EXPLORING TECHNOLOGY ACCEPTANCE OF OCEAN NETWORK EXPRESS WEBSITE BY LOGISTICS EMPLOYEES IN BANGKOK

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Received: February 16, 2023 / Revised: July 20, 2023 / Accepted: July 25, 2023

Abstract

The use of the Ocean Network Express website by logistics department employees is a crucial research topic that can explain the success or failure of any transportation application. This study employs a substantial body of literature on a modified version of the Technological Acceptance Model (TAM) as its theoretical foundation. As a result, the goal of this study is to gain a better understanding of the factors that affect the user's intention to utilize the Ocean Network Express website.

The proposed research model consists of TAM and three external factors which were chosen after a review of the literature. This is a quantitative study in which the data is collected and analyzed statistically by a Partial Least Square regression (PLS). Google Form was used to conduct an online survey of 400 Bangkok based logistics workers who have used the Ocean Network Express website in the past. The effects of TAM characteristics and external factors (such as trust, innovativeness, and work relevance) on intention to use were investigated. Trust, innovativeness, and job relevance all had statistically significant effects on perceived ease of use and usefulness at $p > .05$. Furthermore, the perceived ease of use and perceived usefulness of the company's website directly predicted the intention to use. According to the current findings, the original TAM strategy should be updated to provide better insights into how to boost employee adoption and use of the website.

When designing any transportation application, the web developer should prioritize perceived ease of use and user satisfaction to ensure its effectiveness and utility for consumers. These findings can also assist logistics companies and entrepreneurs in successfully integrating technology into their operations.

Keywords: Technology Acceptance Model (TAM), Partial Least Squares (PLS), Trust, Innovativeness, Job Relevance

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Introduction

Logistics is the movement of items or data from one location to another by a number of interconnected activities such as transportation, inventory management, and package handling. This emphasizes the significance of transportation as a crucial component of logistics, since it plays an important role in lowering costs and assuring timely delivery (Kenton, 2022).

The logistics industry contributes greatly to Thailand's economy and plays an important role in enabling trade and improving the well-being of the country and its citizens.

Ocean freight is a common means of transportation because to its low cost, although it can take several weeks to reach its destination depending on weather conditions and sailing routes. International trade is expanding rapidly, mainly to technological developments that enable better bargaining and faster purchasing orders. Because the volume of imported and exported commodities has increased the Ocean Network Express website delivers services on multiple continents, giving logistics and supply chain solutions. These include shipping, husbandry, stevedoring, freight forwarding, customs brokerage, warehousing, logistics, transportation, and haulage. As a result, the Ocean Network Express website can be one of the logistics solutions used to make logistics employees and shipping companies more efficient and convenient in satisfying client needs, this study, which focuses on the technological acceptance variables impacting logistics employees' use of the Ocean Network Express website, is significant because it provides insight into the particular aspects that influence an employee's intention to utilize the website.

This knowledge can be applied to improve the website's efficiency and suit the needs of present and prospective users. The study findings can also help the organization prepare for future website improvements, which will improve the overall user experience. Thus, the purpose of this study is to investigate the technological acceptability elements that influence logistics employees' intention to use the Ocean Network Express website

Research Questions

What are technology acceptance factors that influence logistics employees' intentions to use the Ocean Network Express website in Bangkok?

Objective

To investigate which specific Technology Acceptance Factor has influenced logistics employees' intention to use the Ocean Network Express website.

Literature Review

A study on technology acceptance factors of logistics employees in Bangkok in relation to the Ocean Network Express website has been compiled from a variety of sources, comprising video, research, journal papers, and business reports, internet data and research study concepts, and conceptual framework.

Technology Acceptance Model (TAM)

TAM refers to beliefs of a person towards the use of technology or system as motivating factor to the behavior of using technology (Nixon, 2019). TAM2 is an abbreviation for Technology Acceptance Model version 2. It is a commonly used paradigm in the field of information systems that seeks to comprehend the aspects that influence a user's adoption and utilization of technology. TAM2 emphasizes perceived usefulness, perceived ease of use, and social influence as determinants a technology. This paradigm has been implemented in a variety of fields, including healthcare, education, and e-commerce, and is commonly utilized in research to study user behavior and attitudes toward technology.

Perceived Ease of Use

Perceived ease of use refers to an individual's belief in the ease of using a new technology or system (Davis, 1989). The ease of use of a system is significant since it has a direct impact on the user's experience and incentive to utilize it. If a system is viewed as simple to use, the user is more likely to embrace it and have a positive attitude toward it.

According to Davis (1989), perceived ease of use relates to how much a person perceives that using a technology is simple and easy. A greater perception of simplicity of use leads to a greater willingness to employ the technology.

According to Ghozali and Latan (2015), perceived ease of use has a major impact on mobile banking system adoption, the findings showed perceived ease of use has a favorable and significant effect on attitudes about utilizing the mobile banking system. Moreover, a study by Molla and Licker (2005) on the acceptance of e-government services in developing countries showed that perceived ease of use has a positive effect on the intention to use e-government services.

In conclusion, the literature reviewed highlights the importance of perceived ease of use in determining the intention of individuals to use technology systems. A system that is seen to be simple to use will increase the user's willingness to embrace and use the technology.

Perceived Usefulness

Davis (1989) defines perceived usefulness as an individual's belief in the utility of a technology or system. It is the degree to which a user believes that using a system will help them perform better at work or meet their needs. If a system is perceived as useful, the user is more likely to adopt it and find it valuable.

Furthermore, other studies have expanded on the basic TAM model and included other elements that influence technology acceptance.

For example, Venkatesh et al. (2003)'s Unified Theory of Acceptance and Use of Technology (UTAUT) model contains four more factors: performance expectancy, effort expectancy, social influence, and facilitating conditions. These elements lead to a better understanding of technology acceptance and the factors that influence user behavior toward technology adoption and usage.

Overall, the literature review supports the necessity of researching technology acceptance factors and their impact on technology adoption intentions in logistics field. The findings of this study can help firms improve their technological systems and increase user acceptance and satisfaction.

Trust

The level of believe and confidence that consumers have when using technology is referred to as trust in technology. It is seen as an important aspect in molding customers' attitudes toward technology and their intention to use it.

A lack of trust in technology can decrease users' confidence and motivation, while a high level of trust can lead to increased usage and acceptance. This has been proved in research on mobile learning and smart homes, where trust was found to have a major impact on users' intention to use and acceptance.

Likewise, a study in Saudi Arabia and Iraq found that trust influences users' intention to use and hedonic motivation in mobile learning (Al-Azawei and Aloway, 2020). Likewise, a study found that trust is one of the most influential factors influencing residents' acceptance and use of smart homes (Shuhaiber & Mashal, 2019).

Innovativeness

The definition of "innovativeness" is "a predisposition to be a technology pioneer and thought leader" (Parasuraman & Colby 2001). This dimension measures how much people believe they are at the cutting edge of technological adoption.

In a study by An et al. (2023), they looked at customers' acceptance intention to use mobile food delivery services through an extended technology acceptance model and found that personal innovativeness had a positive effect on perceived ease of use.

Job Relevance

The Technology Acceptance Model 2 (TAM2) considers job relevance as an important factor in determining people's acceptance of IT applications. According to Venkatesh et al. (2003), this construct reflects individuals' opinions about how relevant technology is to their jobs or daily lives. TAM2 also considers output quality and results demonstrability, as these factors, together with social norms and job relevance, can impact perceived usefulness and ease of use. Ketikidis et al. (2012) stated that job relevance directly predicted Health Information Technology (HIT) usage intentions, indicating that the effect of job relevance was also significant, showing that the more healthcare professionals know about the applicability of HIT systems on their daily work routines, the more likely they are to accept those systems.

Intention to Use

The major purpose of this study is to respecify and validate the TAM2 model, as well as determine whether it can be generalized to forecast consumer intent to utilize the ocean express website. Based on Teo and Zhou (2014), the intention is to use the application of principles and rationale in the process of selecting one of the most suitable alternatives in a user decision. According to

the effects of perception of visual elements on purchase intention of new game applications of smartphone users in Thailand (2020), the research discovered that male consumers rated the game developer's reputation as high as female consumers and indicated a higher level of purchase intent.

Research Hypotheses

Figure 1 depicts the conceptual model by outlining the relationship between trust, innovativeness, job relevance, perceived usefulness, and perceived ease of use as independent factors and intention to use as a dependent variable.

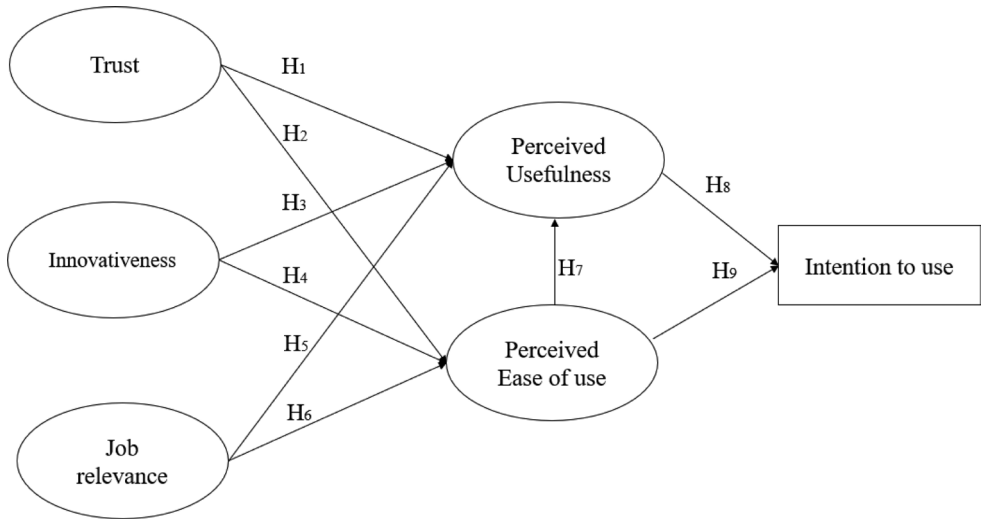

Figure 1 Conceptual Framework

The following hypotheses are being tested in this study:

H_1: Trust has a significant effect on Perceived usefulness.

H_2: Trust has a significant effect on Perceived ease of use.

H_3: Innovativeness has a significant effect on Perceived usefulness.

H_4: Innovativeness has a significant effect on Perceived ease of use.

H_5: Job relevance has a significant effect on Perceived usefulness.

H_6: Job relevance has a significant effect on Perceived ease of use.

H_7: Perceived ease of use has a significant effect on Perceived usefulness.

H_8: Perceived usefulness has a significant effect on intention to use.

H_9: Perceived ease of use has a significant effect on intention to use.

Methodology

A quantitative analysis was carried out with questionnaires used to gather information on the website of Ocean Network Express adoption. However, the number of logistics workers is unknown, thus we chose to utilize Green's (1991) technique to determine a sample size. The participants were Bangkok-based logistics workers who had used the website in their normal employment.

The data was evaluated using the Adanco version 2.2.1 composition modeling analysis tool and the partial least square structural equation model (PLS-SEM).

The sample size was calculated to be 90 respondents using Green's approach, however the researcher obtained 400 respondents to boost the dependability of the data. As a result, the sample size is calculated using the formula below.

Sample size: $n \geq 50 + 8m$

Where n = the minimum number of sample size

m = the number of predictors

There is a total of five dependent variables in this study:

$$n \geq 50 + 8(5)$$

In the context of factor analysis, MacCallum et al. (1999) suggested a sample size of 200 or greater. A preliminary test with 50 participants was done to assess the reliability of the variables and to eliminate unclear words from the actual survey questionnaire. The reliability and validity of the measurement equipment were assessed in this study. The Average Value Extracted (AVE), Cronbach Alpha Coefficient, and Composite Reliability (CR) were used to assess the reliability of the study instruments, with a threshold value of 0.7 considered acceptable.

The factor loadings were used to test the validity of the measurement instrument and had to be 0.7 or greater. The AVE was employed to assess convergent validity, and it had to be at least 0.5.

The questionnaire was distributed online using a self-administered Google Form survey. The questions in this study were administered in Thai and were closed-ended. The questionnaire was broken into two

sections: personal information and questions about the technology acceptance of the Ocean Network Express, the questionnaire consisted of factors such as trust, innovativeness, job relevance, perceived usefulness, perceived ease of use and intention to use.

Results

The structural model was found to have appropriate reliability and validity after latent variable scores were calculated and standard errors and t-statistics were derived through bootstrapping with 999 resamples. Finally, convergent validity was defined as the degree to which scale elements were linked to theory.

Descriptive Statistics

According to Table 1, the majority of gender respondents are female, with 261 (65.19%), followed by males, with 124 (31.01%), and those who would rather not say their gender, with 15 (3.80%). The majority of respondents are under the age of 25, with 246 (61.39%), followed by 25-30 years old with 106 (26.58%), 31-35 years old with 30 respondents (7.59%), 36-40 years old with 3 respondents (0.63%), and 41 years old and above old with 15 respondents (3.80%). Additionally the majority of respondents 309 (77.22%) have a Bachelor's Degree, followed by a Master's Degree 56 (13.92%), and those with less than a Bachelor's Degree 25 (6.33%).

The majority of respondents have work experience between 3-5 years with 309 (77.25%), followed by work experience between 6-10 years with 56 (14.00%), and work experience less than 3 years with 25 (6.25%).

Table 1 Descriptive statistics of respondents

Gender	**Frequency**	**Percent**
Male	124	31.01
Female	261	65.19
Rather not to say	15	3.80
Total	**400**	**100.00**
Age		
Below 25	246	61.39
25-30	106	26.58
31-35	30	7.59
36-40	3	0.63
Above 40	15	3.80
Total	**400**	**100.00**
Education Level		
Below bachelor's degree	25	6.33
Bachelor's Degree	309	77.22
Master's Degree	56	13.92
Higher Master's Degree	10	2.53
Total	**400**	**100.00**
Work Experience		
Less than 3 years	25	6.25
3-5	309	77.25
6-10	56	14.00
More than 10 years	10	2.50
Total	**400**	**100.00**

Trust, innovation, job relevance, perceived usefulness, and perceived ease of use are among the variables examined in this study. The reliability and validity of each construct were assessed. Table 2 shows the results of measuring, testing, modifying, and discussing reliability and validity.The Average Value Extracted (AVE), Cronbach Alpha Coefficient, and Composite Reliability (CR) are also measurement devices for testing reliability. Similarly, in order to verify the validity of the measurement instrument, it has discriminant and convergent validity (Factor Loadings).

The degree to which items on a scale are linked to theory is defined as convergent validity. According to Chin, (1998), The general rule of thumb is that the factor loading should be greater than 0.7. Furthermore, the factor loading value in this study ranged between 0.8170-0.898, which can be defined as convergent validity. The Average Value Extracted (AVE) must have a minimum threshold of 0.5. Meanwhile, the remainder of the variables in this study ranged from 0.6055 to 0.7601.

The Composite Reliability (CR) approach was used to measure construct dependability. A number greater than 0.7 is considered acceptable (Taber, 2018). The Composite Reliability (CR) score in this study ranged from 0.8803 to 0.9315.

Table 2 The Measurement Model (n = 400)

Constructs	Items	Factor Loading	AVE	CR	Cronbach's Alpha
Trust	Trust1	0.8794	0.7601	0.9047	0.8424
	Trust2	0.9016			
	Trust3	0.8330			
Innovativeness	Innovativeness1	0.8051	0.6490	0.8803	0.8170
	Innovativeness2	0.8166			
	Innovativeness3	0.8800			
	Innovativeness4	0.7117			
Job Relevance	Job relevance1	0.8304	0.7412	0.8956	0.8247
	Job relevance2	0.9060			
	Job relevance3	0.8445			
Perceived Usefulness	Perceived usefulness1	0.7031	0.6490	0.8803	0.8170
	Perceived usefulness2	0.8132			
	Perceived usefulness3	0.8639			
	Perceived usefulness4	0.8331			
Perceived Ease of Use	Perceived ease of use1	0.7661	0.7744	0.9315	0.8989
	Perceived ease of use2	0.9278			
	Perceived ease of use3	0.8170			
	Perceived ease of use4	0.9912			
Intention to Use	Intention to use1	0.7777	0.6055	0.8847	0.8380
	Intention to use2	0.7989			
	Intention to use3	0.7825			
	Intention to use4	0.7803			
	Intention to use5	0.7505			

The Fornell-Larcker criterion states that for a construct to be considered valid, its Average Variance Extracted (AVE) must be greater than the square of its correlation with any other constructs in the model. In a multi-construct model, this criterion contributes in determining a construct's discriminant validity. Correlations in latent variables must be less than the square root of the corresponding AVE (Fornell & Larcker, 1981). Simultaneously, Table 3 displays the square root of the AVE in the diagonal cells, followed by the correlations that exist beneath it. As a result, the top numbers in each of the factor columns exceed their correlations, indicating that the measurement model in this study achieved discriminant validity.

Table 3 Fornell-Larcker Criterion: Correlation constructs and the AVE of square root

Construct	Trust	Innovativeness	Job Relevance	Perceived Usefulness	Perceived Ease of Use	Intention to Use
Trust	0.7601					
Innovativeness	0.2466	0.6490				
Job Relevance	0.1811	0.1736	0.7412			
Perceived Usefulness	0.2150	0.2048	0.2138	0.7744		
Perceived Ease of Use	0.2471	0.3155	0.2495	0.2214	0.6055	
Intention to Use	0.1782	0.2110	0.3150	0.3611	0.4778	0.6490

Remark: Squared correlations; AVE in the diagonal

Source: Authors' own calculation

Structural Model

Table 4 illustrates the structural model and 48.3% of the variance is in Intention to use construct. According to the findings, trust (β = .100, p < .05), innovativeness (β = .292, p < .001), and job relevance (β = .370, p < .001), all have significant positive effects on perceived usefulness. In addition, trust (β = .222, p < .001), innovativeness (β = .278, p < .001), and job relevance (β = 0.242, p < .001) all have significant positive effects on perceived ease of use. As a result, H_1 to H_6 are now supported. It is regarded as a critical factor in shaping consumers' attitudes toward technology and their willingness to use it; a high level of trust, innovation, and job relevance can all lead to an increase in perceived usefulness and ease of use. Perceived usefulness is significantly influenced by perceived ease of use (β = .574, p < .001). As a result of this outcome, H_7 is now supported. It means that the usability of a website is important because it can have a direct impact on the user's experience and motivation to use it, resulting in a high level of usefulness of a technology or system.

While perceived usefulness, also known as H_8, had a significant effect on Intention to use (β = .171, p > .05). This can be explained

as follows: if a system is perceived as useful, the user is more likely to adopt it and find it useful in practice. Likewise, perceived ease of use has a significant positive effect on Intention to use (β = . 673, p < .001); therefore, H_9 is now supported. Finally, it means that if a system is perceived as simple to use, users are more likely to adopt it and have a favorable attitude toward it. Consequently, the table below depicts a summary of calculations.

Table 4 Summary Results of Structural Model

Hypothesis	Beta	Std. Error	t-value	P-value	Conclusion
H_1 Trust → Perceived Usefulness	0.100	0.044	2.129	0.034	Supported
H_2 Trust → Perceived Ease of Use	0.222	0.043	4.574	0.000	Supported
H_3 Innovativeness → Perceived Usefulness	0.292	0.052	5.995	0.000	Supported
H_4 Innovativeness → Perceived Ease of Use	0.278	0.051	5.546	0.000	Supported
H_5 Job relevance → Perceived Usefulness	0.370	0.044	8.117	0.000	Supported
H_6 Job relevance → Perceived Ease of Use	0.242	0.043	5.159	0.000	Supported
H_7 Perceived Ease of Use → Perceived Usefulness	0.574	0.043	13.969	0.000	Supported
H_8 Perceived Usefulness → Intention to Use	0.171	0.042	2.649	0.043	Supported
H_9 Perceived Ease of Use → Intention to Use	0.673	0.040	15.731	0.000	Supported

Remarks: R^2 for Perceived Usefulness= 48.2%, R^2 for Perceived Usefulness = 33.5%, R^2 for Intention to Use = 48.3%, $^{**}p$ < .05, and $^{***}p$ < .001. Author's calculation with ADANCO 2.2.1 Bootstrap

Hypothesized Paths Result

According to the PLS-SEM structural model depicted in Figure 1, 48.3% of employees intend to use the ocean network express website. As a result, a total of nine hypotheses were tested. Overall, the hypothesized path result is supported by the figure below:

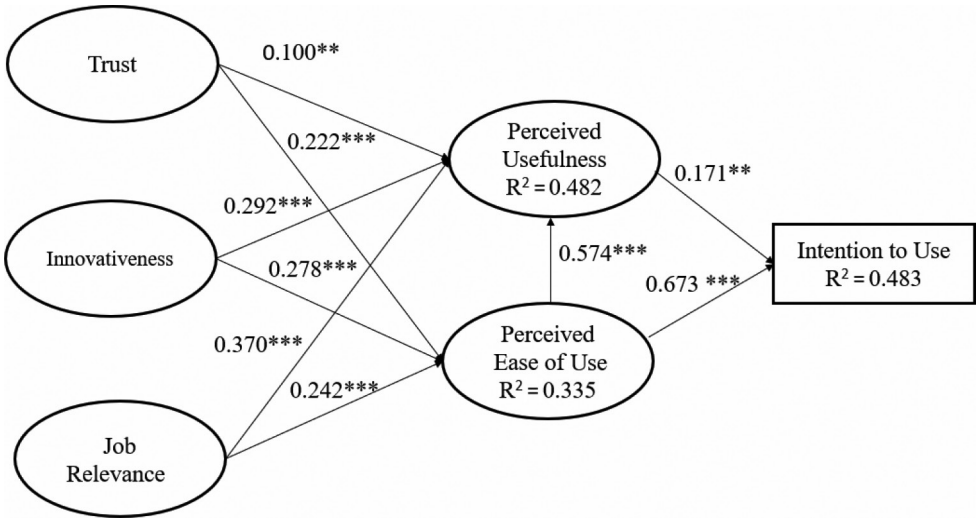

Figure 2 The Structural Model Result. Author's Calculation

Remarks: $^{**}p < .05$, $^{***}p < .001$

Discussion

Policymakers and technology providers can benefit from understanding the factors that influence behavior when it comes to encouraging the deployment of the ocean network express website.

In this regard, the findings demonstrated that trust is associated with perceived ease of use and that innovativeness has a substantial effect on perceived usefulness, which is similar with the study of Vărzaru et al. (2021). Meanwhile, innovativeness is another variable that had significant impacts on both perceived ease of use and perceived usefulness (An et al. 2023).

The effect of job relevance is also significant, indicating that the more logistics employees are aware of the ocean network express website as part of their daily work routines, the more likely they are to accept the website. The findings are similar to those of Ketikidis et al. (2012), who discovered that job relevance can influence technology acceptance in health information systems. While perceived ease of use and perceived usefulness significantly affect intention to use the website, which is consistent with research by Taufik and Hanafiah (2019).

Conclusion

TAM2 may be more appropriate for intention to use in the ocean network express website based on the roles of trust, innovation, job relevance, perceived ease of use, and perceived usefulness. The data also show that logistics employees would be likely to utilize the ocean network express website if they thought it was straightforward to use and had a positive attitude toward it.

At $p > 0.05$, both perceived ease of use and perceived usefulness had a favorable effect on intent to use, which is consistent with past research on technology acceptance and adoption in healthcare settings (Chalutz Ben-Gal (2022)

Overall, this study provided important recommendations to policy makers and technology providers. In accordance with past research on technology acceptance, we agree that a modified version of existing TAM techniques is required to better comprehend digital consumers' acceptance of technology systems.

Trust, innovativeness, job relevance, perceived usefulness, and perceived ease of use appear to be crucial factors, implying that TAM2 may be more fit for usage in the ocean network express website than the original TAM.

Furthermore, the current findings imply that particular actions should be done to educate logistics staff in their daily work routines about the potential ocean network express website.

Furthermore, the current findings suggest that specific steps should be taken to educate logistics employees about the potential ocean network express website in their daily work routines, as well as to improve their efficacy and competence skills in computer use. This may include information about how the tasks can become easier, for example, by automating processes; how the workload can be reduced, for example, by reducing duplication of data entry; or become more manageable, for example, by improving websites to be more user friendly. The website's content should be simple and easy to understand.

Future Studies

Finally, this study only quantified the quantitative effects of the Ocean Network Express website's acceptance and adoption factors. For future research, we propose a qualitative examination of the five influential factors, such as investigating the effects of policy and social influence on user knowledge and awareness in order to increase other transportation websites' adoption.

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