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What Makes Courier Service Creative?—From Managing Logistics to Managing Knowledge

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Abstract: The recent online business blossom has stimulated the soaring demand for logistics service, or rather, courier service, which emerged as a robust momentum of economic growth worldwide. So, to satisfy the fast-changing online businesses, courier services have been urged to be more creative to ensure the desired efficient movement of goods and services along the supply chain, especially in logistics and parcel deliveries. How could the courier service be more creative? What makes courier service creative has not yet been fully explored. Therefore, this study aimed to unveil the antecedents of creativity of courier services from the perspective of managing knowledge which is regarded as the source of wisdom. Taking into consideration the logistical nature of courier service, the proposed framework integrates logistics into knowledge management, and focuses on empirically detecting its relationship with creativity in the context of Malaysia. The results prove that the logistics-related knowledge management (LRKM) affects creativity in a significant and positive manner. However, amongst the four select constructs, only the logistics-related knowledge dissemination (LRKD) followed by the logistics-related knowledge responsiveness (LRKR) are significant operational contributors in the development of creativity in courier services. The logistics-related knowledge generation (LRKG) and logistics-related shared interpretation (LRKS) have not yet appeared significant, which is mainly due to the current insufficient development of the courier service in Malaysia. It indicates that to further enhance creativity, courier service providers should attach importance on managing knowledge of logistics operation, especially in the respects of dissemination and responsiveness, while more efforts shall be exerted to the generation and shared interpretation as both are still having positive potentials towards creativity. This study is amongst the pioneers to cross-extend the theory of logistics management and knowledge management into the courier service industry, and it also expands the application of the theory of creativity into the courier service industry. Future study could further examine the inter-relationships among the detected constructs, the effects of creativity of courier service on the performance of e-business firms, and so on.



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1. Introduction

The origination of the third party logistics (3PL) in Malaysia can be traced back to 1867 when the government established the first postal service company “Pos Malaysia Bhd. (PMB)”. Along with its development, the courier service industry was conceived in the 1970s when DHL, as the first foreign courier service provider, entered Malaysian. During the 1980s and 1990s, a number of local private courier companies successively emerged, such as Nationwide Express, ABX Express, Kangaroo Worldwide Express, and GD Express, etc. [1]. Nowadays, more and more international courier companies (i.e., UPS, DHL, TAQBIN, ARAMEX, etc.) have joined Malaysian market, which stimulates the

competition of courier services in Malaysia to become increasingly fiercer. This impels courier service providers to promptly create services to keep abreast with their fast-growing online business clients.

The notable creative service is the launching of the Cash On Delivery (COD) by courier service providers in 2011, which prominently eased the online payment transaction and enhanced customer's trust of online shopping. Other creative services, to name but a few, include the chilled delivery, return and pick-up service, the Applications Programme Interface (API), the E-payment Platform, the Web-based Consignment Notes, etc. [2]. Then, the question is "what are the internal factors that contribute to such creativity or wisdom?" If the hidden mechanism were unveiled, the companies could better utilize it to be more creative towards achieving competitiveness.

Meanwhile, knowledge is viewed as the source of wisdom; it generates the "pool" of creative ideas and problem solutions that initiate the course of innovation. Although research of creativity has been carried out on discussing the inherency of creativity and how to stimulate creativity [3], research that relates creativity with managing knowledge has not yet been widely conducted.

Furthermore, knowledge management (KM) has experienced significant developments in the new business environment [4]. Chuang et al. [5] conceptualized knowledge resources into six different types, one of which is the outbound related knowledge originated from outbound logistic activities. However, the related knowledge from logistic activities has not yet been intensively explored or specified in a theoretical threshold. Hence, how to scientifically manage knowledge in logistics practice is largely constrained.

Thus, this study aimed to investigate the contributors of the creativity of courier services from the perspective of managing knowledge. Section 2 reviews related works and Section 3 proposes the conceptual framework that incorporates both logistics and knowledge management towards creativity by taking into consideration the logistical nature of courier service. Section 4 develops the instrument accordingly and Section 5 describes the data collection and processing. The findings are demonstrated in Section 6 where the managerial implications are discussed as well. Section 7 draws the conclusion.

The contributions of this study are twofold. Theoretically, it extends the integration of logistics management and knowledge management and bridges it with creativity, particularly in the courier service sector. Practically, it brings more insights to the effectiveness of managing logistics-related knowledge towards creativity of courier services, especially in Malaysia. Additionally, the empirically proved model with feasible managerial suggestions proposed by the study could shed some light on improving the business performance of relevant industries and the economic development of Malaysia, especially in the era of Industry 4.0.

2. Related Work

2.1. Logistics-Related Knowledge Management (LRKM) in Courier Service

Courier service is one type of logistics services or the so-called third party logistics (3PL) to assist and provide the service of parcel delivery for clients who are selling or buying online [6–8]. The typical process of courier services covers the courier process and distribution process where the flow is divided into afternoon and morning cycles [9]. The logistics management in courier service is limited to mainly include the collection/pickup of parcels, conveyance of parcels on the roller conveyor, sorting, scanning, unloading parcels, and, lastly, delivery to consumers [10,11].

Embedded in the physical process, the logistics-related knowledge is also flowing in different forms of management. Fugate et al. [12] defined the logistics-related knowledge management (LRKM) as a process of integrating, rapidly developing, and exploiting knowledge of the business environment by logistic and courier operation personnel. Although it was applied in the manufacturing setting [12], this study adopted and adapted it into courier service, as it also contains logistics elements [13]. According to Fugate et al. [14], the process of LRKM was categorized into four interconnected stages: logistics-related knowledge

generation (LRKG), logistics-related knowledge dissemination (LRKD), logistics-related knowledge shared interpretation (LRKS), and logistics-related knowledge responsiveness (LRKR). To note, the study ignored the inter-relationships among the four knowledge processes as they were beyond the scope of the study.

In the study, the logistics-related knowledge generation (LRKG) is regarded as the logistics operations and services personnel's collection and evaluation of knowledge relative to its usefulness to business decisions [14]. It is the extent to which logistics operations and services personnel formally and informally recognize and filter new knowledge about the inbound and/or outbound business environments of the courier service in which they are immersed. The logistics-related knowledge dissemination (LRKD) is defined as the logistics-related operations and services personnel's timely sharing of knowledge of the business environment with appropriate logistics operations or services and other personnel within the firm. The logistics-related knowledge shared interpretation (LRKS) refers to the process of quickly achieving a cohesive understanding of knowledge by logistics operations and services personnel. Lastly, for the logistics-related knowledge responsiveness (LRKR), it is the speed with which unified action is taken by logistics operations and services personnel based upon available knowledge of the business environment.

2.2. Creativity in Courier Service

The creativity in courier service is defined as the creation of new services [15], where the logistics operations and services personnel work together in a complex social system to achieve superior performance [16]. It concerns restructuring frontline employees and involves a knowledge capability to come up with new and different viewpoints from competitors, business partners, or customers. Thus, it is asserted that creativity in services is to create new service through improvement of creative skills and managing knowledge from frontline employees to spread among general staff with the mission to achieve efficient operations and superior performance.

Based on the real practices of logistics services [10] and considering Yang et al.'s study [16] on creativity, the elements of creativity in this study are limited to team creative efficacy (TCE), service newness (SNW), and service marketability (SMA) and relevant resources such as knowledge management [17]. As knowledge management was elaborated above, the following focuses on the other three elements of creativity.

Team Creative Efficacy (TCE)—Creative efficacy is an accurate measure to reflect creativity in organizations. It refers to the fluency and self-view of employees on whether they have the ability to produce creative outcomes [18,19]. Team in the study refers to the leaders and frontline employees in courier companies as an efficient team, who are competent in implementing continuous improvement practices and skilled in seeking out and applying new ways of performing operational activities [16].

Service Newness (SNW)—The service newness refers to the originality of a firm's services [20]. This service is in creation for the first time, either by combining with or improving on old services [16]. When a service firm has a high level of service newness, it is under pressure to create new services frequently to achieve the desired newness and unique outcomes [17,21]. Due to the pressure, the frontline employees are usually more creative and competent in operational improvement [16].

Service Marketability (SMA)—The service marketability is the extent to which new services meet customers' needs and respond to the service market effectively [22,23]. Hence, new services could be easily accepted if the frontline service employees know well about the new service and can elaborate and explain it clearly to customers and build the customers' confidence with their knowledge [19].

3. Hypotheses Development

Along with creative activities, there are knowledge flows of reviewing, generating, exploiting, and sharing about the operations and services in order to get new insights naturally [24]. According to Yusuf [21], the creativity of courier services requires the generation

of new knowledge or the combination of the existing knowledge with creative ideas and solutions for logistics operations. It happens when the existing bases of knowledge are disseminated through interactions between specialists with various areas of expertise [25]. It happens when logistics suppliers respond to their customers [26] effectively. Hence, generally, we hypothesized that:

H1. *Logistics-related knowledge management is positively related with creativity.*

3.1. The Logistics-Related Knowledge Generation and Creativity

The creation of new services is a combination of knowledge generation (KG) with novelty or originality. It is most effectively supported by combining and integrating various pools of knowledge and ideas [21]. In other words, creativity requires frontline staff to combine and integrate inputs from multiple new service information. For example, learning new practices from other courier service companies, implementing new technologies that fit with local logistics services into logistics operations, the continuous learning of personnel through managing knowledge to generate new ideas, and maintaining relationships with logistics partners and with their customers, etc. By building on the knowledge of various sources, all members of a company can facilitate the exchange of information and produce new knowledge and insights for creativity. Hence, we hypothesized that:

H2. *Logistics-related knowledge generation positively affects creativity.*

3.2. The Logistics-Related Knowledge Dissemination and Creativity

The core of creativity is knowledge, and new knowledge can only be created when existing bases of knowledge are disseminated (KD) through interactions amongst leaders, supervisors [27], and specialists with different areas of expertise during logistics operations, in the aspects of markets, technologies, competitors, resources, technical solutions to solve strategic problems, and translating knowledge and information into operations and real services [28,29]. It is, therefore, no surprise that knowledge dissemination via communicating and sharing appropriate information has played an important role within logistics organizations for creativity. In other words, dissemination/distribution of the right knowledge and information would create useful services. Thus, we hypothesized that:

H3. *Logistics-related knowledge dissemination positively affects creativity.*

3.3. The Logistics-Related Knowledge Shared Interpretation and Creativity

Shared interpretation helps to reduce uncertainty, fill competence gaps, and suggest new arguments for value creation through the use of new terms and the expression of different ideas [30], to develop new services and resolve issues of an organizations and to fulfil customers' need [31]. Fugate et al. [12,14] stated that if logistics personnel receive information about important changes in a courier business environment, and receive ideas from other personnel, and encourage other personnel to provide more ideas (to be trained in the fluency of a new situation), then the logistics personnel could try to solve problems together (suppose they are flexible and have tolerance) [31]. Additionally, creativity is based on a hermeneutic perspective to understand how customers and service suppliers can cocreate new meanings, share ideas, and interpret them properly to improve services or develop new services [26]. Thus, we hypothesized that:

H4. *Logistics-related knowledge shared interpretation positively affects creativity.*

3.4. The Logistics-Related Knowledge Responsiveness and Creativity

Customers and service suppliers and other actors in the firm's business network are important contributors to creativity. Oberg [32] viewed that creativity was a process of interactions among individuals within the internal and external resources of a firm. Knowledge responsiveness that exists among interactions and responses with other employ-

ees/members, and with customers and partners, is crucial. According to Fugate et al. [12], logistics personnel who understand how to interact and respond is important, as swift responsiveness to changes in the business environment affect courier services. This is because an increased level of interaction and responses promotes an increased probability of the occurrence of the cross fertilization of ideas among organizations and with customers. Thus, we hypothesized that:

H5. *Logistics-related knowledge responsiveness positively affects creativity.*

4. Instrument Development

Based on the discussions above, the conceptual framework of this study is displayed in Figure 1, where the constructs of LRKM consist of logistics-related knowledge generation (LRKG), logistics-related knowledge dissemination (LRKD), logistics-related knowledge shared interpretation (LRKS) and logistics-related knowledge responsiveness (LRKR), and the dimensions of creativity include team creative efficacy (TCE), service newness (SNW), and service marketability (SMA).

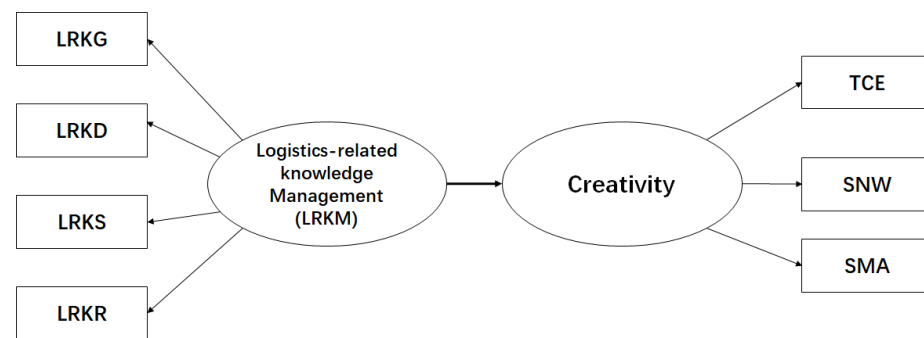


Figure 1. Conceptual framework.

To validate the proposed conceptual framework, a survey questionnaire was designed accordingly. All the measuring items that were included in the questionnaire were adopted or slightly adapted mainly from Fugate et al. [12] and Yang et al. [16]. The five-point Likert scale, ranging from (1) strongly disagree to (5) strongly agree was applied to all the items of the constructs. In total, there were three sections. Section 1 was about the demographic information of the companies and respondents; Section 2 focused on the four constructs of the logistics-related knowledge management, namely, LRKG, LRKD, LRKS, and LRKR. Section 3 was about creativity, inclusive of the three measurement dimensions: TCE, SNW, and SMA. The initial questionnaire was reviewed through the pretesting procedures to ensure its face and content validity. Then, a modified version of the questionnaire was sent for a pilot test, and the reliability result of the constructs was found acceptable, as it was over the lower limit of Cronbach's alpha 0.60 [33]. Therefore, all of the items in the questionnaire were retained to proceed with the main data collection.

5. Data Collection and Processing

The sample of courier service providers was drawn from the Industry Performance Report 2015 hosted by the Malaysia Communication and Multimedia Commission (MCMC) website. The stratified random sampling technique was employed with both local and foreign courier companies included. For local ones, those that have operated for at least 10 years were selected, while for foreign ones, it was at least 5 years. The personnel who were involved in logistics and courier operations were randomly invited for the questionnaire survey.

After a two-month distribution and data collection via emails, follow-up phone calls and face to face approaches, out of the 100 returned questionnaires from the 200 distributed questionnaires, 92 questionnaires were found usable. According to Hair et al. [34], a sample

size with a minimum scale between 30 to 100 is acceptable for PLS-SEM. This generated the response rate of 46%, which is within the acceptable range of 18.9% to 54.5% in most organizational research [35]. Most of the surveyed courier companies were located in Kuala Lumpur, Selangor, and Johor, while a few were from Pahang and Terengganu. The detailed demographic information of the respondents and companies are shown in Table 1.

Table 1. Demographic information (N = 92).

Items	Category	Frequency	Percentage (%)
Courier companies involved	Pos Laju Malaysia	19	20.7
	GD Express	17	18.5
	Nationwide Express	16	17.4
	Skynet	10	10.9
	City-Link	5	5.4
	TNT	4	4.3
	Kangaroo Express	4	4.3
	DHL	4	4.3
	Airpak Express	4	4.3
	Fedex	3	3.3
	Sure Reach	3	3.3
	ABX Express	1	1.1
	Taqbin	1	1.1
UPS	1	1.1	
Working Position	Vice President	2	2.2
	Branch Manager	32	34.8
	Operation Manager	14	15.2
	Assistant Manager	23	25
	Operating Staff	21	22.8
Working Experience	≤5 year	22	23.9
	6–10 years	33	35.9
	11–15 years	18	19.6
	16–20 years	17	18.5
	21–25 years	2	2.2
	≥26 years	0	0

In data screening, missing data was found to be less than 5%, which was considered not to cause any serious problems in the quality of the acquired information [35]. As the collected data was not ample, to rectify this problem, all missing data were replaced with the variable mean score of each variable.

Next, to access the nonresponse bias, the study compared the responses of early respondents (35% of the sample, those who responded in the first month) with the late respondents (65% of the sample, those who responded in the second month). By applying the independent sample *t*-test, it showed that there were no significant differences (>0.05) on all tested variables. That is, the variability in the two conditions was not significantly different [36] and nonresponse bias was not detected.

Lastly, to examine whether common method bias could become problematic in this research, the Harman's single factor test was employed, as it is the most widely used in the literature [37]. The result showed that the first component (17%) accounted for less than 50% of all the variables in the model. Therefore, the instrument of study was free from significant common method bias effects.

6. Findings

Nowadays, structural equation modeling (SEM) has become a common statistical tool in most academic research [38], especially when multivariate analysis is required [39]. One significant benefit of SEM is that all hypothesized relationships among multiple independent and dependent variables can be tested simultaneously [40]. As the focus of this study is to conduct causal predictive analysis where a researcher faces limited

theoretical information and in conditions of complex variables, a partial least square SEM (PLS-SEM) is considered preferable [41]. Hence, the following data analysis was conducted following the standard procedure of PLS-SEM using SmartPLS 3.0 software.

6.1. Assessment of Measurement Model

Before verifying the research hypothesis by using the structural model, it is necessary to assess the involved measurement models first. The assessment of a measurement model includes internal consistency (composite reliability), individual indicator reliability, convergent validity (i.e., average variance extracted, AVE) [34,42], and discriminant validity (i.e., the Fornell–Larcker criterion, cross loadings, and HTMT). Table 2 demonstrates the results of the measurement model assessment.

Table 2. Assessment of measurement model (before deleting items).

Latent Variable	Indicators (Items)	Mean	Loadings (>0.708)	Indicator Reliability (>0.501)	Composite Reliability (>0.7)	AVE (>0.5)
LRKG		3.859			0.025	0.175
	LRKG1	4.185	0.476	0.227		
	LRKG2	3.696	0.536	0.287		
	LRKG3	3.761	0.558	0.311		
	LRKG4	4.207	0.183	0.033		
	LRKG5	3.587	−0.154	0.024		
	LRKG6	3.609	−0.228	0.052		
	LRKG7	3.793	−0.433	0.187		
	LRKG8	4.033	−0.525	0.276		
LRKD		3.992			0.781	0.361
	LRKD1	3.946	0.848	0.719		
	LRKD2	3.957	0.814	0.663		
	LRKD3	3.707	0.505	0.255		
	LRKD4	3.935	0.631	0.398		
	LRKD5	4.000	0.475	0.226		
	LRKD6	4.304	0.326	0.106		
	LRKD7	4.098	0.397	0.158		
LRKS		3.970			0.726	0.352
	LRKS1	3.935	0.478	0.228		
	LRKS2	3.674	0.591	0.349		
	LRKS3	4.022	0.505	0.255		
	LRKS4	3.880	0.586	0.343		
	LRKS5	4.335	0.765	0.585		
LRKR		4.179			0.774	0.398
	LRKR1	4.239	0.806	0.650		
	LRKR2	4.000	0.698	0.487		
	LRKR3	3.826	0.416	0.173		
	LRKR4	4.380	0.749	0.561		
	LRKR5	4.630	0.702	0.493		
	LRKR6	4.000	0.144	0.021		
TCE		3.992			0.839	0.433
	TCE1	4.196	0.529	0.280		
	TCE2	3.891	0.582	0.339		
	TCE3	4.196	0.722	0.521		
	TCE4	3.728	0.695	0.483		
	TCE5	4.391	0.736	0.542		
	TCE6	4.272	0.782	0.612		
	TCE7	3.272	0.507	0.257		

Table 2. Cont.

Latent Variable	Indicators (Items)	Mean	Loadings (>0.708)	Indicator Reliability (>0.501)	Composite Reliability (>0.7)	AVE (>0.5)
SMA		4.105			0.876	0.512
	SMA1	3.815	0.400	0.160		
	SMA2	4.685	0.735	0.540		
	SMA3	3.891	0.632	0.399		
	SMA4	4.384	0.746	0.557		
	SMA5	4.034	0.830	0.689		
	SMA6	3.978	0.848	0.719		
	SMA7	3.978	0.721	0.520		
SNW		4.026			0.793	0.376
	SNW1	4.413	0.719	0.517		
	SNW2	2.870	0.311	0.097		
	SNW3	4.391	0.730	0.533		
	SNW4	3.946	0.677	0.458		
	SNW5	4.250	0.665	0.442		
	SNW6	4.500	0.716	0.513		
	SNW7	3.815	0.269	0.072		

Note: internal consistency (composite reliability, CR).

As shown in Table 2, the CR values of the factors of LRKD (0.781), LRKS (0.726), LRKR (0.774), TCE (0.839), SMA (0.876), and SNW (0.793) are higher than 0.7. Hence, according to Hair et al. [37], the data of the factors as mentioned above are considered consistent. However, the CR value of LRKG (0.025) is far below 0.7. Thus, the data of LRKG lack internal consistency, which indicates some of the items of LRKG need to be deleted.

6.1.1. Convergent Validity

To examine the convergent validity, the outer loading of the indicators should be higher than 0.708 and the AVE of the construct/dimensions should be more than 0.5 [34]. As shown in Table 2, for LRKG, the outer loadings of its indicators (LRKG4, LRKG5, LRKG6, LRKG7, and LRKG8) are all lower than 0.4. Hence, according to Hulland [43] and Hair et al. [41], those indicators are suggested to be eliminated. While the outer loadings of the indicators, i.e., LRKG1 (0.476), LRKG2 (0.536), and LRKG3 (0.558) were between 0.4 and 0.7, which should be considered for removal only when deleting the indicator leads to an increase in the CR (or the AVE). Hence, the researcher further tested the three indicators by checking the changes in CR and AVE when deleting one by one. Unfortunately, the CR and AVE showed no obvious improvement. Hence, all the three indicators were deleted finally; then, the construct LRKG was removed from LRKM because none of its indicators could be retained.

For LRKS, the outer loadings of the indicators, i.e., LRKS1 (0.478), LRKS2 (0.591), LRKS3 (0.505), and LRKS4 (0.586) were also between 0.4 and 0.7, which should be considered for removal only when deleting the indicator leads to an increase in the CR (or the AVE). Hence, the researcher further deleted the four indicators after checking the changes on CR and AVE when deleting one by one. Again, no obvious improvement in the CR and AVE appeared. Hence, all the indicators were deleted finally; then, the construct LRKS was taken out from LRKM because none of its indicators were retained.

6.1.2. Discriminant Validity

To assess the discriminant validity, both the Fornell–Larcker criterion [44] and the Heterotrait Monotrait Ratio (HTMT) [37] were employed, and the results are provided in Tables 3 and 4, respectively.

Table 3. Fornell–Larcker criterion result.

	Creativity	LRKD	LRKM	LRKR	SMA	SNW	TCE
Creativity	0.761						
LRKD	0.603	0.832					
LRKM	0.606	0.538	0.712				
LRKR	0.589	0.317	0.334	0.754			
SMA	0.283	0.414	0.377	0.256	0.721		
SNW	0.117	0.588	0.387	0.336	0.219	0.709	
TCE	0.511	0.611	0.224	0.186	0.255	0.329	0.711

Note: diagonal elements are the square roots of the AVE values.

Table 4. HTMT results.

	Creativity	LRKD	LRKM	LRKR	SMA	SNW	TCE
Creativity							
LRKD	0.646						
LRKM	0.853	0.932					
LRKR	0.769	0.426	0.926				
SMA	0.978	0.587	0.666	0.496			
SNW	0.828	0.730	0.880	0.714	0.820		
TCE	0.959	0.565	0.858	0.881	0.654	0.845	

Note: $HTMT_{0.85} < 0.85$; $HTMT_{0.90} < 0.90$; $HTMT_{inference} < 1.00$ (ssignificantly).

According to the Fornell–Larcker criterion results in Table 3, the square root of each construct’s AVE is larger than its correlation with other constructs, i.e., creativity (0.761), LRKD (0.832), LRKM (0.712), LRKR (0.754). Hence, according to Hair et al. [40], the discriminant validity of data could be approved.

Meanwhile, the HTMT results in Table 4 show that the values of the constructs are higher than 0.85, which indicates a discriminant validity issue according to the $HTMT_{0.85}$ (<0.85) criterion, while for the results higher than 0.90 show the problem based on the $HTMT_{0.90}$ (<0.90) criterion [34]. However, Hair et al. [34] claimed that $HTMT_{inference}$ (<1.000) does not indicate discriminant validity issues. So, as long as the results are not more than 1.0, it does not indicate discriminant validity issues. Thus, thoroughly considering the results of cross loading the Fornell–Larcker criterion and the HTMT criterion, the discriminant validity of the study data is significant and has no issues. Table 5 summarizes the measurement model assessment results after some items and constructs were removed

Table 5. Summary for measurement model assessment (after items deleted).

Latent Variable	Indicators (Items)	Mean	Loadings (>0.708)	Indicator Reliability (>0.501)	Composite Reliability (>0.7)	AVE (>0.5)	Discriminant Analysis (HTMT)
LRKD		4.061			0.918	0.692	YES
	LRKD1	3.946	0.773	0.598			
	LRKD2	3.957	0.834	0.696			
	LRKD5	4.000	0.885	0.783			
	LRKD6	4.304	0.892	0.796			
	LRKD7	4.098	0.766	0.587			
LRKR		4.312			0.834	0.569	YES
	LRKR1	4.239	0.869	0.755			
	LRKR2	4.000	0.600	0.360			
	LRKR4	4.380	0.774	0.599			
	LRKR5	4.630	0.749	0.561			

Table 5. Cont.

Latent Variable	Indicators (Items)	Mean	Loadings (>0.708)	Indicator Reliability (>0.501)	Composite Reliability (>0.7)	AVE (>0.5)	Discriminant Analysis (HTMT)
TCE		4.286			0.711	0.506	YES
	TCE3	4.196	0.713	0.508			
	TCE5	4.391	0.750	0.563			
	TCE6	4.272	0.798	0.637			
SMA		4.212			0.720	0.518	YES
	SMA2	4.685	0.734	0.539			
	SMA4	4.384	0.748	0.560			
	SMA5	4.034	0.830	0.689			
	SMA6	3.978	0.846	0.716			
	SMA7	3.978	0.722	0.523			
SNW		4.435			0.709	0.503	YES
	SNW1	4.413	0.721	0.520			
	SNW3	4.391	0.781	0.610			
	SNW6	4.500	0.716	0.513			

6.2. Assessment of Structural Model (Hypothesis Testing)

After the two constructs of LRKG and LRKS were deleted from the assessment of the measurement model, H2 and H4 were not subject to verification. Table 6 provides the path coefficients of LRKD and LRKR towards creativity. It can be seen that the path coefficient of LRKD towards creativity equals 0.411 with Sig. (2-tailed) value 0.041, which is significant at the 0.05 level (2-tailed). Thus, the logistics-related knowledge dissemination positively affects creativity; H3 is accepted. The path coefficient of LRKR towards creativity equals 0.321 with Sig. (2-tailed) value 0.044 less than 0.05. Thus, the logistics-related knowledge responsiveness positively affects creativity; H5 is accepted.

Table 6. The path coefficient of LRKM factors and creativity.

Hypothesis	Path Coefficient	T Value	Significance Level	p Value
H2: LRKG → CREATIVITY	–	–	–	–
H3: LRKD → CREATIVITY	0.411	7.925	**	0.041
H4: LRKS → CREATIVITY	–	–	–	–
H5: LRKR → CREATIVITY	0.321	5.693	**	0.044

** Significance at level 0.05 (two-tailed).

Figure 2 presents the structural model of LRKM towards creativity. It shows that the path coefficient of LRKM towards creativity is equal to 0.453 with Sig. (2-tailed) value 0.000 which is significant at the 0.01 level (2-tailed). Therefore, LRKM positively and significantly affects creativity; H1 is accepted.

Moreover, this study also analyzed the effect size (f^2 and q^2) of significant relationships for factors of LRKM towards creativity. As shown in Table 7, the f^2 value of LRKD is 0.203 with q^2 value 0.184, followed by f^2 value of LRKR (0.151) and q^2 value (0.119). Hence, comparing with LRKR, LRKD is suggested to contribute more towards creativity, because the degree of accuracy (f^2) and relevancy (q^2) of LRKD is higher and the path co. of LRKD (0.411) is also higher. However, the most contributing factor towards creativity is LRKM, with path co. value 0.459, f^2 value 0.305, and q^2 value 0.202. Hence, it implies that when

the constructs of LRKD and LRKR function together, the factor LRKM contributes further towards creativity.

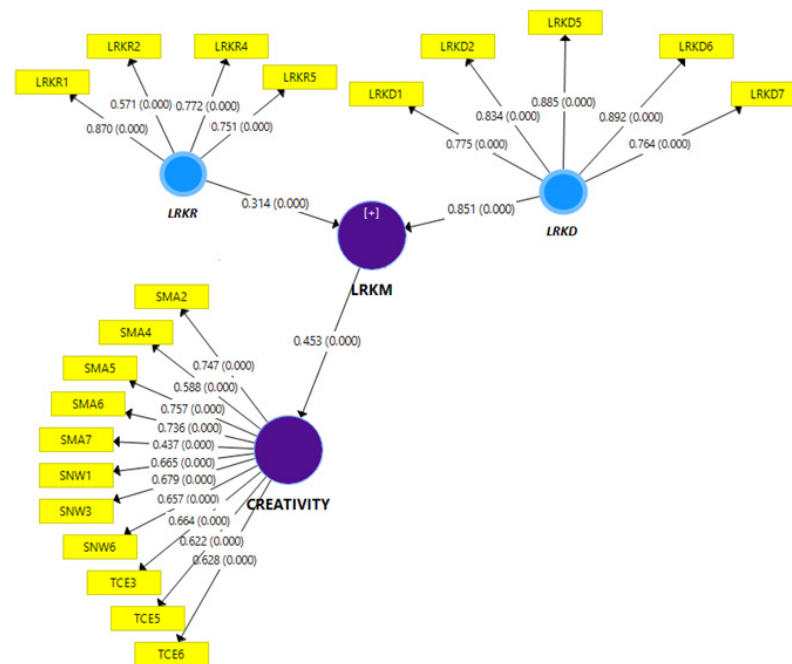


Figure 2. Model of LRKM towards creativity.

Table 7. Summary of results—path coefficients, f^2 and q^2 .

Constructs	Endogenous					
	Path Co.	LRKM		CREATIVITY		
		f^2	q^2	Path Co.	f^2	q^2
LRKD	0.841	*** 0.501	** 0.304	0.411	** 0.203	** 0.184
LRKR	0.329	*** 0.426	** 0.266	0.321	** 0.151	* 0.119
LRKM				0.459	** 0.305	** 0.202

Note *: 0.02–0.14 = small; **: 0.15–0.34 = medium; and ***: 0.35–1.00 = large (Cohen, 1988).

6.3. Managerial Implication

The study revealed that the logistics-related knowledge management of courier services significantly and positively contributes to developing creativity in the aspects of creative team efficiency, service newness, and service marketability. This is in line with Gino et al. [45] who explained that tasks related to the experiences of team members stimulated creativity through collective awareness of “who knows what” which promoted the dissemination and responsiveness of knowledge held by members. Furthermore, active engagement in mutual learning and information sharing fosters high-order forms of thinking, enabling group members to develop new cognitive schemas and frame issues creatively and innovatively [46]. As most of the knowledge management literature has adopted, knowledge processes towards teamwork effectively endorse the importance of what teams do with their knowledge, instead of what they know [47,48]. Hence, managing logistics-related knowledge in courier services is suggested to be implemented systematically and in team spheres to better build creativity.

Notably, amongst the four constructs of the logistics-related knowledge management, only the logistics-related knowledge dissemination and responsiveness were found to positively and significantly affect creativity. Thus, logistics-related knowledge dissemination and logistics-related knowledge responsiveness were contingent upon contextual and interpersonal processes and states among employees, members, customers, and business partners, such as participative leadership, trust, and a learning climate in teams to drive

creativity in the development of new services [31,49]. Today, under the fast changing environment boosted by technology, courier companies shall be more sensitive and responsive to competition by increasing the level of interactions and responses, which further increases the cross fertilization of innovative ideas towards the best services [50].

On the other hand, although the proposed two constructs (i.e., the logistics-related knowledge generation and shared interpretation) were removed during the measurement model assessment and dismissed to verify their effects on creativity, it does not mean they are not important and can be ignored. Actually, previous studies have recognized and demonstrated the importance of domain-relevant skills and knowledge on individual creativity [47,51]. Individuals may not have any difficulty in applying their knowledge to generate novel solutions when they possess a wide array of knowledge and information. However, when it comes to a team level, the mere possession of knowledge by team members may be insufficient if their knowledge is not shared, thereby failing to influence the generation of information and collective problem-solving processes [52] towards creativity. Hence, it suggests that courier companies should further improve their practices of logistics-related knowledge generation and shared interpretation to be more consistent and reliable towards developing creativity. In this way, the total effects of logistics-related knowledge management can be expected to further strengthen creativity.

7. Conclusions

To conclude, the operations of managing logistics-related knowledge in courier companies play a significant role in the development of creative services. By having a better understanding of the hidden mechanism of managing logistics-related knowledge towards developing creativity, this study hoped to help courier companies focus and prioritize which organizational resources should be utilized, how they can be utilized, and towards what target they should be utilized in order to boost their innovations and competitiveness. Additionally, as it has inherent connections with the booming e-business companies, future studies may empirically explore how the creativity of courier services could facilitate the development of e-business companies and if there is some overseen catalyzer. In this way, the momentum of both sectors for economic development could be brought into further play.

To conclude, this study, by applying the theory of knowledge management into logistics management, proposed and empirically verified the framework of logistics-related knowledge management with the purpose of achieving better creativity, especially for courier service providers in Malaysia. To note, the proposed logistics-related knowledge management was limited to concentrate on personnel's behavior of integrating, developing, and exploiting knowledge in their logistic and courier operation environment. In other words, logistics or the courier service was treated as a coherent whole for behavioral research; it did not extend into the knowledge of specific logistics components (such as transportation, storage, distribution, etc.). This could be one worthy direction of future research.

The results implied that the operations of managing logistics-related knowledge in courier companies play a significant and positive role on the development of creative services. More specifically, the couriers shall attach more importance to the aspects of dissemination and responsiveness as these were detected as two key apparent contributors to developing creative services. While for generation and shared-interpretation in logistics-related knowledge management, although they were technically removed at the early stage of the data analysis, their positive potentials could still be realized if they could be operated more consistently and reliably towards creativity. If the four components could function together more holistically and systematically, the total effects on creativity should be enlarged further.

However, how these four components interact with each other and to what extent can they affect creativity have not yet been explored in this study. This is suggested to be another worthy direction of future study. Because by deepening the understanding of

the hidden mechanism of “what makes courier service creative” from the perspective of managing logistics-related knowledge, it is hoped that courier companies could be more effectively focusing and prioritizing what logistics-related knowledge should be utilized, how it can be utilized, and towards what target it should be utilized in order to boost their innovations and competitiveness more efficiently. As it has inherent connections with the booming e-business companies, future studies may also empirically explore how the creativity of courier services could facilitate the development of e-business companies and whether there is any overseen catalyzer affecting such inter-relationships. Towards this end, the momentum of both sectors for economic development could be brought into further play.

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