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Factors behind Third-Party Logistics Providers Readiness towards *Halal* Logistics

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Abstract- **Halal logistics is an approach to avoid contamination of perishables, raw materials, and food products during distribution activities taking into consideration the need for *Halalan Toyibban* products for consumption by Muslim consumers. The Malaysian Standard for *Halal* Logistics (MS 2400:2010) provides the guidelines on *halal* logistics based on the *Shariah* law, for logistics providers to specialize in transportation, warehousing, and retailing. The requirements for *halal* logistics involve specifications throughout processing, handling, distribution, storage, display, serving, packaging, and labelling of the products. There are concerns on logistics providers meeting the required standards on *halal* logistics implementation. This study thereby strives to investigate readiness factors that influence *halal* logistics implementation among food-based logistics providers. Face-to-face interviews were carried out with 156 managerial representatives of logistics companies located in Peninsular Malaysia. Descriptive analysis was used for company profiling, while factor analysis and logistics regression analysis were carried out to determine readiness factors to *halal* logistics implementation among the logistics providers. Support from management, enforcement of *Halal* Assurance System (HAS), environment controls, employee acceptance, and company vision to change were the factors identified influencing *halal* logistics implementation among logistics providers.**

Keywords- readiness, *halal* logistics, *logistics providers, Halalan Toyibban*

1.   Introduction

Halal are things or actions permitted by *Shariah* Law or Islamic Law and it should be performed to show an obligation towards Islamic faith. The word *'halal'* originated from Arabic word meaning allowable or permitted [2]. *Halal* aspect is not restricted to ingredients of food products but also includes anything related to *halal* food or/and non-food products and should comply with *Islamic* rules. This includes the supply chain activities for the *halal* products as according to the 5th principle of *Halal* [18], anything related to *halal* food, services, things, and action should be *halal* to serve *Halalan Toyibban* products to end consumers. The *halal* supply chain for *halal* products should be entirely based on best *halal* practices including logistics activities, which is part of the supply chain of *halal* products. The *halal* logistics activities comprise *halal* transport, *halal* warehouse, and *halal* retail [38].

Faced with globalization and competition, logistics companies should be looking for new concepts to make them competitive in the market [23]. Hence, *halal* is considered as a new and innovative approach in logistics operations. This is especially true in case of food-based logistics operations and concerned logistics players should be prepared for managing changes in their operations due to implementation of *halal* logistics. Readiness and preparation are important for food-based logistics players to maintain and sustain *halal* logistics operations for a long period. Due to the definitive objective of *halal* logistics, some improvements need to be done in *modus operandi* to ensure the *Halalan Toyibban* status of food products. However, to provide sustainable *halal*

good logistics service for *halal* products, a few factors need to be considered.

According to [46], technology factors, environmental factors, management factors, and government factors need to be considered in order to adopt the *halal* transportation for *halal* logistics in Malaysia perspective. In addition, organization members' beliefs, attitudes, and intention to change [52] are other factors that need to be considered if a company would like to make changes. Other than above mentioned factors, perception towards change, vision to change, mutual respect and trust, change initiatives, management support, acceptance, and how the organization manage the changes also need to be taken into consideration [44], [45].

Previous studies highlighted other factors such as organizational culture, policies and procedure, past experience, resources, and organizational structure. However, [19] argued that readiness of organization is influenced by factors like employee capability to adopt to change, appropriateness of change to organization, committed leadership to guide changes, managerial support, and benefits to organization from the change. The MS 2400:2010 is the *Halal* Logistics Standard published by SIRIM (Department Standard of Malaysia) and it dictates a few compulsory *halal* logistics requirements such as presence of Muslim workers and establishment of a *halal* committee. There are many factors that affect the logistics player's organizational readiness to *halal* logistics service implementation and this study intends to investigate the factors that influence readiness of implementation *halal* logistics among food-based logistics players in Malaysia.

2. Literature Review

Halal is an obligatory dietary prescription in the *Al-Quran* for Muslims [38] [2]. However, *halal is* not limited to foods alone, but also cover aspects such as actions, behaviors, speech, dress, manners and conduct [27], [50]. Thus, *halal* is necessary to be implemented in supply chain activities of *halal* products. Supply chain is basically a cycle of processes comprising physical, information, financial, and knowledge flows, with the purpose to satisfy end-customer requirements [16]. Hence, both *halal* and supply chain concept could be

blended together to come up with a new approach of *halal* supply chain [48], [49], [50].

The *Halalan Toyibban* supply chain objective is to uphold *halal* integrity to ensure high quality *halal* products to Muslim end-users. In order to ensure the *Halalan Toyibban* status through logistics activities, [38] had introduced *Halal* Standard (MS 2400:2010) for transportation, warehousing, and retailing. For instance, ref [16] had argued that retail activities are more like customers service activities which offer value-added benefits to the supply chain in a cost-effective way. Customers will demand improved service quality, thus to ensure quality of products, retailers, warehouse operators as well as transport providers need to work together. An insertion of *halal* operations into the entire supply chain requires involvement from the manufacturing stage until products reach the end-consumers. According to the standard for *halal* logistics, logistics players who would like to offer *halal* logistics services must fulfil standard requirements such as the *Halalan Toyibban* Management System, *Halalan Toyibban* Management Plan, and *Halalan Toyibban* Assurance Pipeline to fulfil all requirements for premises, infrastructure, facilities, and personnel.

Logistics players need to incorporate changes as per *halal* logistics requirements, in order to stay competitive in the growing *halal* market [44]. Products that had added value usually will help firms to gain profits in business. However, logistics firms should no longer aim for profits alone, but they need to look over value-added *halal* processes or products that will benefit the firm and its end consumers [47], [51]. The change from a typical logistics service to a *halal* logistics service provider would not only develop the logistics industry scenario but also affect the market competition and strategies towards *halal* industry demand fulfilment. This might also help in assuring the society of quality of *halal* products and its supply chain operations.

In order to understand *modus operandi* of *halal* logistics implementation, a prior knowledge of *halal* logistics is necessary. Ref [33] argued that knowledge should be measured first to ensure the implementation of new things or a new idea. Rapid changes in today's environment lead organizations to adjust and update the knowledge they have to maintain their competitive advantage [3]. Knowledge about *halal* logistics could be one of the indicators towards successful implementation

of *halal* logistics while intention is one of the components that reflects the readiness to change of an organization [6] [34] [49]. Ref [36] in their studies stated that intention to implement changes will reflect on both the management and organization as it is a core component towards creation of readiness.

Other than that, there are also few other factors that might affect readiness of organization such as organization's vision to change [4] [15] [37], management support [8] [9] [28], employee acceptance [12] [13] [44], organization environments [11] [12] [17], and assurance system [24] [40] [50]. An organization needs a clear and applicable vision towards changing. Applicable vision facilitates a company to focus on the objective of changes, give long term perspective as well as provide motivation to its workers and synergy to the whole company towards change. Clear vision is also useful in terms of creating a new organizational culture [4]. Clear vision is needed because it helps organization to fulfil certain key functions in interpretation, and legitimation with global mobilization of economic roles and exchanges [15].

The management support plays a role in accommodating the implementation of *halal* logistics process through the provision of financial, materials, human resources, shaping the organizational context to make the organization more adaptive to the information system. Managements support team could help an organization by providing resources to change the organization, introducing new workflow patterns, using formal power to enforce new structures facilitating adaptation of the technology to the organization, and actively help developers and implementers to make changes to the technology in a way that promotes the new system's use [9] [28]. However, for most employees, changes in organization could create an uneasy feeling and tension, and during the organization changes employees may feel uncertainty and sense of confusion. Employees are willing to accept any changes in organization which they think as beneficial for them [44], thus employee acceptance will influence an organization's readiness on changing towards *halal* logistics.

Both the internal and external environments encompass the environmental readiness factor of an organization [12]. This will therein reflect the internal and external organizational boundaries for

standardization or specialization [11]. This will also help the organization to be prepared for *halal* operations standardization. The establishment of a *halal* assurance system is essential to provide trust and confidence in organizations' commitment to *halal* [40]. The *halal* logistics handbook which is aligned with HACCP was thereby introduced to identify *halal* critical control points, critical limits, management and control procedures and corrective action procedures [50] for *halal* logistics.

3. Methodology

The conceptual model of this study (Figure 1) was developed from previous literatures. According to a study by ref [20], knowledge aspects adapted from the Theory of Diffusion of Innovation (DOI) could be a basic element in implementation of something innovative or new. Based on few readiness theories, [8] and [33] included management supports, employee acceptance towards change, organization vision to change, internal and external environments of organization, knowledge, intention, standard, and Muslim workers are the factors that might be faced by organizations that are ready to change. In meeting *halal* aspects, one of the readiness factors to be included towards the implementation of *halal* logistics is the *Halal* Assurance System (HAS).

In order to measure the factors that influence readiness towards implementation of *halal* logistics, 156 managers representing logistics companies located in Peninsular Malaysia were surveyed through face-to-face and phone call interviews. A quantitative survey approach was conducted using a structured questionnaire and the list of companies were obtained from the Directory of Logistics Companies published by the Company Commission of Malaysia (*Suruhanjaya Syarikat Malaysia* or SSM) in 2011. Descriptive analysis was carried out to profile the companies while factor analysis was conducted to extract factors influencing the readiness of implementation of *halal* logistics. 5-point Likert scale statements with range between '1-Strongly disagree', '2-Disagree', '3-Neutral', '4-Agree' and '5-Strongly agree' were used to measure the readiness to implementation of *halal* logistics. Logistic regression analysis was carried out to determine the level of readiness towards *halal* logistics. The coding used for explanatory variables is given in Table 1. The

dependent variable was readiness to implementation of *halal* logistics with coding, 1= Ready and 0 = Not Ready. The equation of the model Eq. (1) is given below.

$$\ln\ (\pi/1\text{-}\pi) = \beta_0 + \beta_{1\,Knowledge} + \beta_{2\,Muslim\ Workers} + \beta_{3\,Standard} + \beta_{4\,Constrains} + \beta_{5\,Intention} + \beta_{6\,Region} + \beta_{7\,Vision\ to\ Change} + \beta_{8\,Halal\ Assurance} + \beta_{9\,Environments} + \beta_{10\,Employee\ Acceptance} + \beta_{11\,Management\ Support} + \epsilon_1 \quad (1)$$
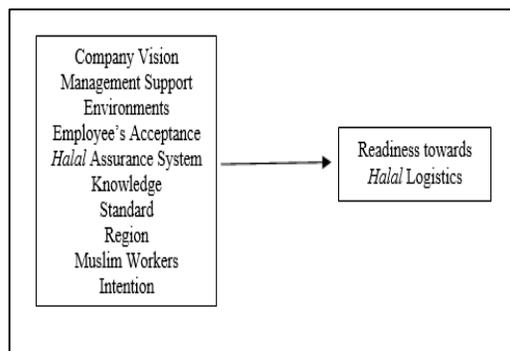

Figure 1: Conceptual framework

Table 1: Explanatory variables to measure readiness of *halal* logistics

Variables	Coding
Level of Knowledge	1 : High knowledge 0 : Low knowledge
Present of Constraint	1 : Faced Constraint 0 : Not Faced Constraint
Standard	1 : Applied Standard 0 : Never applied any standard
Region	1-0-0 : South 0-1-0 : Central 0-0-1 : East 0-0-0 : North
Present of Muslims workers	1 : Yes 0 : No
Intention	1 : Yes 0 : No
Company Vision	1 : Yes 0 : No
Halal Assurance	1 : Yes 0 : No
Environments	1 :Yes 0 : No
Employee Acceptance	1 : Yes 0 : No
Management Support	1 : Yes 0 : No

Note: n = 156

4. Results and Discussion

4.1 Company Profiling

Table 1 shows the results of company profiling. While majority of the respondents had annual sales below RM50,000 (75%), the remaining (25%) had more than RM50,000. The results on profiling of food-based logistics operations showed that 38.5% of food-based logistics players were mainly involved in retailing, while 25% accounted for transportation, 1.9% accounted for warehousing services, and the remaining 34.7% represented mixed mode (mix mode is referred to those logistics players who offered transportation, warehousing, and retailing as one). Most of the respondents were from the Central region (48%) followed by Eastern region (7.7%), Northern region (13.5%), and Southern region (30.8%). Only 34.6% companies indicated complying with standards while 65.4% responded as non-complying with standards. Majority of the companies showed high involvement of Muslim workers (63.5%) while 25% companies indicated mix of both Muslim and non-Muslim workers and only 11.5% of the companies showed involvement of only non-Muslim workers. Company owners (26.3%) and logistics operation officers (73.7%) represented their logistics companies during the survey.

Table 1. Company Profiles

Profiles	Percentage (%)
Annual Sales (RM)	
Less than 50,000	75
More than 50,000	25
Logistics Activities	
Retailing	38.5
Transporting	25
Warehousing	1.9
Transporting, Warehousing, Retailing	34.7
Region	
North	13.5
East	7.7
South	30.8
Central	48
Experience Complying with Standards	
Complying	34.6
Not Complying	65.4
Number of Workers	
Muslim	63.5
Non-Muslim	11.5
Both	25.0

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Companies Representative	
Logistics Operation Officer	73.3
Company Owner	26.3

4.2 Factor Analysis

Factor analysis was conducted to identify factors that influenced readiness among logistics players towards *halal* logistics. Keiser-Meyer-Olkin (KMO) showed a value of 0.776 which was above the minimal requirement value of 0.6 and the Bartlett's Test with significance at 1% level of significance indicated factor analysis appropriate for this study.

Table 2. KMO and Bartlett's Test

Keiser-Meyer-Olkin Measure of Sampling Adequacy		0.776
Barlett's Test of Sphericity	Approx. Chi-Square	8974.38
	df	465
	Sig	0.000

Cronbach's Alpha for reliability test for each factor showed value above 0.5, meaning the variables were valid and reliable (Table 3). Factor analysis using exploratory factor analysis method (EFA) revealed five factors towards readiness to *halal* logistics implementation. Vision to change, *Halal* Assurance System (HAS), environment, employee acceptance, and management support were the five factors revealed and Table 3 shows the items under each factor. Cumulative variance for *vision to change* was 23.17%, while variance explained for *Halal Assurance System, environments factor, employee acceptance, and management support* was 22.17%, 12.9%, 12.7%, and 9.8% respectively.

Table 3. Factors influencing readiness towards *halal* logistics

Factors Extracted	Factor Loading
Factor 1: Vision to Change	
V1 Ready for new policies and practices	0.866
V2 Important to understand new policies and practices	0.851
V3 New vision in leadership	0.843
V4 Company ready to deal with *halal* logistics	0.835
V5 Company ready to re-alignment	0.795
Cronbach's Alpha	**0.957**

Eigenvalue	**16.4**
% variance explained	**23.17**
Cumulative % variance explained	**23.17**
Factor 2: *Halal* Assurance System	
HA1 Advanced information systems help to ensure the *halal* system	0.861
HA2 Company is willing to invent new operations to meet *halal* requirements	0.854
	0.807
HA3 Logistics players should apply traceability system	0.769
HA4 Customers also need to understand *halal* logistics guidelines	0.767
HA5 *Halal* logistics needs *Halal* Assurance System (HAS)	**0.950**
Cronbach's Alpha	**3.530**
Eigenvalue	**22.12**
% variance explained	**45.29**
Cumulative % variance explained	
Factor 3: Environmental	
E1 Employees are allowed to make decision	0.768
E2 Global *halal* market affects *halal* logistics services	0.722
E3 Management should create employees' teamwork	0.697
E4 Employees trust and respect are needed	0.616
E5 Company should study on market competitiveness	0.605
Cronbach's Alpha	**0.919**
Eigenvalue	**2.046**
% variance explained	**12.91**
Cumulative % variance explained	**58.2**
Factor 4: Employee Acceptance	
A1 Employees might sometimes confuse regarding *halal* logistics	0.702
A2 Employees should be ready to change on operation practices	0.699
A3 Employees are willing to face any uncertainty	0.690
A4 Employees need to accept any changes made by management	0.670
A5 Employees are willing to learn new skills	0.662
Cronbach's Alpha	**0.935**
Eigenvalue	**1.787**
% variance explained	**12.72**
Cumulative % variance explained	**70.92**
Factor 5: Management Support	
S1 Management needs to understand vision and mission	0.919
S2 Management needs to consider company's history	0.911
S3 Management team should support and accept the changes if beneficial	0.792
Cronbach's Alpha	**0.898**
Eigenvalue	**1.229**
% variance explained	**9.83**
Cumulative % variance explained	**80.72**

4.2.1 Vision to Change

Generally, top-level management will be responsible towards the company's vision to change. All the members of the management need to learn of, understand about, and be able to handle the new implementation requirements of *halal* logistics according to the specific standards laid out. However, leaders of organization need to remember that a vision should also guide its employees who are an important part of any change. In order to give directions, the top level and technical management need to have policies and practices in place to ensure right directions and right implementation of *halal* logistics. Thus, a new vision of leadership should be considered while preparing for change towards *halal* logistics.

4.2.2 Management Support

Employees play a more supportive role in companies when compared to the top level management. There are important roles played by heads of departments, executives and top level managers to deliver the ideas, provide instructions and correct directions to perform *halal* logistics operations. Proper preparations will help to increase organization effectiveness to face any failure, problems, and risks while performing *halal* logistics. Thus, high level management needs to explain and provide a comprehensive training to other levels of management, so that all levels of management are able to comprehend the risks and understand their roles in performing *halal* logistics.

4.2.3 Environmental

There are internal and external environmental factors that could affect the readiness to change in an organization and both environments could affect the logistics players' readiness towards implementation. According to the *halal* logistics requirements, an efficient workplace will promote better performance among employees in performing *halal* logistics operations. Furthermore, employee job performance might increase as a result of a conductive workplace. Workplace will be more efficient with the existence of cooperation and superior relationship among employees. However, external environments could provide either a beneficial or non-beneficial outcome. For instance, governments sometimes may act as a

barrier to transformation, in some instances, they might also assist organizational changes. Thus, logistics players need to be prepared to face all such challenges towards making changes.

4.2.4 Employees Acceptance

It is very important for companies or organizations to get their employee's acceptance as it is one of the first steps towards preparation of organizational change. It is not an easy job to get employee's acceptance since giving an explanation to Muslims workers about the changes for *halal* logistics operations will be much easier compared to non-Muslims workers, because of their understanding of the implications. *Halal* training would be the best method to deliver the *halal* concept to the workers. Both Muslim and non-Muslim workforce could be unaware of the product flow and all technical operations required to ensure *halal* in the business and obtain certification. A tough challenge will be faced by the management's level to explain about the detail operations and information system process flow required for insertion of *halal* logistics operations into the system. Acceptance to all *halal* logistics requirements by all employees of the company is essential to ensure the success of *halal* logistics.

4.2.5 Halal Assurance System (HAS)

Halal Assurance System (HAS) is one of the important aspects that need to be considered for establishment of *halal* policies and procedures for correct implementation of *halal* logistics. All *halal* logistics operations in logistics companies also need a *HAS* as their general guidelines to ensure the integrity of *halal* products along the supply chain. Along the supply chain of *halal* products, assurance system in *halal* sector ensures that every entity fulfils the *Halalan Toyibban* requirements for all aspects such as management system, *halal* risk assessment, *halal* facilities, equipment, and infrastructure. Information and status of the *halal* products could be traced by the assurance system back from the ingredients to manufacturing process and logistics activities which comply with *halal* requirements from JAKIM (Islamic Department of Malaysia) and Malaysia Standard Department (SIRIM) for *halal* food preparation, handling, and logistics.

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4.3 **Logistic Regression Analysis**

Binary logistics regression was used to determine the extent to which selected determinants affected the readiness level of logistics companies. The results in Table 4 showed that there were nine factors with significant relationships with readiness implementation of *halal* logistics by logistics players in Malaysia. Out of the eleven factors, two of them namely type of region and management support were not significant to readiness of the logistics players towards *halal* logistics. The Wald values shows the importance of each factor that affect the readiness of the logistics players. The bigger the Wald numbers, the higher the effect of variables towards readiness to *halal* logistics. The two step iteration of Block 0 gave a -2 Log likelihood value of 158.156 in the final model, which is desirable and the Cox & Snell R square value of 0.267 and Nagelkerke R square value of 0.375.

Intention towards *halal* logistics affect readiness maximum, with a Wald value of 15.527 while barrier least affect readiness among logistics players with a Wald value of 3.963. The Exp (B) values in the table explain how many times likely the logistics players is ready to implement *halal* logistics. Logistics companies with Muslims workers have 5.149 times more readiness towards implementation of *halal* logistics and logistics companies which have intention towards *halal* logistics showed 5.181 times more inclination to implementation of *halal* logistics compared to those who have no intention towards *halal* logistics. Logistics players who have experienced with standards of procedure in their company were 3.432 times more ready towards *halal* logistics and logistics companies who have knowledge about *halal* logistics were 3.163 times more readiness towards *halal* logistics compared to a company with less knowledge and no experience applying any standard in their logistics operations.

When the logistics players claimed that there are no barriers for them to implement *halal* logistics, it showed that logistics companies were 2.520 times more ready towards *halal* logistics while logistics companies who have vision towards implementing *halal* logistics showed that there were 2.578 times more readiness towards implementation of *halal* logistics. Logistics companies who have *Halal* Assurance System (HAS) on their management system were 2.178 times more ready towards

implementation of *halal* logistics compared to those who have not. However, if the logistics players were adapted with new internal and external environments and received the employees' acceptance to implement *halal* logistics, basically they were 1.628 times more ready towards *halal* logistics. Thus, presence of Muslims workers and intention towards implementation of *halal* logistics would be the major factors that affect the readiness towards *halal* logistics among logistics players in Malaysia.

Table 4. Estimates Logit Model for level of readiness towards *halal* logistics

Variables	B	Wald	Sig	Exp(B)
Knowledge	1.152	6.021	.014*	3.163
Barrier	0.924	3.963	.047*	2.520
Standard	1.233	5.621	.018*	3.432
Region 1	-5.11	0.903	.34	0.600
Region 2	0.182	0.049	.82	1.20
Region 3	0.182	0.097	.75	1.10
Muslims workers	1.639	6.533	.011*	5.149
Intention	1.645	15.527	.000**	5.181
Company Vision	0.947	14.548	.000**	2.578
Halal Assurance	0.778	12.819	.000**	2.178
Environments	0.488	4.831	.028*	1.628
Employee Acceptance	0.675	8.311	.004*	1.964
Management Support	-0.155	0.262	.609	0.856
Constant	-3.415	15.820	.000*	.045
-2Log Likelihood	146.946			
Cox and Snell R Square	.267			
Nagelkerke R Square	.375			
Hosmer and Lemeshow Test	.232			

The final binary regression model Eq. (2) is as follows:-

In (Readiness level) = -3.415+ -.511(R1) + 0.182 (R2) + 0.182(R3) + 1.512 (Knowledge) + 1.639 (Muslim Workers) + 1.233 (Standard) + 0.924 (Barriers) + 1.645 (Intention) +0.947 (Vision to Change) + 0.778 (Halal Assurance) + 0.488 (Environments) + 0.675 (Employee Acceptance)
(2)

5. **Conclusion**

Readiness towards implementing a new idea or innovation is one of the successful keys in implementation of new things. The successful change from conventional logistics operations to *halal* logistics operations requires a right intention. It is essential for logistics players to make themselves ready for *halal* logistics implementation by considering few readiness factors such as knowledge, intention, Muslims workers, management support, and vision to change, *Halal* Assurance System (HAS), environments and employee's acceptance. Logistics players or companies need to have prior knowledge about factors effecting the implementation of *halal* logistics, before its inception into their operations. Furthermore, it is essential for companies to gain full support of its managerial staff and employees acceptance for adoption of *halal* logistics into their business.

Furthermore, the establishment of the *Halal* Assurance System (HAS) is essential for companies involved in *halal*, with consideration for the internal and external environments of the organization as a result of this change. Visionary logistics players should have a team ready to manage the *halal* logistics operations and changes associated with it in the business. The appointment of a *halal* advisor or *halal* internal auditor is recommended as part of the team. The team will monitor day-to-day logistics operations in their business. The appointment of trainers for employee training on *halal* logistics operations will further help with right implementation of *halal* logistics in the logistics business. In the meantime, logistics companies also should consider presence of Muslim workers to ease *halal* logistics handling while knowledge and intention on *halal* logistics will be catalyst towards readiness implementation of *halal* logistics.

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