

SUPPLY CHAIN QUALITY MANAGEMENT IN SERVICES SECTOR: A RESEARCH AT UNIKL, MARA HIGHER EDUCATION INSTITUTE

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Abstract: *The Supply Chain Management (SCM) model is broad. Its applicability applies at all industrial sectors from manufacturing, medical, agricultural to the education sector. The aim of this paper is to reveal the Supply Chain Quality Management activities in education sector. This research is significant in view of the need in ensuring the supply chain activities at education sector is align with the objective to provide the best service to the stake holders especially the future human capital resource, which the student. The research will be carried out at University Kuala Lumpur Strategic Business Unit (SBU) or campuses, which is MARA higher education institute. The research aims at several areas related to supplier evaluation. The first objective is to analyse the gap between SBU practices comparing with the literature review through previous case studies and literature review. Based on the previous research, there are several popular supplier evaluation criteria being used such **Price, Technology, Quality, Service, Responsiveness and Delivery**. In addition to this objective is to analyse the difference of supplier evaluation criteria for each UniKL SBU. There are 12 UniKL SBU in total, that will be involved in this study. To achieve the objective, the research activities will compare the assessment criteria from each SBUs. In the next phase a comprehensive table will be developed to depict the different of practice for each of campuses. Based on the preliminary study and investigation, we identified there are some variances of suppliers evaluation criteria at several campuses. At later part this research will relate with the gap that we have found analyse why there are variances in supplier evaluation between Strategic Business Unit (SBU) of UniKL. This research also will make comparison of supplier evaluation criteria with TQRDCBE model that widely used by Manufacturing Sector and UniKL campuses. The third objective is to make assessment on the acceptance level of UniKL procurement unit toward TQRDCBE model. Several hypothesis can be developed such as the different nature of core business strategies between the SBUs, the coordination or centralization issues linked with the corporate strategies and the understanding of each SBU towards best model of supplier evaluation. This research will benefit the organization from the perspective of improving the supply chain quality management through several potential recommendations.*

Key words: Supply Chain Management (SCM), Supply Chain Quality Management (SCQM), Strategic Business Unit (SBU)

Introduction

Recent marketplace is more toughly competitive than before. Our forwarding and increasing in globalization of technology make all the business out there become huge gap of competition towards another. Lot of researcher agreed that to succeed in nowadays world is exiting but very challenging. In order to pursue their business and always moving forward need an extra knowledge and build up experiences. In this challenging world, there are many types of business built especially when young and fresh innovator come into the world and come out with such a brilliant and profitable ideas. Therefore, to maintain the business in great position, they need a strong relationship with supply chain partners who possess essential complementary capabilities (Stanley, Lisa, Jeffrey, 2007).

According to (Stanley, Lisa, Jeffrey, 2007), they have introduced a

supply chain flows which known as The Beer Game (TBR). TBR was originally developed at Massachusetts Institute of Technology and purposely to stimulate the simple performance with 6-tier supply chain. In other research, this supply chains flows generally known as Supply Chain Model.

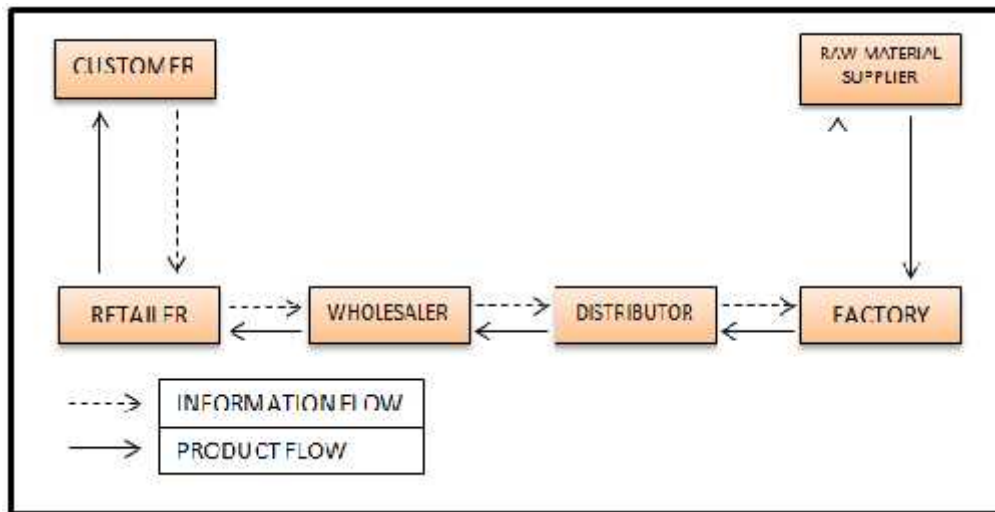


Figure 1-1 shows basic supply chain diagram. In the diagram, it clearly shows there are two different arrows represented information flow and product flow. The information ed requirements of product specification, and delivery order after finish product. In basic supply chain, the components contributed are linked to each other. The information from customer also linked and informed from one to another as well. The last information receiver would be supplier. Once the product is ready to shipment, the flow will slightly backward from information flow. Starting with supplier and end up receive by customer. The main focus of this research is at supplier stages.

FIGURE 1 : Supply Chain Flows (Stanley, Lisa, Jeffrey, 2007)

The basic supply chain has transformed into simpler diagram to indicate the main focus of this study.

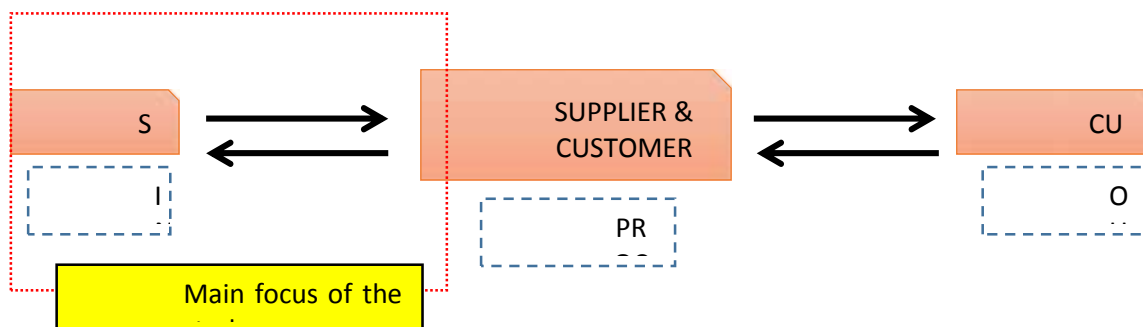
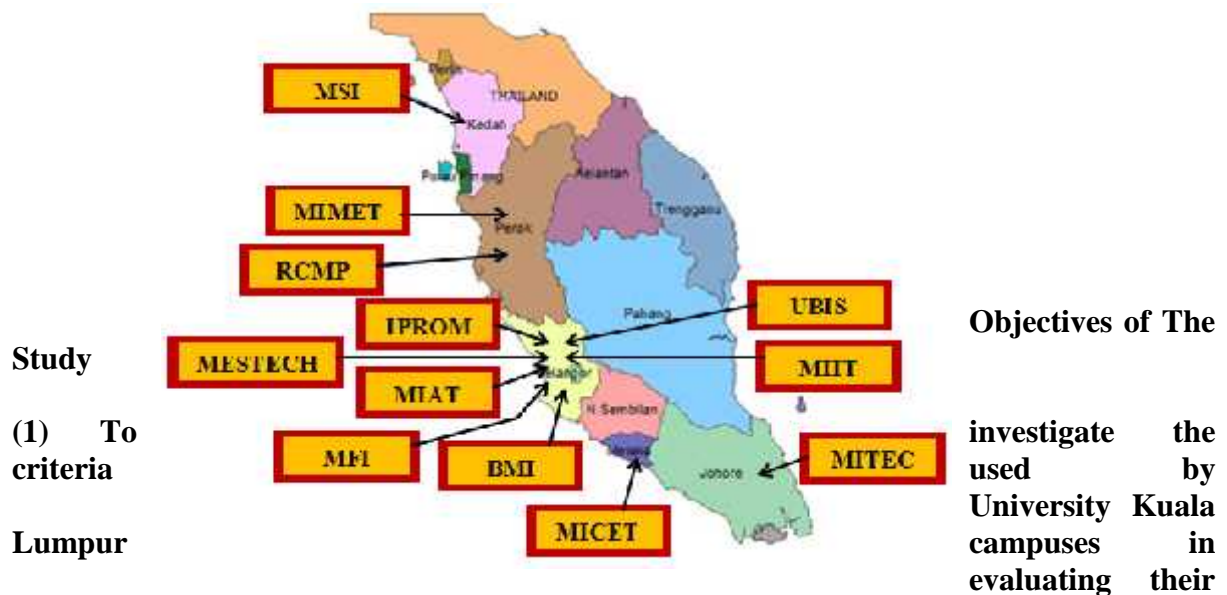


FIGURE 2: Main Focus of Study in SCM

This research will focus on the supplier assessment criteria at Universiti Kuala Lumpur (UniKL). At the current moment, there are 12 UniKL campuses throughout Malaysia. The following map illustrating the location of UniKL campuses.

Figure 3 : UniKL Campuses



existing supplier performance.

The are several aims in this objective. The first aim is to investigate the criteria of supplier assessment. The second aim is to compare the assessment criteria among all UniKL campuses. The third aim is depend on the earlier finding. If there is a different in the supplier assessment criteria, an analysis to be done to investigate on the differences between campuses.

Different organization has different purpose and background. In evaluating supplier's performance also, they might use different criteria which more reliable and compatible with them. In literature review, there are several criteria that have been studied by authors. General conclusion can be made is most of the authors have come out with 6-7 similar criteria among them. Therefore, an investigation regarding criteria used by UNIKL campuses in assessing their supplier's performance will be conducted. Hence, the result will be analysed with literature analysis.

(2) To compare gap of supplier's evaluation criteria between University Kuala Lumpur and industry practices.

The researcher will distribute questionnaires to all procurement units at UNIKL campuses and Industry organization. The criteria would be based on top chosen by literature's authors. Complete comparison table will tabulate the data of criteria by UNIKL campuses and industry practices.

(3) To measure acceptance level of University Kuala Lumpur towards industry practices.

During questionnaire distribution, the acceptance level of UNIKL towards TQRDCBE criteria will determine. The questionnaire data will be analysed by using Microsoft Excel.

Literature Review

Many researches have conducted by referring to Dickson (1966) as a founder of criteria's in evaluating supplier's performance. Previously, he has done distributing questionnaires survey by mailed to about 300 commercial organizations, primarily manufacturing firm, (S. Hossein, Mohammad Dadashzadeh and Muthu Subramanian, Journal of Applied Business Research). [22] The surveys aim to define the most important criteria in selecting and evaluating suppliers. There are 23 listed ranking criteria by Dickson's.

R	Criteria	R	Criteria
1	Quality	2	Delivery
3	Performance history	4	Warranties and claim policies
5	Production facilities and capacity	6	Price
7	Technical capability	8	Financial position
9	Procedural compliance	10	Communication system
11	Reputation and position in industry	12	Desire of business
13	Management and organization	14	Operating controls
15	Repair service	16	Attitude
17	Impression	18	Packaging liability
19	Labor relations record	20	Geographical location
21	Amount of past business	22	Training aids
23	Reciprocal arrangements		

Table 1 Criteria by Dickson (Laura, 2011)

Nowadays, major literature studied based on these 23 criteria presented by Dickson. But the ranking may change according to the changes of environment and nature of business (Laura, 2011). [23] As for example, technology used by manufacturing industry may differ from educational industry.

According to Sherry, (2005), [27] the advantages that will be gained by implementing supplier's performance measurement were as follows:-

- i. The organization should able to manage what they has been measured. The performance of suppliers will be measured according to several criteria that will discuss below. The criteria might be as for example quality and delivery. In this case, the organization shouldn't able to manage what they don't measure. The quality of the suppliers should measure according to the quality of the product supplied by checking the defect and reject. Delivery usually been measured on the time goods arrived whether on-time, delay or not received. But for several criteria that the organization not measured, they absolutely can't manage them. Besides no specification indicated on those criteria, they also don't have the significance to do so.
- ii. The suppliers will continuously improve themselves when they realized that they were measured.

In supply chain relationship, all the stages were linked to each other. The relationship is giving benefit and advantage to each others. Therefore, in this case, an organization's piece of success

is depending on the suppliers. This matter is due to the quality, delivery, price, and many other criteria of the supplier. They function as supply goods or parts and components to the organization. Succeeding in supplying the parts and components will contribute the piece of success to the organization as mention earlier. For the opposite case which in supplier's side, their piece of success also depends on the organization who being supplied by them. By growing a good relationship of organization and suppliers, they will able to achieve win-win situation each other. In order for them get the tender or contract, they will push themselves to serve the best. But the performance may decrease with the time being. Therefore, by realizing that they always been measured as for example monthly, they absolutely have no right to give bad service for example late delivery, low quantity from what being ordered and so on. Hence, they will continuously improve themselves to maintain the contract and relationship with the customer (organization).

- iii. The organization should able to increase the competitiveness by shrinking order cycle time and inventory levels.

In Lean Manufacturing, there are terms of inventory. Inventory means the storage of receiving goods and also finishing goods. By implementing supplier's performance measurement, the organization should able to identify the ability of the suppliers deliver the incoming goods. A productivity level of a process in an organization also depends on the level of inventory. For better image and production, the organization was advised to shrink the amount of quantity ordered but in frequent cycle time.

According to Sherry, (2006), [28] supplier evaluation well defined as a process of evaluating the supplier's process and practices performance. The performance was monitor along aiming the cost reduction, risk mitigation and driving continuous improvement. The activities involve focusing on value-added resources instead of reacting to supplier's performance problems such as defects, inventory and late deliveries. Supplier's performance evaluation and measurement also helps the organization in find the best solution to prevent from these related problems to occur. There are studies that have been identified the most successful and critical criteria implemented in an organization. Development of supplier's evaluation criteria was begun by Dickson. By conducting questionnaire surveys to 300 commercial organizations primarily in manufacturing industry, he finally came out with 23 ranked criteria.

A table of comparison several supplier assessment criteria has been developed by Laura, (2011).The table as follows:

Table 2: Criteria by Laura, (2011)

Criteria/ Source	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	Total	
Quality	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	19
Price/Cost	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X			17
Performance Delivery	X	X	X		X	X	X	X	X	X			X	X	X	X	X	X			15
Service	X			X	X	X		X		X	X		X		X		X	X			11
Financial strength	X	X		X				X				X		X	X		X		X		9
Lead-time			X		X	X	X			X		X				X	X				8
Technical ability	X	X		X										X	X	X		X	X		8
Flexibility	X		X			X	X					X				X					6
Production Capacity		X										X			X	X	X		X		6
Development				X		X	X				X				X						5
Management attitude				X										X			X		X		4
Fill rate		X				X															2
Geographic location		X													X						2

From table above, there are 19 authors from different literatures has been investigated by Laura, (2011) on supplier's evaluation criteria. She has come out with 13 criteria which are Quality, Price/cost, Performance delivery, Service, Financial strength, Lead-time, Technical ability, Flexibility, Production capacity, Development, Management attitude, Fill rate and Geographical location.

Table below shows an analysis of Criteria Comparison in Evaluating Supplier's Performance based on literature approach.

No	Criteria	Dicks on	Webe r	Laura	S. Hossein	Total
1	Quality	•	•	•	•	4
2	Delivery	•	•	•	•	4
3	Performance History	•	•			2
4	Warranties and Claim Policies	•				1

5	Production Facilities and Capacity	•	•	•	•	4
6	Price	•	•	•	•	4
7	Technical Capability / Ability	•	•	•	•	4
8	Financial Position and Strength	•	•	•	•	4
9	Procedural Compliance	•				1
10	Communication System	•				1
11	Geographical Location		•		•	2
12	Management and position in the industry		•		•	2
13	Reputation and position in the industry		•			1
14	Service			•	•	2
15	Lead time			•		1
16	Flexibility			•		1
17	Development			•		1
18	Attitude				•	1

Table 3: Supplier Assessment Criteria Comparison

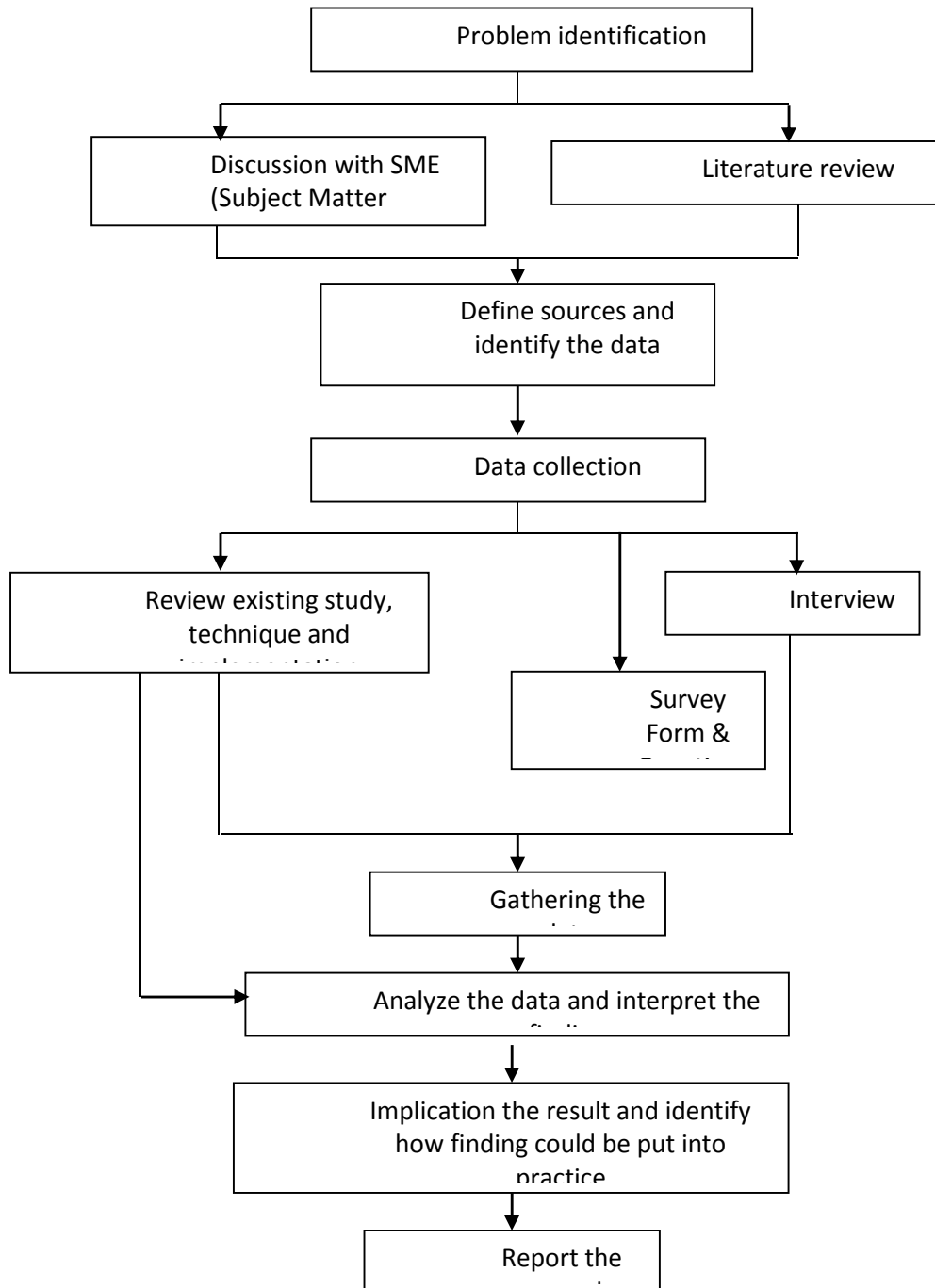
TQRDCBE Model

TQRDCBE are criteria that used by Venture in evaluating their supplier's performance. According to Agilent, (2000), the basic strategy for establishing the working relationship between customers and suppliers, is through the establishment of mutual performance expectations and measures, feeding back the results, initiating corrective actions to ensure the continuous performance improvements and over time, rewarding the best with the opportunity for more business through new R&D product.

T	Technology
Q	Quality
R	Responsiveness
D	Delivery
C	Cost
B	Business
E	Environment

Research Methodology

This chapter will discuss about the methodology of the research. To conduct the investigation, it will include branches of campus University Kuala Lumpur entire Malaysia. Data for the research were collected through **Questionnaires** and **Interview**.



Result (Preliminary)

At this stage, this research is focusing at the data collection through interview and survey questionnaire at all UniKL campuses.

Research Objective 1. Supplier Assessment Criteria at UniKL Campuses.

There are 12 UniKL campuses. Preliminary result at one UniKL MITEC campus found that there are only 5 supplier assessment criteria that is been used for supplier assessment purpose.

The criteria are as following: Delivery, Quality, Service, Pricing and Responsiveness. This preliminary finding provides several important indications:

- a. There is a gap between supplier assessment criteria in Literature Review and the implementation at UniKL MITEC. Based on Literature review, there are 10 most important supplier assessment criteria that commonly used by the industry based on several research journal.
- b. There is a potential that the supplier assessment criteria is not adequately been perform. Further investigation is required to justify the adequacy supplier assessment criteria.

At the end of this research objective 1, the following table in matrix form will be able to display the practice by all campuses by comparing with the top 10 criteria in the literature review (based on the previous studies).

Campus	Supplier Assessment	10 Supplier assessment criteria based on Literature Review										Total
		1	2	3	4	5	6	7	8	9	10	
MITEC	Yes	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					4
X	?	?	?	?	?	?	?	?	?	?	?	
Y	?	?	?	?	?	?	?	?	?	?	?	

Table 4 :Preliminary Finding Criteria of UNIKL Campus based on Literature analysis

1	Quality	6	Technical Capability (Technology)
2	Delivery	7	Financial Position and Strength
3	Performance History	8	Geographical Location
4	Production Facilities and capacity	9	Management and position in the industry
5	Price	10	Service

Research Objective 2: To compare gap of supplier’s evaluation criteria between University Kuala Lumpur and industry practices.

At this level, the main objective is to identify a company that practising the TQRDCBE model in the supplier performance assessment. Further investigation found that several manufacturing companies in Johor Bahru and Singapore implementing this model. For example Venture Technocom System, Flextronics and Celistica.

One interview with Senior Quality Engineer from Venture Technocom System has been conducted. The interview has been recorded. The preliminary finding to be shared at this juncture is as following points.

1. The TQRDCBE model is commonly used by the Contract Manufacturing Companies (CMC) in the Supply Chain Performance Assessment Process. It is used to evaluate the supplier’s performance. The model is been used by the customer to evaluate the performance of CMS as well. The customer such as Agilent Technologies, AVAGO Technologies, EMULEX Corporation and Hypercom are some of many other customers that using this model for performance assessment.
2. The following table shows how the TQRDCBE Model is tabulated for assessment. The assessment is systematic with a very clear assessment criteria and weightage.

TQRDCBE Weightage Table

T	Technology	T1 (60%)	Provides Current/Necessary Technology Support
		T2 (N.A.)	Future/New Technology (Product & Process)
		T3 (40%)	Engineering Expertise
Q	Quality	Q1 (12%)	Process Control & Improvement
		Q2 (88%)	Quality Scorecard
R	Responsiveness	R1 (30%)	Management / Production Commitment
		R2 (35%)	Service and Support
		R3 (35%)	Flexibility to Changes
D	Delivery	D1 (50%)	On-time Shipment & Cycle Time
		D2 (30%)	Order Fulfillment System
		D3 (20%)	Packaging & Shipping Compliance
C	Cost	C1 (40%)	Cost Leadership
		C2 (40%)	Cost Reduction Program
		C3 (20%)	Cost Containment
B	Business	B1 (50%)	Business Planning
		B2 (50%)	Business Support - Attention to Avago's Strategy
E	Environment	E1 (100%)	Environment Management

Table5:
TQRDBE
Model

3. The following table shows

preliminary finding on the comparison between UniKL MITEC supplier assessment criteria comparing with the common practice at CMC practice. Based on below table, the gap is found at two criteria which is Business and Environment. This table will be filling up by the rest of UniKL campuses for complete analysis.

PRACTICES	CRITERIA						
	T	Q	R	D	C	B	E
INDUSTRY	✓	✓	✓	✓	✓	✓	✓
UNIKL (MITEC)	✓	✓	✓	✓	✓		

Table 6: Gap comparison between UniKL (MITEC) and CMC practice.

Summary

At this stage, this research revealed that there is gap between the supplier assessment implementation at UniKL campuses with previous research that has been selected based on the literature review. TQRDCBE model is found to be a systematic approached that can be considered as reference for UniKL supplier assessment. Based on comparison at one UniKL campuses, we also see the gap in the practice. Moving forward, is to complete the research by getting all relevant information from all campuses. More investigation will be done in getting the reason of findings. This research has potential to be extended to several areas in the context of supply chain quality management.

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