancing sustainable doctor-patient relationships. Rahman et al. (2023) found that service quality is positively associated with intention to revisit the healthcare facility through WOM.

### **Theoretical Framework and Hypothesis Development**

The theoretical framework for this study is based on two theories: the pathway model (Street et al., 2009) and the social role theory (Eagly & Wood, 2016).

#### ***Pathway Model***

The pathway model originates from the field of health communication. It is specifically grounded in the discipline of communication studies with a focus on its application in healthcare settings. The pathway model includes both direct and indirect consequenc-

es of patient-provider communication, implying that communication affects health outcomes through an indirect or mediated route through proximal outcomes of the interaction, such as trust in the clinician, which may affect health (Nwosu et al., 2023). According to the model, patient-provider communication facilitates information exchange, reduces uncertainty, strengthens relationships, and supports decision-making. These functions may affect proximal outcomes, such as comprehension, clinician-patient agreement, physician trust, and care participation (Asan et al., 2021). Communication centered on the patient is about balancing two crucial requirements of healthcare providers: diagnostic and patient treatment, and understanding patient needs and enhancing participation. These needs can then be used to meet two categories of patient needs: informational and emotional. Informational needs can be met by using simple terms, evaluating patients' degree of comprehension, and offering ample time and space for questions, while satisfying emotional needs, which involves demonstrating empathy and other forms of emotional support (Kwame & Petrucka, 2021). When these needs are satisfactorily met, patients' emotional and cognitive trust in their physicians increases, raising the possibility that they will revisit them.

### ***Social Role Theory***

The social role theory is a sociological viewpoint that describes how cultural norms and social structures impact behavior and beliefs regarding gender and other social groups. It originates from the field of social psychology and is closely related to gender studies and sociocultural theories. The theory holds that social roles are determined by society and depend on characteristics such as gender. These roles are accompanied by expectations and norms that govern human behavior and social relationships (Eagly & Wood, 2012). Social roles can also impact the cognitive processes and psychological development of the patient. In healthcare, this theory suggests that men and women may develop different expectations regarding physician-patient communication due to culturally ingrained gender roles. Traditionally, women are socialized to value relational and emotional communication, while men are conditioned to prioritize competence, problem-solving, and efficiency in interactions. These differences are particularly relevant in trust formation, as female patients may rely more on emotional bonds, whereas male patients may prioritize cognitive trust competence and expertise.

### **Perceived Physician Communication and Emotional Trust**

Physician communication and trust are essential components of patient-doctor interaction and influence patient outcomes (Gu et al., 2022). Clinicians must actively listen to and address patient concerns as well as demonstrate empathy and emotional sensitivity to establish a strong foundation of emotional trust (Drossman et al., 2021). Nonverbal cues such as eye contact, facial expressions, and touch (when appropriate) can contribute to establishing this emotional connection (Thakur & Sharma, 2021). Findings from the study by Tan et al. (2023) revealed a positive association between the level of perceived emotional support provided by physicians and the level of hope reported by patients. Mohd Salim et al. (2023) found that physicians who display warmth, compassion, and emotional sensitivity create a sense of security for patients, which leads to increased trust. Additionally, the ability of physicians to validate patient concerns and express understanding contributes to patients' willingness to adhere to medical recommendations



and maintain long-term relationships with healthcare providers (Wu et al., 2022). Hence, to create and sustain emotional trust and positive communication with patients, physicians must be aware of and prioritize these factors.

The above discussion provides an argument for the first hypothesis:

**H1:** Perceived physician communication has a positive relationship with emotional trust.

### **Perceived Physician Communication and Cognitive Trust**

Cognitive trust, in contrast to affective trust, is built on rational assessments of a physician's competence, reliability, and expertise. While affective trust relies on emotional connections, cognitive trust emerges from a physician's ability to communicate medical knowledge effectively and address patient concerns with logical reasoning (He et al., 2022). Research indicates that physicians who provide clear explanations, evidence-based recommendations, and well-structured responses to patient inquiries tend to be perceived as competent and trustworthy professionals (Feng et al., 2022; Lee, 2021a). Effective physician communication, which includes the use of medical knowledge and patient education, strengthens cognitive trust by reducing uncertainty and enhancing patients' understanding of their health conditions (Du et al., 2020; Wang et al., 2022). Similarly, He et al. (2022) found that when physicians are transparent about treatment options and involve patients in shared decision-making, cognitive trust increases. Moreover, specialized communication skills, such as the ability to simplify complex medical terminology and provide structured guidance, contribute to a patient's confidence in the physician's expertise (Berman & Chutka, 2016). Demonstrating strong communication abilities helps patients process information effectively, reinforcing trust in their medical judgment and decision-making (Du et al., 2020; Wang et al., 2022). Based on the existing literature, the second hypothesis is proposed:

**H2:** Perceived physician communication has a positive relationship with cognitive trust.

### **Cognitive Trust and Revisit Intention**

Patients with a high degree of cognitive trust in their healthcare providers do so because they believe in their expertise, which fosters confidence in the quality of care, increases patient satisfaction, and, ultimately, the increased intention to revisit the same provider (Lee, 2021b). Revisit intention ensures continued engagement and efficient resource utilization within the healthcare system (Pighin et al., 2022). Research conducted by Rigo et al. (2022) examined the association of patients' affective and cognitive trust on revisit intention and patient satisfaction with life and revealed a positive relationship between cognitive trust and revisit intention to the dentist. Similar findings by Bilisbekov et al. (2021) on the effect of trust on service relationships revealed a positive relationship between cognitive trust and the anticipation of future interactions. Based on the literature, the following hypothesis is proposed:

**H3:** Cognitive trust has a positive relationship with revisit intention.

### **Emotional Trust and Revisit Intention**

Consumers hope to obtain emotional satisfaction when purchasing products or services. Thus, consumers are more likely to repurchase when they use a product or service and encounter a positive emotional experience (Liu et al., 2021). The results from Lin and Chao (2023) also revealed that the consumer's positive emotional connection increases trust and further influences revisit intention. In healthcare, patients who emotionally trust their physicians have a better overall care experience and are more likely to return for future medical needs. The findings from a study by Karami et al. (2023) revealed that relationship marketing, a component of emotional trust, increases revisit intention. Similarly, a cross-sectional study by Liu et al. (2021) revealed that emotional attachment towards the doctor predicts patients' intention to revisit. Hence, the following hypothesis is proposed:

**H4:** Emotional trust has a relationship with revisit intention.

### **Perceived Physician Communication and Revisit Intention**

Patients' intention to revisit their doctors can be influenced by how well they perceive their doctor's communication skills. Patients who perceive their healthcare providers as polite and responsive to their needs are inclined to seek care in the future. Effective communicators can help patients understand their treatment plans, build rapport, and provide emotional support when required. Focusing on these aspects of communication can help physicians enhance patient outcomes, increasing revisit intention. The findings by Park et al. (2021) indicate that doctors' communication style substantially impacts patients' revisit intention. Similarly, Woo and Choi (2021) point out that the communication style between physicians and patients directly influences the willingness of the patient to revisit. Based on the above literature, the following hypothesis is proposed:

**H5:** Perceived physician communication has a positive relationship with revisit intention.

### **The Moderating Role of Gender**

Gender differences in communication styles and preferences have been widely examined in both psychological and healthcare communication literature (Street, 2002; Leaper & Robnett, 2011). There have been conflicting results from studies examining the role of patient gender in the link between perceived physician communication and trust. According to some findings, perceived physician communication comparably influences cognitive and emotional trust for both male and female patients, showing that gender may not significantly modify the relationship as other factors, such as physician competence, communication skills, or cultural competence, are prioritized (Wang et al., 2022). However, studies suggest that men and women differ in how they communicate, process information, and establish trust in interpersonal interactions (Natalie, 1991). These differences extend to the healthcare setting, influencing how patients perceive and respond to physician communication, which affects the development of emotional trust and cognitive trust (Haile, 2018; Surchat et al., 2022). Women are generally found to value emotional support, empathy, and relational communication more than men (Burlison, 2003). In healthcare, female patients may respond more positively to physician behaviors that demonstrate warmth, compassion, and active listening, which reinforce emotional trust

(Hojat et al., 2002). In contrast, men may prioritize task-oriented communication and decisiveness over emotional connection when assessing physician trustworthiness (Pang et al., 2023). This aligns with the social role theory, which explains that gendered expectations shape interpersonal interactions, leading women to seek more relational assurance while men prioritize expertise and direct solutions. Moreover, female patients often expect longer consultations and more verbal engagement from physicians, which strengthens their emotional trust, while male patients may not require the same level of affective communication for trust to develop (Hall & Roter, 2002). Moreover, studies indicate that men and women interpret medical advice differently (Cabral & Dillender, 2021). Men tend to take a physician's explanation at face value and form cognitive trust based on the clarity and authority of the communication. Women may critically evaluate the physician's ability to personalize information and consider their individual concerns, leading to gendered variations in the strength of cognitive trust formation.

**H6:** The effect of perceived physician communication on emotional trust is stronger for female patients than for male patients.

**H7:** The effect of perceived physician communication on cognitive trust is stronger for male patients than for female patients.

### **Mediating Role of Emotional Trust**

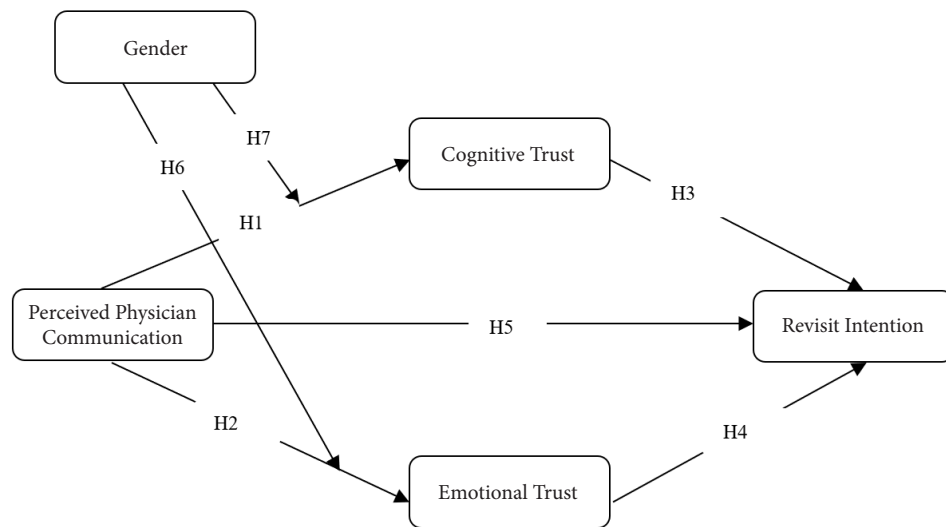
Perceived physician communication is essential in developing emotional trust. Patients tend to confide in their physician's ability to care for them and their emotional well-being when they believe their physician can communicate effectively. This can result in increased emotional trust and a higher possibility of returning to the same care provider (Sharkiya, 2023). A lack of concern for the patient's emotional needs might lead to a breakdown in trust and a reduced intention to return. Patients who believe their doctor is uncaring are more inclined to seek care elsewhere. Therefore, the following hypothesis proposes a mediating relationship between these variables. That is, emotional trust will mediate the influence of perceived physician communication on revisit intention.

**H8:** Emotional trust mediates the relationship between perceived physician communication and revisit intention.

### **Mediating Role of Cognitive Trust**

Evidence suggests that cognitive trust can mediate the relationship between perceived doctor communication and patient revisit intention (Lee, 2021b). In other words, if a patient perceives their doctor as having good communication skills and being knowledgeable and competent, this can lead to increased cognitive trust, which may increase the likelihood of the patient intending to revisit. A study conducted by Lee (2021a) revealed that informational justice positively impacts patients' cognitive trust and satisfaction in the physician-patient relationship, which could lead to the patient's intention to revisit. Rigo et al. (2022) also highlight that the cognitive aspect of trust during physician-patient communication positively influences the intention to revisit the care provider. Given the above discussion, the fourth hypothesis is proposed:

**H9:** Cognitive trust mediates the relationship between perceived physician communication and revisit intention.



**Figure 1.** Research Model

## Methodology and Research Framework

In this quantitative study, data was collected via purposive sampling from outpatients who have visited public hospitals in Lagos State, Nigeria. Patients seeking services represent all 36 states since Lagos is Nigeria's most culturally diverse state. To be eligible as a participant, one must be currently living in Nigeria and have consulted a physician at least twice within the last year. (Aghaei & Poorkhaje Namaghi, 2022) suggested that for each item, a minimum of five respondents and a maximum of ten are sufficient distributions. Therefore, employing 265 participants with the exclusion of 46 invalid responses after the data collection period (March 28-May 20, 2023) had elapsed was sufficient. Based on the demographic information, most of the respondents were male (60.4%). Over half of the respondents were 18-25 years old (58.1%). Regarding education, 71.7% were undergraduates, and virtually all participants (90.9%) were single. The demographic profile can be seen in Table 1.

**Table 1.** Demographic Information of Respondents

		Frequency	Percentage
Gender	Male	160	60.4
	Female	105	39.6
Age	18-25	154	58.1
	26-35	40	15.1
	36-45	53	20.0
	46 and above	18	6.8
Level of Education	Primary	25	9.4
	Secondary	35	13.2
	Undergraduate	190	71.7
	Graduate	15	5.7

Marital Status	Single	241	90.9
	Married	16	6.0
	Separated/Divorced	8	3.0

### ***Measures***

The measurement items were adopted from prior studies to ensure content validity. A five-point Likert scale was used to operationalize the measurement items, ranging from "strongly agree" (1) to "strongly disagree" (5). The questionnaire had two sections. The first section focused on the demographic information of the respondents. The second section measured the variables in the model. Perceived physician communication was measured using six items adopted from Mehra & Mishra (2021). The construct includes items such as "Doctor rarely interrupted me when I was describing the symptoms." Cognitive trust was measured using five items, which include "My doctor is totally honest in telling me about all of the different treatment options available for my condition." Emotional trust was measured using five items which include "I completely trust my doctor's decisions about which medical treatments are best for me." Both dimensions of trust were adopted by Feng et al. (2022) and Chen et al. (2020). Revisit intention had five items adopted from Che et al. (2015), which were then modified. The variable included items such as "I always look forward to visiting my doctor again."

### ***Structural Model Assessment***

The validity and reliability of the variables must be established before assessing the structural model, as they guarantee precise measuring instruments, minimize measurement inaccuracy, and preserve connections among variables (Zeng et al., 2021). By addressing validity up front, researchers may feel more confident in the significance and interpretability of their findings, which leads to stronger conclusions. Enhancing the overall quality and dependability of study findings are valid and reliable factors that also increase the structural model's fit to the data. After the reliability and validity have been established, the path coefficients are used to assess the significance of the model's relationships (Waqar et al., 2023). The hypotheses were tested using structural equation modeling (SEM) via Smart PLS 4.0.9.2, a tried-and-true management research technique for forecasting intricate cause-and-effect relationships (Cheah et al., 2023). This method generally offers the following benefits: predicting the primary statistical objective of the study, applying it with small samples and non-normal distribution data, as is typical of social science and survey data, analysing many latent variables, the ability to assess complex models with many constructs and many indicators, the capacity to apply formative composite measures, suitability for exploratory research predicting endogenous constructs, and fitting with the latent variable measurement models measured formatively (Hair et al., 2020).

Researchers evaluate the congruence between measures of a construct and their conceptualization of its essence. The process entails defining a model, gathering data, estimating parameters with software, and assessing fit through indices such as Chi-square and RMSEA (Knekta et al., 2019). In this study, partial least squares (PLS) evaluates if the items intended to measure cognitive trust, emotional trust, perceived physician communication, and intention to revisit accurately reflect these factors (as captured in Figure 1). SEM would enhance this by analyzing the interrelationships among these variables. This study examines whether perceived physician communication favorably affects both emo-



tional and cognitive trust and whether these trust dimensions subsequently impact the intention to revisit.

## Results

### Measurement Model Assessment

#### *Convergent Validity*

Convergent validity is determined by the degree to which one measure correlates favorably with other measures of the same variable. Average variance extracted (AVE) values greater than 0.50 have convergent validity. The criteria used to evaluate the measurement model's convergent validity include the AV, the reliability of the items, which is the Cronbach's alpha ( $\alpha$ ), and the composite reliability (CR). Values above .70 confirm the internal and construct consistency (dos Santos & Cirillo, 2023). As shown in Table 2, the constructs are reliable.

**Table 2.** Reliability and Validity Analysis

	Factor Loading	A	CR	AVE	VIF
PPC1	0.810				2.362
PPC2	0.830	0.886	0.888	0.637	2.405
PPC3	0.818				2.133
PPC4	0.714				1.635
PPC5	0.809				2.051
PPC6	0.804				1.979
CT1	0.883				2.982
CT2	0.818	0.907	0.911	0.729	2.140
CT3	0.864				2.683
CT4	0.828				2.241
CT5	0.874				2.812
ET1	0.802				1.701
ET3	0.810	0.822	0.822	0.652	1.771
ET4	0.821				1.802
ET5	0.796				1.715
RI1	0.807				2.201
RI2	0.898				3.703
RI3	0.868	0.918	0.919	0.753	3.293
RI4	0.893				3.742
RI5	0.870				3.245

PPC-Perceived Physician Communication, CT-Cognitive Trust, ET-Emotional Trust, RI-Revisit Intention;  $\alpha$ -Cronbach's Alpha; CR-Composite Reliability; AVE-Average Variance Extracted

#### *Discriminant Validity*

The ability of a variable to differentiate itself from other variables is critical for

demonstrating discriminant validity. As seen in Table 3, discriminant validity is achieved when the AVE is larger than the inter-construct correlations.

**Table 3.** Discriminant Validity

	CT	ET	PPC	RI
CT	0.854			
ET	0.477	0.807		
PPC	0.724	0.648	0.798	
RI	0.437	0.72	0.532	0.868

PPC-Perceived Physician Communication, CT-Cognitive Trust, ET-Emotional Trust, RI-Revisit Intention

## Structural Model Assessment

Structural model assessment is a process used in SEM to evaluate the relationships between variables in a theoretical framework. It helps determine whether the hypothesized relationships between latent constructs (unobserved variables) and their indicators (measured variables) are statistically valid (Hair et al., 2021).

## Hypotheses Test

The path coefficient results are presented in Table 4. The results show that perceived physician communication positively affects cognitive and emotional trust ( $\beta = 0.724$ ,  $t = 16.647$ ,  $p < 0.01$ , and  $\beta = 0.648$ ,  $t = 12.809$ ,  $p < 0.01$ ) respectively. Therefore, H1 and H2 are supported. Cognitive trust had no association with revisit intention ( $\beta = 0.098$ ,  $t = 1.388$ ,  $p > 0.05$ ). Thus, H3 is not supported. Emotional trust was positively related to revisit intention ( $\beta = 0.645$ ,  $t = 10.092$ ,  $p < 0.01$ ). Hence, H4 is supported. Lastly, the results revealed that perceived physician communication has no association with revisit intention ( $\beta = 0.044$ ,  $t = 0.541$ ,  $p > 0.05$ ). Hence, H5 was not supported.

**Table 4.** Hypotheses Testing

	Path	$\beta$	Mean	Standard deviation	T statistics	P values	Decision
H1	PPC $\rightarrow$ ET	0.648	0.65	0.051	12.809	0.000	Supported
H2	PPC $\rightarrow$ CT	0.724	0.723	0.043	16.647	0.000	Supported
H3	CT $\rightarrow$ RI	0.098	0.098	0.071	1.388	0.165	Not supported
H4	ET $\rightarrow$ RI	0.645	0.645	0.064	10.092	0.000	Supported
H5	PPC $\rightarrow$ RI	0.043	0.044	0.079	0.541	0.588	Not supported

PPC-Perceived Physician Communication, CT-Cognitive Trust, ET-Emotional Trust, RI-Revisit Intention

## Mediation Analysis

Table 5 displays the results of the mediation analysis. Although the direct relationship between perceived physician communication and revisit intention was not supported ( $\beta = 0.043$ ,  $t = 0.531$ ,  $p > 0.05$ ), the indirect effect through emotional trust was found to be supported ( $\beta = 0.418$ ,  $t = 7.966$ ,  $p < 0.01$ ). Hence, the findings indicate full mediation. This demonstrates that perceived physician communication influences revisit intention through emotional trust. H8 is therefore supported. However, the indirect effect through cognitive trust was not supported ( $\beta = 0.072$ ,  $t = 1.349$ ,  $p > 0.05$ ). H9 is therefore not supported.

**Table 5.** Indirect Effects

		$\beta$	Mean	Standard deviation	T statistics	P values	Decision
<b>H8</b>	PPC $\rightarrow$ ET $\rightarrow$ RI	0.418	0.418	0.052	7.966	0.000	Supported
<b>H9</b>	PPC $\rightarrow$ CT $\rightarrow$ RI	0.072	0.069	0.053	1.349	0.178	Not supported
<b>Direct Effect</b>							
	PPC $\rightarrow$ RI	0.043	0.047	0.081	0.531	0.596	
<b>Total Effect</b>							
	PPC $\rightarrow$ RI	0.533	0.534	0.059	9.034	0.000	

PPC-Perceived Physician Communication, CT-Cognitive Trust, ET-Emotional Trust, RI-Revisit Intention

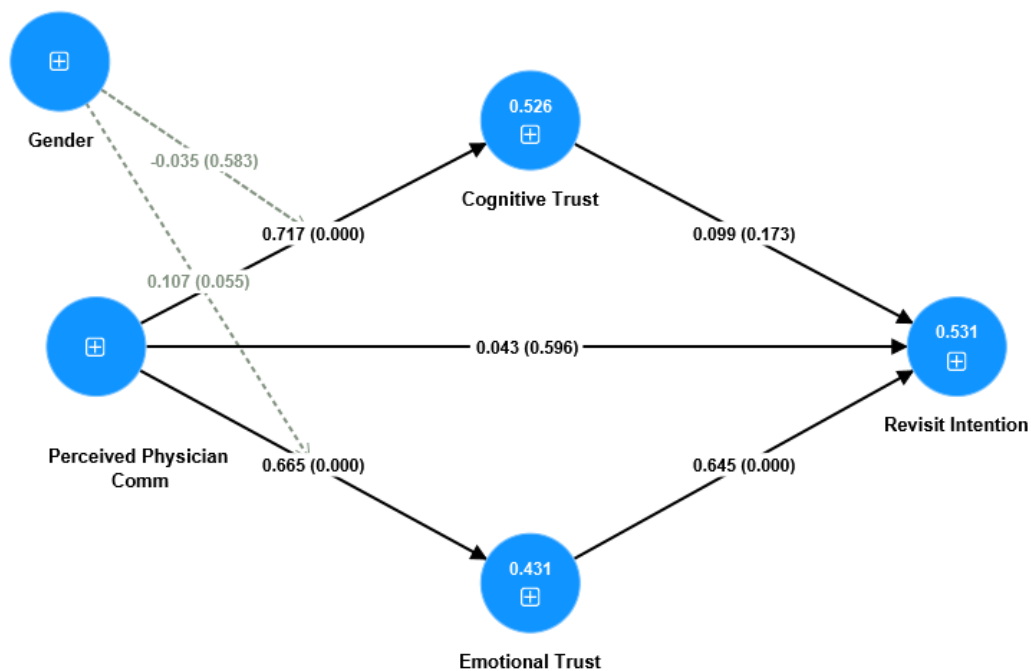
### Moderation Analysis

The study also examines the moderating effect of gender on the relationship between perceived physician communication and the two dimensions of trust as revealed in Table 6. The result indicates that there is no moderating effect of gender on the relationship between perceived physician communication and emotional trust ( $\beta = 0.069$ ,  $t = 1.853$ ,  $p > 0.05$ ) and cognitive trust ( $\beta = -0.003$ ,  $t = 0.436$ ,  $p > 0.05$ ).

**Table 6.** Moderation Analysis

		$\beta$	Mean	Standard deviation	T statistics	P values	Decision
<b>H6</b>	Gender x PPC $\rightarrow$ ET $\rightarrow$ RI	0.069	0.071	0.037	1.853	0.065	Unsupported
<b>H7</b>	Gender x PPC $\rightarrow$ CT $\rightarrow$ RI	-0.003	-0.004	0.008	0.436	0.663	Unsupported

PPC-Perceived Physician Communication, CT-Cognitive Trust, ET-Emotional Trust, RI-Revisit Intention

**Figure 2.** Structural Model-Path Coefficient

## Discussion

This present study is grounded in the pathway model, which suggests that patient-provider communication impacts health outcomes through direct and indirect effects and the social role theory, which provides a framework for understanding how societal norms and roles influence behavior and relationships. These theories provide a comprehensive framework for understanding the interaction between physician-patient communication, trust, and revisit intention.

The patients' perceptions of physician communication skills have been identified as a factor influencing healthcare outcomes (Gu et al., 2022). This paper is among the few that examine the mediating effect of two dimensions of trust in this relationship. The findings revealed that perceived physician communication affects both emotional and cognitive trust. This finding aligns with the existing research on the significance of these factors in physician-patient interaction (Du et al., 2020; Wang et al., 2022). Patients develop confidence in their physicians' skills to deliver adequate treatment and make informed choices when they perceive them to be competent and knowledgeable. This sense of competence strengthens cognitive trust. The establishment of trust is contingent upon competence, as patients require assurance that their healthcare provider possesses the necessary skills and abilities to address their medical requirements effectively. Patients feel secure and confident and in safe hands when they believe the healthcare providers are competent (Westerling et al., 2022). Patients also tend to develop emotional trust in physicians if they perceive they are empathetic, caring, and attentive to their emotional needs. Establishing an emotional connection and interaction between the patient and physician fosters a sense of ease and safety in the relationship (Lansing et al., 2023).

Contrary to expectations, the study found that gender had no moderation effect on the relationship between perceived physician communication and trust dimensions. This finding aligns with the notion that evolving gender norms and increasing healthcare literacy are diminishing traditional differences in communication preferences. In modern healthcare settings, both male and female patients increasingly expect clear, empathetic, and patient-centered communication from physicians, which may explain the lack of a significant gender effect (Peimani et al., 2023; Prasad et al., 2021). Furthermore, increased workforce diversity and gender inclusivity in medicine have minimized gender-based preferences, as both male and female providers are now trained to adopt a balanced communication approach, reducing the likelihood of gender-based trust formation patterns (Masibo et al., 2024). While the social role theory traditionally explains gender differences in communication preferences, the study's findings suggest that these differences may be less pronounced in contemporary healthcare interactions. As societal gender roles become more fluid, factors such as physician competence, clarity, and empathy may override gender-based expectations in shaping trust. This finding suggests that patient-centered communication approaches are universally valued regardless of gender.

A positive effect was observed between emotional trust and the intention to revisit, which highlights the interconnected nature of these factors. This is in line with the findings of Lee (2021b) which highlight that patients who trust their physicians based on emotional connection rather than competence alone have a greater tendency to revisit.

The non-significant indirect relationship between perceived physician communication and revisit intention through cognitive trust suggests that patients' cognitive evaluations of communication, such as perceptions of competence, may not directly influence

their intention to revisit. This finding aligns with previous studies indicating that patients do not necessarily return to a physician simply because they communicate well, but because they develop an emotional bond and feel genuinely cared for (Mohd Isa et al., 2019). It indicates that cognitive trust alone may not be the primary driver behind patients' decision to seek future care with a specific physician. In healthcare interactions, patients seek emotional security and reassurance, which are reinforced through trust (Heyn et al., 2023). The significant mediating role of emotional trust suggests that the emotional bond and sense of comfort established through physician communication are crucial drivers of revisit intention. This highlights the role of physicians in building trust through patient-centered communication strategies that go beyond technical explanations and address emotional needs and concerns. The finding is in line with previous research emphasizing the importance of the affective component in healthcare interactions. Heyn et al. (2023) highlight the importance of benevolence in healthcare communication. Similarly, Chen et al. (2022) point out in their study that expertise alone is directly linked with physician-patient conflict, but affectionate communication is positively associated with patient satisfaction and loyalty. This finding highlights the significance of fostering positive emotional experiences and building trust in the patient-provider relationship. Moslehpour et al. (2022) found a significant difference between 'interpersonal' communication and 'content' communication regarding patient satisfaction in physician-patient interaction. Healthcare providers should prioritize the development of empathetic communication skills and create a supportive and compassionate environment. By demonstrating genuine care and understanding, healthcare providers can enhance emotional trust, ultimately influencing patients' intention to revisit (Ai et al., 2022). Trusting that the physician possesses the necessary knowledge, skills, and expertise to provide appropriate care creates a sense of reliability and confidence in the patient. This belief in the physician's competence leads patients to prefer continuing their care with the same physician, as they trust that their healthcare needs will be effectively addressed (Sharkiya, 2023). The emotion-based trust also plays a significant role. Trustworthy doctors exhibit empathy, actively listen to patients' concerns, and demonstrate genuine care and compassion. This emotional connection creates a sense of attachment to the physician, increasing the intention to revisit (Arakelyan et al., 2021).

Our finding that perceived physician communication skills had no direct association with revisit intention is contrary to the findings of Park et al. (2021). However, the total effect was supported when analyzed with cognitive and emotional trust as mediators. This result is noteworthy as it suggests that the effect of physician communication on revisit intention is not straightforward and may be impacted by other factors. While effective communication is often recognized as a relevant aspect of patient care, it may not be the only factor influencing patients' intention to return to the same physician. Other factors, such as trust level, may influence revisit intention (Park et al., 2021). Despite the results obtained for the proposed hypothesis, they do not diminish the significance of effective communication in healthcare. Thus, healthcare practitioners should prioritize improving their communication skills to offer patient-centered care.

## Theoretical Contributions

This study reinforces the distinction between emotional trust and cognitive trust,

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as proposed by McAllister 1995). The results indicate that emotional trust has a more significant effect in influencing patient revisit intention than cognitive trust. This aligns with research suggesting that in healthcare settings, patients prioritize relational and emotional bonds over purely competence-based assessments (Chen et al., 2022). Thus, this study expands the understanding of trust formation in healthcare by emphasizing that patients' revisit behavior is driven by emotional trust rather than just cognitive evaluations of physician competence. The findings support the pathway model of patient-provider communication (Street et al., 2009), which suggests that communication impacts health outcomes indirectly through intermediate factors like trust. The full mediation of emotional trust in the physician communication–revisit intention link confirms that effective communication alone is not sufficient; it must build emotional trust for behavioral outcomes like patient loyalty. This study also demonstrates that patients' behavioral intentions are not merely transactional but relational. Our findings suggest that patient behavior is significantly influenced by emotional connections formed during physician interactions.

## Practical Contributions

Healthcare providers should establish feedback mechanisms to actively solicit patient feedback on their communication experiences to create room for improvement. This can be achieved through patient satisfaction surveys or online platforms for patient reviews. The hospital management contributes to building a culture that values effective communication (Ellis et al., 2023). Organizations can facilitate positive patient-physician communication by prioritizing patient-centered care, promoting open and transparent communication practices, and providing resources and training opportunities for physicians (Fukami, 2024). The training should incorporate emotional intelligence training as part of professional development programs for healthcare providers. It should focus on recognizing patient emotions, responding empathetically, and managing sensitive conversations that contribute to emotional trust formation. Hospitals can implement simulation-based training, where physicians practice communication in emotionally charged scenarios (e.g., delivering difficult diagnoses) (Elendu et al., 2024). Managers should acknowledge and reward healthcare professionals who demonstrate exemplary communication skills and consistently receive positive patient feedback. Other strategies include encouraging continuity of care, where patients see the same physician over multiple visits, as this can enhance emotional bonds. Implementing patient follow-up systems (e.g. post-visit calls or messages) to check on patient well-being can reinforce trust (Haggerty et al., 2013).

## Limitations and Future Research

This study is not without limitations. The data collected relied on self-report measures, subject to potential biases such as social desirability or recall bias. Despite efforts to ensure confidentiality and anonymity, respondents may have provided responses they felt were anticipated or socially desirable. Future studies could incorporate multiple data collection methods to provide a more comprehensive understanding of patient perceptions. The study found that gender had no moderating effect on the relationship between perceived physician communication and two dimensions of trust, which does not rule out

the possibility of gender variations in communication preferences or trust formation (Id et al., 2022; Peimani et al., 2023). These findings emphasize the need for further investigation to clarify the role of gender in trust formation and its interaction with perceived physician communication. Due to the complexity of gender as a construct, it is also necessary to account for overlapping elements, including race, socioeconomic status, and cultural background, to understand how gender affects communication and trust comprehensively.

## Conclusion

The present study revealed the influence of perceived physician communication skills in shaping patients' revisit intentions. According to the findings, effective physician communication is vital in building both cognitive and emotional dimensions of trust and ultimately increasing patients' intention of returning for future medical consultations. This emphasizes the need for healthcare providers to focus not only on enhancing cognitive trust through clinical knowledge and technical skills but also on developing strong interpersonal skills by cultivating a supportive and empathetic demeanor which can create a positive emotional environment that enhances patient trust and positive behavioral intentions. This research highlights the need to provide all patients with equitable care experiences, emphasizing the need to use clear and empathetic communication strategies that promote awareness and trust across genders. By giving priority to fundamental communication skills that benefit all genders equally, healthcare professionals can optimize training programs and more effectively allocate resources, eventually leading to improved patient experiences and outcomes across a range of demographics.

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## Appendix

**Table A1.** Construct Definition, Operationalization, and Measurement Items

Construct/ Dimensions	Operational Definition	Items	Source
Perceived physician communication	Patients' evaluation of their physician's ability to convey information, show empathy, and address concerns during medical consultations.	1. When I visited the hospital, my doctor gave me enough time. 2. When I visited the hospital, my doctor helped me decide the course of action. 3. When I visited the hospital, my doctor rarely interrupted me when I am describing the symptoms. 4. When I visited the hospital, my doctor asked probing questions. 5. When I visited the hospital, my doctor clarified my doubts.	(Mehra and Mishra, 2021)

		6. When I visited the hospital, my doctor advised me on future course of action.	
Emotional trust	Emotional trust is the confidence in someone's care and support enhancing feelings of safety and emotional connection.	1. My doctor's medical skills are not as good as they should be. 2. I completely trust my doctor's decisions about which medical treatments are best for me. 3. Sometimes my doctor does not pay full attention to what I am trying to tell him/her. 4. I have no worries about putting my life in my doctor's hands. 5. All in all, I have complete trust in my doctor.	(Feng et al., 2022; Chen et al., 2020)
Cognitive trust	Cognitive trust is the confidence in someone's reliability and competence based on rational evaluation and evidence.	1. My doctor will do whatever it takes to provide me all the care I need. 2. Sometimes my doctor cares more about what is convenient for him/her than about my medical needs. 3. My doctor is extremely thorough and careful. 4. My doctor is totally honest in telling me about all of the different treatment options available for my condition. 5. My doctor only thinks about what is best for me.	(Feng et al., 2022; Chen et al., 2020)
Revisit intention	Revisit intention is the likelihood or willingness of a customer to return to a service based on past experiences.	1. I am likely to revisit my doctor in the near future. 2. I am encouraged to revisit my doctor in the near future. 3. I look forward to revisiting my doctor in the near future. 4. I intended to revisit my doctor in the near future. 5. I always look forward to visiting my doctor again.	(Che et al., 2015)



# The Effect of Corporate Entrepreneurship Determinants on the Financial Performance of Small and Medium Enterprises (SMEs): An Empirical Study

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**Abstract:** This paper examines the effect of corporate entrepreneurship determinants on small and medium-sized enterprises (SMEs) financial performance in Malaysia, including the mediator effect of competitive advantage. A cross-sectional design was adopted, where data were collected from a sample of 221 SMEs utilizing an online questionnaire. Hypotheses were tested using the partial least squares (PLS) approach. The findings revealed a significant relationship between the determinants of corporate entrepreneurship (individual, organizational, and external environment characteristics) and an organization's financial performance. A mediating effect was also found by including an organization's competitive advantage in its financial performance. A profound understanding of corporate entrepreneurship determinants by focusing on individual and organizational perspectives can assist SMEs in implementing appropriate strategies to achieve desired financial performance. The capability of SMEs to embed employee entrepreneurial behavior in the workplace is likely to achieve the desired financial performance outcomes effectively. This study advances knowledge on corporate entrepreneurship by proposing relevant determinants and the effect of each determinant on an organization's financial performance in the context of Malaysian SMEs.

**Keywords:** corporate entrepreneurship, individual characteristics, organizational characteristics, competitive advantage, organizational financial performance, small and medium enterprise (SMEs)

**JEL Classification:** L260, M130, O310

## Introduction

To drive corporate entrepreneurship and foster innovation, many businesses have adopted strategies such as downsizing, reengineering, and restructuring, aiming to streamline operations and create more agile environments conducive to entrepreneurial initiatives (Civelek, 2021; Mamun et al., 2018; Pangestuti et al., 2022). These actions are often implemented to eliminate inefficiencies, free up resources, and cultivate a culture that encourages risk-taking and the development of innovative solutions to remain competitive in dynamic markets. According to Chinie (2013), well-structured or bureaucratic businesses face difficulties in integrating the entrepreneurial spirit into their organizations. Therefore, it would be good if these organizations could think outside the box (Castrogiovanni et al., 2011). These organizations should adopt innovative approaches, such as fostering cross-disciplinary collaboration or exploring unconventional strategies, to drive corporate entrepreneurship and innovation effectively. For instance, they could implement programs like Google's '20% time,' which allows employees to dedicate a portion of their work hours to personal projects, or establish partnerships with startups to explore fresh perspectives and cutting-edge technologies.

Businesses will find it difficult to survive if they are unable to adopt proactive strategies that address the specific challenges of implementing corporate entrepreneurship, such as fostering innovation, overcoming resistance to change, and identifying viable new ventures (Nurhayati et al., 2021). Without such forward-thinking approaches, organizations risk falling behind competitors who are better equipped to navigate the complexities of dynamic markets and capitalize on emerging opportunities.

This is because today's external business environment has become aggressive, competitive, and dynamic (Sumarmi et al., 2024). According to Mokaya (2013), organizations must continuously reinvent themselves through differentiation and innovation to achieve and sustain a competitive advantage. While challenging, this approach not only enables the development of new products and services but also enhances organizational processes and business models, addressing a significant gap in research. Such efforts are crucial for maintaining relevance in dynamic markets and adapting to ever-evolving customer needs, ensuring long-term success.

Desl  e and Dahan (2018) state that the outcome of the innovation process to assist business organizations is to develop new sources of competitive advantage and reintroduce their plans. Groenewald (2010) mentions that for organizations to remain competitive, they need to achieve a competitive advantage. Building on the foundational insights of Hatinah et al. (2015) and Kamalian et al. (2015), there is a pressing need to expand research into corporate entrepreneurship practices. Specifically, exploring the mediating role of competitive advantage is crucial, as it represents a significant gap in current knowledge. Addressing this gap is not only vital for enhancing the theoretical frameworks that underpin corporate entrepreneurship but also for providing practical guidance to organizations aiming to sustain innovation and performance in competitive markets. Such an investigation would offer a deeper understanding of the mechanisms through which corporate entrepreneurship drives sustainable competitive outcomes. Kahkha et al. (2014) observe that research exploring the impact of corporate entrepreneurship activities on organizational financial performance remains sparse. This observation has been corroborated by   a  a et al., (2024), who have found that less than 15% directly examined financial performance metrics. Similarly, D'Angelo et al. (2023) highlight the lack of studies that

investigate the sustained financial effects of entrepreneurial initiatives, emphasizing that most existing research focuses on qualitative or theoretical models rather than quantitative financial outcomes. These findings underscore a significant gap in the literature, highlighting the need for more robust empirical research to understand the financial implications of corporate entrepreneurship activities—a critical dimension of entrepreneurial practice. There is a gap in the studies of corporate entrepreneurship whereby, until now, only little conceptual clarity has been produced on its most effective and reliable determinants (Wang & Zhang, 2009). Furthermore, researchers have proposed various definitions, resulting in some ambiguity on what determines corporate entrepreneurship (Kamalian et al., 2015). Thus, this study was carried out to identify the determinants of corporate entrepreneurship and its effect on organizational financial performance.

## Literature Review

This study is closely associated with the resource-based view (RBV) theory, commonly utilized in corporate entrepreneurship studies. In addition, the differences in corporate entrepreneurship determinants among the resources that Malaysian SMEs have at their disposal and the ability to operate these resources towards a positive financial performance are also projected (Zakaria & Kuah, 2024). According to Amran et al. (2015), the results of their study validated the model that supports the RBV theory, which relates to the environmental, organizational, and individual resources that affect the economic performance of SMEs in Malaysia. It was found that competitive advantage can be achieved when organizations have different levels of resources, capabilities, or essential competencies (Penrose, 2009). The RBV theory recommends that competitiveness can be realized by delivering superior value to customers. A review of literature on corporate entrepreneurship shows that most of the studies in that field did not use a specific conceptual framework (Ahuja & Lampert, 2001). The resources of a firm, which are the driver of its growth, profit level, and competitive advantage, are consistent with the RBV theory, which emphasizes the importance of the resources.

### **The Influence of the Relationship between Individual Characteristics, Organizational Characteristics, and External Environment Characteristics on Organizational Financial Performance**

One of the main indications of a strong relationship between corporate entrepreneurship and organizational financial performance is provided by Amran et al. (2015) and Panjaitan et al. (2023), who have found a correlation between corporate entrepreneurial behavior and financial performance. In this study, individual characteristics consist of entrepreneurial behavior, entrepreneurial intention, and organizational citizenship behavior. The basis for evaluating the entrepreneurial behavior of individuals is based on two aspects, mainly, the amount of employees' experience measured by job knowledge and the strength of their social network and overall learned knowledge of the organization's staff, judged by their capabilities, initiatives, and how knowledge sharing takes place (Urbano et al., 2013). Entrepreneurial behavior will consider the individual human characteristics that affect people to act entrepreneurially (Affendy et al., 2011).

Identifying and exploiting business opportunities can be enhanced when employ-

ees possess relevant entrepreneurial experience (Shane & Khurana, 2003). Prior experience helps employees make wrong decisions or moves (Nahata, 2019; Prasetyo et al., 2022). In the case of entrepreneurial intention, it is described as the process of identifying opportunities, which is implemented purposefully and subsequently drawing more research attention (Alonso & Alexander, 2017; Krueger et al., 2000). The entrepreneur's goal setting, communication, commitment, and other actions are significantly guided by the level of entrepreneurial intentions (Ajzen, 2005). Entrepreneurial intention is a good predictor of subsequent entrepreneurial behavior (Ajzen, 1991, 2005). Therefore, when studying entrepreneurial behavior, it has become crucial to understand the factors that influence entrepreneurial intentions (Fitzsimmons & Douglas, 2011). Past literature on organizational citizenship behavior reveals that two approaches have been commonly utilized: mutual commitment and non-prefabricated incentives. In terms of forming a relationship and shared values, it has been found that individuals are different from one another. The reluctance of employees to display organizational citizenship behavior happens when employees take advantage of the situation for their self-interest. In addition, it is also driven by suspicion toward fellow workers (Krueger et al., 2000). One way to achieve organizational citizenship behavior and competitive performance, according to Fitzsimmons and Douglas (2011), is by applying fair treatment and procedures. To summarize the above discussion, it is posited that individual characteristics have a significant relationship with a competitive advantage.

**H1:** Individual characteristics have a significant relationship with organizational financial performance.

As part of organizational characteristics, entrepreneurial orientation significantly contributes to an organization's success. Positive relationships between entrepreneurial orientation and organizational financial performance are quite a common finding reported by researchers (Kraus & Rigtering, 2015). As stated by Chandler et al. (2000), corporate earnings are enhanced by having an innovative, supportive culture but do not significantly contribute to firm growth. Several researchers have also found a positive correlation between entrepreneurial orientation and the growth of small organizations (Gurbuz & Aykol, 2009) and the profit levels of non-state organizations (Chow, 2006). Similarly, external environmental characteristics positively influence organizational performance (Antoncic & Zorn, 2004). The need for change in a volatile environment has become inevitable, and organizations have been forced to adapt to change to maintain their competitiveness. The ability of the organization to assimilate the necessary change depends on organizational-level characteristics, the capabilities of the employees, and the organization's strategic orientation, which is then said to affect the financial performance of organizations (Mokaya, 2013). The importance of environmental characteristics' explicit and implicit effect on organizational financial performance (Kamalian et al., 2015) has encouraged this study to investigate further the relationship between external environment characteristics and organizational financial performance. The following is posited:

**H2:** Organizational characteristics have a significant relationship with organizational financial performance.

**H3:** External environment characteristics have a significant relationship with organizational financial performance.

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## **The Influence of the Relationship between Individual Characteristics, Organizational Characteristics, and External Environment Characteristics on Organizational Competitive Advantage**

Organizational support, such as the level of encouragement and support from the management, worker's discretion, designation of idea champions, the establishment of ways to harness ideas from employees, training, rewards, time availability, and financial resources, are deemed crucial for pursuing new ideas or projects (Zahra, 2007). As stated by Chen et al. (2005), organizational management style cannot positively impact corporate entrepreneurship, even when support is obtained from the board of directors and senior management. Furthermore, corporate strategic entrepreneurial management affects the success level in cultivating corporate entrepreneurship (Covin & Miles, 1999).

Organizational culture is an internal organizational factor that motivates corporate entrepreneurship (Kuratko, 2007). Top management and the transfer of experience and knowledge is an essential part of the corporate entrepreneurial culture for handling people and groups of individuals (Trestl, 2016). The lack of proper transference of knowledge among individuals is an area of concern, as there is no proper documentation to retain the knowledge of employees. Evidence from previous experience in various industries has shown how this task of knowledge transfer can be learned and mastered (Thornberry, 2003). The formation of specific functional teams and how the cultures of organizations are utilized will pave the way to attain corporate entrepreneurial goals. Individual involvement is needed to ensure this can be carried out successfully (Trestl, 2016). Organizational entrepreneurial orientation is also one of the critical links to organizational performance.

Felício et al. (2012) state that, for organizations to stay and remain competitive in the twenty-first century, they need to have rapid and cost-effective organizational techniques. As per Morris et al. (2008), the occurrence of more innovative, risk-taking, and proactive entrepreneurial activities reflects the level of entrepreneurship in an organization relating to entrepreneurial orientation. Organizations with entrepreneurial orientation behave differently than other types of organizations, making entrepreneurial orientation a significant theoretical construct. In this study, the organization's external environment is a resource that expedites the organization in identifying, acquiring, and exploiting resources (Hitt et al., 2011). According to Ireland et al. (2003), examples of external environmental resources are raw materials, monetary resources, and labor. The organization's external environment focuses on collaborations between organizational and business environment characteristics (Kraus & Rigtering, 2015). The external business environment needs to be studied carefully before any deductions can be made to see the relationship between corporate entrepreneurship and the financial performance of organizations (Covin & Miller, 2014). Previous studies have shown that corporate entrepreneurship was mainly related to better financial performance (Bierwerth et al., 2015). Paradkar et al. (2015) show that organizations need to be innovative and agile in this current age of rapid technological advancement. It has become a minimum requirement for organizations to be more creative, innovative, and entrepreneurial to remain competitive, contributing to corporate entrepreneurship that will ensure survival, growth, profitability, and positive renewal for the organization (Zahra, 2007).

Dentchev et al. (2016) state that environmental characteristics such as dynamism, industry growth, and resource deployment favor corporate entrepreneurship. These are present in the external business environment, influencing entrepreneurial activities.



Therefore, based on the discussion above, the following hypotheses are posited:

- H4:** Individual characteristics have a significant relationship with organizational competitive advantage.
- H5:** Organizational characteristics have a significant relationship with organizational competitive advantage.
- H6:** External environment characteristics significantly impact organizational competitive advantage.

### **The Relationship between Organizational Competitive Advantage and Organizational Financial Performance**

David (2015) defines competitive advantage as a means to earn a higher rate of profit, which can be achieved by outperforming rivals in the industry. Anwar (2018), however, refers to competitive advantage as anything that a firm does well compared to its rivals in the industry. Sources or situations that lead to a competitive advantage for organizations are their availability when they are valuable, rare, and hard to imitate. An organization's resources and capabilities enable innovation and efficiency, which can be exploited to generate a competitive advantage (Ismail et al., 2012). It is suggested that if an organization could inculcate corporate entrepreneurship practices, it can enhance its performance (Zimmerman & Brouthers, 2012). Majeed (2011) states that companies with more competitive advantages could gain higher levels of financial performance. Ireland et al. (2003) argue that corporate entrepreneurship promotes wealth creation and organizational financial performance through competitive advantage. Strategic entrepreneurship and intellectual capital will facilitate the competitive advantage of an organization's resources.

Achieving a competitive level will provide opportunities for companies to obtain the possible highest financial performance. Based on these justifications, the following hypothesis is postulated:

- H7:** Competitive advantage has a significant relationship with organizational financial performance.

### **Mediation Assessment of Competitive Advantage**

Previous literature has shown that competitive advantage has a mediating role in organizational financial performance. Ma and Wang (2006) address the relationship between competitive advantage and organizational financial performance and find that competitive advantage is not equal to superior performance. However, it provides predictive validity for future performance. Rezaian and Naeiji (2012) provide more real evidence about the mediating role of competitive advantage in organizational financial performance. They show that competitive advantage significantly mediates strategic entrepreneurship determinants and financial performance. In addition, in their study, Rosli and Norshafizah (2013) show that competitive advantages mediate the relationships between corporate entrepreneurship and financial performance determinants. Since competitive advantage is predicted to influence organizational financial performance, individual and organizational characteristics and external environmental characteristics may also significantly indirectly influence organizational financial performance (Kamalian et al., 2015).

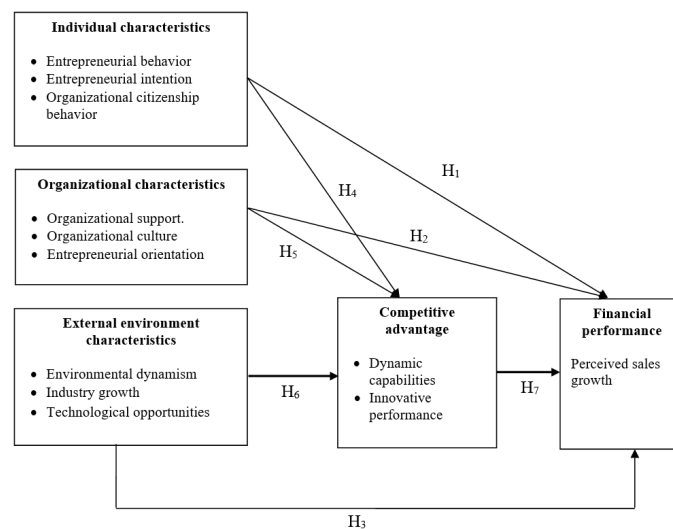
Empirical studies examining the mediating effect of competitive advantage on organizational characteristics and business financial performance relationships are still scarce (Rosli & Norshafizah, 2013). Therefore, based on this scarcity, the following hypotheses are proposed:

- H8:** Competitive advantage mediates the relationships between individual characteristics and organizational financial performance.
- H9:** Competitive advantage mediates the relationships between organizational characteristics and organizational financial performance.
- H10:** Competitive advantage mediates the relationships between external environment characteristics and organizational financial performance.

## Organizational Financial Performance

In management research, some scholars have criticized financial performance as the dominant construct for organizational performance (Góis et al., 2020; Mahrous & Genedy, 2019). The criticisms against this approach relate to the scope of accounting manipulation, the possibility of asset undervaluation, different depreciation methods, different methods of consolidating accounts, and lack of standardization (Chakravarthy, 1986). Corporate entrepreneurship is an essential aspect of the financial performance of small and medium enterprises (SMEs). However, there are limited studies on understanding them as a consequence of corporate entrepreneurship activities (Trestl, 2016). The above reasoning justified the researchers' selection of the respondents in this study, who were among the recipients of the Malaysian "Enterprise 50" award. Before they received this award, the selected SMEs had an excellent record of financial performance. Excellent financial performance is one of the criteria to participate and qualify for the Malaysian "Enterprise 50" award. Being successful in their respective businesses, these organizations can also be the benchmark for new setups and other small and medium enterprises in the future.

## Proposed Research Framework



**Figure 1.** Proposed Research Framework

## Methods

The research approach in this study is based on the quantitative method and employs an online survey for the data collection. The study population focused on small and medium enterprises (SMEs) in Malaysia, and the sample was collected from the Malaysia “Enterprise 50” award recipients from 1998 to 2021. As of December 2021, there were 618 recipients of the Malaysian “Enterprise 50” awards. The process of distributing the online survey started with contacting the key persons of the organizations on the list for the “Enterprise 50” award. During the data collection phase, the questionnaire was distributed to middle-level managers up to the top management level. The questionnaire modified the items accordingly, and the measurement scale deployed was a seven-point Likert scale. Groenewald (2010) and Mokaya (2013) measured the items for individual characteristics. For organizational characteristics, which consisted of organizational support, organizational culture, and organizational entrepreneurial orientation, the items were adapted from Groenewald (2010), Normalini (2013), and Rosli and Norshafizah (2013). Business environment characteristics encompassed environmental dynamism, industry growth, and technological opportunities, which were measured by Amran et al. (2015) and Najib (2014). The items for financial performance were measured by Amran et al. (2015) and Rosli and Norshafizah (2013). For competitive advantage, the items were adapted from Antoncic and Zorn (2004), Bashir et al. (2011), Giannikis and Nikandrou (2013), Ramaswami et al. (2004), and Rosli and Norshafizah (2013). The items for demographic profiles were adapted from Bashir et al. (2011) and Kaswengi (2014). There were 84 items in the questionnaire to make up all the variables involved.

Stratified random sampling was used, and the sampling approach involved the stratification of small and medium enterprises (SMEs) in Malaysia. Then, each sample was chosen from each stratum. The sampling frame for this study was based on the population list of 618 companies. In addition, the reliability of the questionnaire was also tested. A pre-test study was done before the execution of the pilot study. For content validity, the survey instrument was provided to two industry practitioners and four academic experts to improve the structure and wording of the items in the questionnaire. A random sample of 50 managers from the targeted respondents was selected. In this study, the responses established during the pilot study were verified for internal consistency reliability, whereby Cronbach’s alpha with more than 0.7 is acceptable (Hair et al., 2016). Only two out of 84 items were deleted, and the final questionnaire had 82 items measuring five constructs and other questions related to the firm.

## Results

Based on stratified random sampling with a total population of 618 SMEs, 442 SMEs were selected, and the survey questionnaires were distributed to 442 SMEs. Two hundred eighty-seven questionnaires were returned (46.4 percent). Upon screening the returned questionnaires, only 223 questionnaires were used for further analysis. Outlier analysis was done, and two questionnaires were removed, leaving the final usable 221 questionnaires.

### Descriptive Analysis

From the survey, there were 221 valid, usable respondents, and each company was

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represented by one respondent only. Table 1 shows the respondents' profiles based on age, gender, and position in their respective organizations.

**Table 1.** Respondents Profile

Group	Frequency	%
<b>Gender</b>		
Male	125	56.6
Female	96	43.4
	<b>221</b>	<b>100.0</b>
<b>Age</b>		
20 - 29 years	1	0.5
30 - 39 years	84	38.0
40 - 49 years	113	51.1
50 years and above	23	10.4
	<b>221</b>	<b>100.0</b>
<b>Position</b>		
Departmental manager to regional / senior manager	122	55.2
Divisional manager to general manager	90	40.7
Vice president to chief executive officer	9	4.1
	<b>221</b>	<b>100.0</b>
<b>Company's business sector</b>		
Manufacturing sector	120	54.3
Service sector	86	38.9
Other sectors	15	6.8
	<b>221</b>	<b>100.0</b>
<b>Company experience in current industry</b>		
12 - 14 years	40	18.1
15 - 17 years	91	41.2
18 years and above	90	40.7
	<b>221</b>	<b>100.0</b>

### Measurement Model and Assessment in Goodness-of-Fit Measures

The PLS-SEM approach was used to evaluate the measurement and structural model. In this approach, the non-parametric bootstrap can estimate the precision of the PLS. The non-parametric bootstrap approach was applied with 5,000 replications to obtain the standard errors of the estimates (Hair et al., 2014).

### Convergent Validity

In this study, the convergent validity was measured by making an allowance for the size of the factor loading, average variance extracted (AVE), and construct reliability (CR) among the sets of items in the construct. Table 2 shows the overall result of the convergent validity.

**Table 2.** Convergent Validity

Construct(s)	Item	Factor loadingy (validity)	AVE	CR	Cronbach Alpha
<b>Entrepreneurial behavior (EB)</b>	EiB 1	0.774	0.5672	0.8388	0.7425
	EiB 2	0.809			
	EiB 3	0.776			
	EiB 4	0.643			
	EiB 5	0.333 <sup>a</sup>			
<b>Entrepreneurial intention (EI)</b>	EI 1	0.696	0.5483	0.8789	0.8342
	EI 2	0.664			
	EI 3	0.773			
	EI 4	0.791			
	EI 5	0.737			
	EI 6	0.774			
<b>Organizational citizenship behavior (OCB)</b>	OCB 1	0.744	0.601	0.9003	0.8671
	OCB 2	0.760			
	OCB 3	0.750			
	OCB 4	0.799			
	OCB 5	0.796			
	OCB 6	0.801			
<b>Organizational support (OS)</b>	OSu 1	0.555 <sup>a</sup>	0.5246	0.8981	0.8703
	OSu 2	0.559 <sup>a</sup>			
	OSu 3	0.445 <sup>a</sup>			
	OSu 4	0.695			
	OSu 5	0.491 <sup>a</sup>			
	OSu 6	0.572 <sup>a</sup>			
	OSu 7	0.436 <sup>a</sup>			
	OSu 8	0.707			
	OSu 9	0.756			
	OSu 10	0.493 <sup>a</sup>			
	OSu 11	0.719			
	OSu 12	0.694			
	OSu 13	0.700			
	OSu 14	0.749			
	OSu 15	0.769			
<b>Organizational culture (OC)</b>	OC 1y	0.753	0.5298	0.8704	0.8206
	OC 2y	0.773			
	OC 3y	0.766			
	OC 4y	0.512 <sup>a</sup>			
	OC 5y	0.601			
	OC 6y	0.481 <sup>a</sup>			
	OC 7y	0.523 <sup>a</sup>			
	OC 8y	0.725			



	OC 9y	0.735			
<b>Entrepreneurial orientation (EO)</b>	EO 1	0.397 <sup>a</sup>	0.5013	0.8891	0.8574
	EO 2	0.64			
	EO 3	0.713			
	EO 4	0.687			
	EO 5	0.740			
	EO 6	0.680			
	EO 7	0.774			
	EO 8	0.742			
	EO 9	0.680			
<b>Environmental dynamism (ED)</b>	ED 1	0.782	0.5654	0.8382	0.7427
	ED 2	0.759			
	ED 3	0.793			
	ED 4	0.668			
	ED 5	0.189 <sup>a</sup>			
<b>Technological opportunities (TO)</b>	TO 1	0.903	0.6946	0.8708	0.7739
	TO 2	0.886			
	TO 3	0.695			
	TO 4	0.571 <sup>a</sup>			
<b>Industry growth (IG)</b>	IG 1	0.746	0.5465	0.8782	0.8333
	IG 2	0.745			
	IG 3	0.668			
	IG 4	0.796			
	IG 5	0.764			
	IG 6	0.710			
<b>Perceived sales growth (PSG)</b>	PSG 1	0.808	0.6699	0.8903	0.8356
	PSG 2	0.831			
	PSG 3	0.805			
	PSG 4	0.829			
<b>Dynamic Capabilities (CC)</b>	DC 1	0.520 <sup>a</sup>	0.6387	0.8981	0.8576
	DC 2	0.829			
	DC 3	0.816			
	DC 4	0.817			
	DC 5	0.814			
	DC 6	0.715			
<b>Innovative performance (IP)</b>	IP 1	0.58 <sup>a</sup>	0.5699	0.8683	0.8095
	IP 2	0.679			
	IP 3	0.746			
	IP 4	0.836			
	IP 5	0.772			
	IP 6	0.734			

*a: rejected item due to inadequate factor loading (below 0.6)*

As shown in Table 2, the results of assessing the standardized factor loadings of

the model's items indicated that the initial standardized factor loadings of 16 items (i.e., EiB\_5, OS\_1, OS\_2, OS\_3, OS\_5, OS\_6, OS\_7, OS\_10, OC\_4, OC\_6, OC\_7, EO\_1, ED\_5, TO\_4, DC\_1 and IP\_1) were below the cut-off 0.6. Therefore, these items were removed as recommended by Hair et al. (2014). The standardized factor loadings of the remaining 65 items were all above 0.6, ranging from 0.601 to 0.903. The reliability of the questionnaire was assessed by AVE, CR, and Cronbach's alpha. Table 4.2 also shows that the AVE, ranging from 0.5013 to 0.7986, was above the cut-off of 0.5, as Nunnally and Bernstein (1994) recommended. The CR values surpassed 0.6 for all constructs, as Bagozzi and Yi (1988) recommended, ranging from 0.8382 to 0.9003. The Cronbach's alpha ranged from 0.7425 to 0.8703, which was above the threshold of 0.7, as Nunnally and Bernstein (1994) recommended.

### Discriminant Validity

Table 3 represents the discriminant validity of the measurement model. The inter-correlations between the constructs ranged from 0.252 to 0.681, which was below the threshold of 0.85.

**Table 3.** Results of discriminant validity

Variable	IVC	OGC	BEC	FP	CA
Individual characteristics (IVC)	<b>0.860</b>				
Organizational characteristics (OGC)	0.681	<b>0.822</b>			
External environment characteristics (BEC)	0.507	0.553	<b>0.832</b>		
Financial performance (FP)	0.252	0.327	0.302	<b>1.000</b>	
Competitive Advantage (CA)	0.476	0.576	0.471	0.468	<b>0.894</b>

### Structural Model Assessment

In the structural model, the effects of individual, organizational, and external environments on financial performance were evaluated, including the mediation effects of competitive advantage. A total of seven research hypotheses (direct effects) and three research hypotheses (mediation effect) were examined. The data were analyzed, and the results were discussed based on the hypotheses in Table 4.

**Table 4.** Hypotheses testing (direct effects)

Hypothesis	Path shape	Path coefficient	Standard error	T-value	P-value	Hypothesis result
H1	IVC→FP	-0.0298	0.0461	0.647	0.518	Rejected
H2	OGC→FP	0.0646	0.0558	1.157	0.249	Rejected
H3	BEC→FP	0.0925*	0.0428	2.1603	0.032	Supported
H4	IVC→CA	<b>0.1069**</b>	<b>0.0406</b>	<b>2.6323</b>	<b>0.009</b>	Supported
H5	OGC→CA	<b>0.3935***</b>	<b>0.0491</b>	<b>8.0226</b>	<b>0.000</b>	Supported
H6	BEC→CA	<b>0.1988***</b>	<b>0.0401</b>	<b>4.9593</b>	<b>0.000</b>	Supported
H7	CA→FP	<b>0.4016***</b>	<b>0.0464</b>	<b>8.6474</b>	<b>0.000</b>	Supported

\* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$

In Table 4, three paths from individual, organizational, and external environment characteristics to competitive advantage and two paths from external environment characteristics and competitive advantage to financial performance were significant. Thus, H3, H4, H5, H6, and H7 were supported. However, the effects of individual and organizational characteristics on financial performance were insignificant. Thus, H1 and H2 were rejected.

Table 5 shows the summary of the mediation effect of organizational competitive advantage. This study employed the bootstrapping approach to measuring the mediating effects of an organization's competitive advantage (Bagozzi & Yi, 1988). The significance of the regression coefficients between individual characteristics, organizational characteristics, external environment characteristics, organizational competitive advantage, and organizational financial performance was inspected to decide the existence of the mediation effect. Thus, three hypotheses (i.e., H8, H9, and H10) were assessed, as shown in Table 5.

**Table 5.** Mediation effects of competitive advantage

<b>Dependent Variable = Financial performance (FP)</b>	<b>Independent Variable (IV)</b>		
	<b>Individual characteristics (IVC)</b>	<b>Organizational characteristics (OGC)</b>	<b>External environment characteristics (BEC)</b>
<b>Mediating Variable = Competitive Advantage (CA)</b>			
Total Effect of IV on DV without M (path a)	.0131 <sup>(sig:0.781)</sup>	.2226*** <sup>(sig:0.000)</sup>	.1723*** <sup>(sig:0.000)</sup>
Direct Effect of IV on DV with M (path a')	-.0298 <sup>(sig:0.518)</sup>	.0646 <sup>(sig:0.249)</sup>	.0925* <sup>(sig:0.032)</sup>
Indirect Effect of IV on DV through M (path bc)	0.0429**	0.158***	0.0798***
Effect of IV on M (path b)	.1069** <sup>(sig:0.009)</sup>	.3935*** <sup>(sig:0.000)</sup>	.1988*** <sup>(sig:0.000)</sup>
Effect of M on DV (path c)	.4016*** <sup>(sig:0.000)</sup>	.4016*** <sup>(sig:0.000)</sup>	.4016*** <sup>(sig:0.000)</sup>
Mediation Path	IVC→CA→FP	OGC→CA→FP	BEC→CA→FP
Mediation Effect	No	Yes	Yes
Degree of Mediation	---	Full	Partial
	<b>H8 (Rejected)</b>	<b>H9 (Supported)</b>	<b>H10 (Supported)</b>

\* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$

## Discussion

This study investigates the relationship between corporate entrepreneurship determinants and Malaysian SMEs' organizational financial performance. The central research gap was based on the point that there is a critical issue of poor financial performance among Malaysian small and medium enterprises (Rahman et al., 2025; Shehnaz & Ramayah, 2015). The dimension of this study was extended by including the mediating role of an organization's competitive advantage. In the previous section, the three corporate entrepreneurship determinants support organizational competitive advantage. On the contrary, only the business environment supports organizational financial performance. In addition, the organizational competitive advantage also strongly supports

organizational financial performance. The analysis has provided empirical evidence that an organization's competitive advantage delivers the most significant direct impact on organizational financial performance. This is followed by the external environment characteristics, which provide the second most significant direct impact on organizational financial performance. However, it was found that organizational characteristics and individual characteristics do not provide any significant direct impact on organizational financial performance.

Among the four determinants, it was shown that organizational competitive advantage has the most positive significant direct effect on the organizational financial performance of small and medium enterprises. This is followed by external environment characteristics, which also have a significant relationship with SMEs' organizational financial performance. It is noted in this study that organizational characteristics and individual characteristics have a non-significant direct effect on small and medium enterprises' financial performance. On the other hand, the results also provided some interesting empirical evidence on the direct effects of the corporate entrepreneurship determinants on organizational competitive advantage. Interestingly, it was found that organizational characteristics delivered the most significant direct impact on organizational competitive advantage. External environment characteristics provided the second most significant direct impact on organizational competitive advantage, and individual characteristics had the least significant direct impact on organizational competitive advantage.

The findings indicated that all three corporate entrepreneurship determinants significantly correlate with SMEs' organizational competitive advantages. In the structural model analysis, organizational characteristics have a positive, significant, direct effect on the SMEs' competitive advantage. This is followed by the external environment and individual characteristics, which directly correlate with the SME's organizational competitive advantage. The findings of this study are in line with past research (Amran et al., 2015; Armesh et al., 2014; Kamalian et al., 2015). The findings also suggest that a resource-based view is validated as inputs of individual, organizational, and environmental resources are relevant in ensuring higher economic outcomes for small and medium enterprises (Barney et al., 2001). However, in this study, individual and organizational characteristics only supported organizational competitive advantage and not organizational financial performance. Instead, it was the external environment characteristics that supported both organizational financial performance and organizational competitive advantage.

In this study, the hypotheses on the mediating role of organizational competitive advantage in the relationship between corporate entrepreneurship determinants and organizational financial performance to some extent were supported. Based on the findings, it was found that there is a partial mediation effect of competitive advantage on the relationship between corporate entrepreneurship and the financial performance of SMEs. The findings of this study are in line with Rosli and Norshafizah (2013) and demonstrate the importance of organizational competitive advantage in enhancing the relationship between corporate entrepreneurship determinants and organizational financial performance. The findings provide evidence that the resource-based views of an organization are associated with the organization's competitive advantage. The findings also concurred with Trestl's (2016) findings, in which corporate entrepreneurship does not protect an organization from external environmental influences harming profitability. However, it provides a viable instrument to steer competitiveness from within the organizations. From

the theoretical perspective, this study was designed to identify and bridge the research gaps previously highlighted in the past corporate entrepreneurship literature. This study has significantly contributed to the body of knowledge on corporate entrepreneurship and extended the existing literature. It has delivered new empirical evidence on the relationship between corporate entrepreneurship and the financial performance of small and medium enterprises in the Malaysian context.

This study contributes to the body of knowledge by introducing the three main determinants of corporate entrepreneurship: individual characteristics, organizational characteristics, business environment characteristics, and the mediating role of competitive advantage. This finding is achieved based on studies by Hatinah et al. (2015) and Kamalian et al. (2015) on the possibilities of using multi-level analysis by including a mediation role, which can impact the relationship between corporate entrepreneurship and organizational financial performance. This study offers an excellent opportunity for Malaysian SMEs to prepare themselves to face global business challenges with the endorsement of the Malaysian government on the Trans-Pacific Partnership Agreement (TPPA) with other world economic giants. Additionally, this study narrowed down the research gap between the determinants of corporate entrepreneurship and SMEs' financial performance, which previous researchers have identified, but until today, produced little conceptual clarity on the most effective and reliable determinants for corporate entrepreneurship (Daryani & Karimi, 2013; Rutherford & Holt, 2007; Wang & Zhang, 2009).

This study offers practical implications from its findings, especially for Malaysian SMEs. This research was designed to identify new evidence highlighted in corporate entrepreneurship practices among Malaysian SMEs. The choice of respondents among successful SMEs in Malaysia has provided some valuable propositions to other Malaysian SMEs on managing their organization's financial performance. The success of the selected SMEs was proven when they fulfilled all the stringent requirements to be the recipients of the Malaysian "Enterprise 50" award. For Malaysian SMEs, the findings of this study will enable them to understand the factors that might have a relationship with and influence their business operations in the future. This information will help SMEs in Malaysia understand the importance of making the right decisions regarding corporate entrepreneurial activities. Improving SMEs' financial performance will significantly impact Malaysia's gross domestic product (GDP). This study's findings are expected to benefit the Malaysian SME community, economy, and the country as a whole. It will create a greater awareness of the factors affecting the relationship between corporate entrepreneurship practices and organizational financial performance.

## Conslusions

Corporate entrepreneurship practices are essential components of any organization, regardless of its shape and size. This study delivered empirical evidence on the significant relationship between the determinants of corporate entrepreneurship and financial performance among successful Malaysian SMEs. This study offered new empirical evidence, emphasizing the role of organizational characteristics in controlling the external environment toward achieving a positive organizational financial performance. Such awareness shall create better understanding and decision-making by the top management level of companies from the Malaysian private sector and government-linked



companies (GLC). This study also makes a significant contribution by improving organizational performance and sustaining organizational competitive advantage in the competitive 21st-century business environment. To further reinforce the findings of this study, additional research can be conducted by replicating this study and extending it to other countries, particularly in Southeast Asia. In addition, it is also recommended to expand this study with a different research method design, such as a qualitative or mixed method with another research context, to grasp a better understanding and bridge the theoretical and knowledge gaps identified earlier.

To conclude, this study has made an essential contribution to corporate entrepreneurship and has positively responded to the needs of the industry by focusing the research area on corporate entrepreneurship practices among successful Malaysian SMEs. Therefore, given the importance of corporate entrepreneurship in today's business environment, research needs to be conducted based on the research model proposed in this study.

## Limitations

While the research was designed to meet the study's main objectives, the findings were still subject to several limitations. The first limitation is the scope of the study, which was confined only to SMEs in Malaysia that were listed as the award recipients of the Malaysian "Enterprise 50" awards. This raises concerns that the findings might be country-specific. Therefore, it is suggested that a homogeneous culture reduces the likelihood of culturally induced variation in the perception of the relevant constructs (Spender & Grant, 1996). The second limitation is that the current study experienced difficulties collecting data from SMEs. A few of the respondents were reluctant to participate in the research. They were concerned that disclosing company information might adversely affect them.

On top of that, this study might face the problem of self-reported bias since the information on financial performance was measured through self-reporting by the respondents. There might be a particular bias between the actual situation and the indicated reality. Nevertheless, since most of the respondents were from the managerial level, this is not perceived as critical. Thirdly, the research time horizon for the cross-sectional design provided a short time frame for this study, especially during the data collection. A short time frame is likely to make the study static, and a longitudinal study would offer a more dynamic approach. This approach may give the relevant variables over a longer time, providing a better result that discloses hidden relationships between short- and long-term practices (Soininen et al., 2012).

Last but not least, the fourth limitation is that this study covered both the manufacturing and services industries. Therefore, it is suggested that future research investigate the manufacturing and services industries separately. This is to determine whether the nature of corporate entrepreneurship practices is similar or different to the manufacturing industry and services industry.

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