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The Study Information Technology Assessment for Transportation Business with SCOR Digital Standard and COBIT2019 Standard by CMMI Model

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Abstract

The research aims to study the evaluation model of information technology for transportation businesses on appropriate services using SCOR digital standard (DS) and COBIT2019 framework through the CMMI method. The study emphasizes evaluating the transportation business service by studying basic information through various and suitable dimensions with the mixed method. The received data were to create the interview form assessed by three information technology experts, then used to interview five executives (president or vice-president of the technological management officers) and twelve involved personnel with direct experience in management and transport business service according to the SCOR DS and COBIT2019 framework, which includes ITS, DSS 01-06, and MEA02, a total of 24 Indicator/Process from 17 respondents. The results were assessed using CMMI model software and interpreted the data by level indication concordant with the contributions that occurred authentically. The result revealed from all experiences of the respondents' professionality that all of the evaluation results as the overall image could reach the passing level from beginning to moderate only (Level1-3). Hence, it has to improve and develop services continuously and in various processes to meet the conclusion and bring the standardized performance to do the new paradigm standard, which can perfectly enhance the measurement of performance effectiveness according to the indicators, including making a conclusion of the result for criteria development of the organizational evaluation to be Smart capable of entering the sustainable digital transformation.

Keywords: Information technology assessment, Transportation business, SCOR digital standard
Type of Article: Research Article

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ผ่านการรับรองคุณภาพจากศูนย์ดัชนีการอ้างอิงวารสารไทย (TCI.) อยู่ในกลุ่ม 1 สาขามนุษยศาสตร์และสังคมศาสตร์

การศึกษาการประเมินเทคโนโลยีสารสนเทศสำหรับธุรกิจขนส่งด้วยสคอร์ดิจิทัลสแตนดาร์ด และโคบิต2019 ด้วยซีเอ็มเอ็มไอโมเดล

เขมขนิษฐ์ แสนยะนันท์ธนะ[1]*, วันชัย รัตนวงศ์[2] และ วรินทร์ วงมณี[3]

บทคัดย่อ

การวิจัยนี้มีวัตถุประสงค์เพื่อศึกษารูปแบบการประเมินเทคโนโลยีสารสนเทศ สำหรับธุรกิจขนส่งด้านบริการที่เหมาะสมโดยใช้สกอร์ดิจิทัลสแตนดาร์ด และกรอบมาตรฐาน COBIT2019 โดยวิธี CMMI เน้นประเมินการบริการธุรกิจขนส่ง โดยการศึกษาข้อมูลพื้นฐานในด้านมิติต่างๆ ที่เหมาะสม ใช้การวิจัยแบบผสมผสาน นำข้อมูลที่ได้มาสร้างแบบสัมภาษณ์ ผ่านการประเมินจากผู้เชี่ยวชาญด้านเทคโนโลยีสารสนเทศ จำนวน 3 คน และนำแบบสัมภาษณ์นี้ไปใช้ในการสัมภาษณ์ผู้บริหาร ระดับประธานหรือรองประธานเจ้าหน้าที่บริหารฝ่ายเทคโนโลยีจำนวน 5 คน และบุคลากรปฏิบัติการที่เกี่ยวข้อง จำนวน 12 คน ที่มีประสบการณ์ตรงในการจัดการการบริการของธุรกิจขนส่งตามหลักการของสคอร์ดิจิทัลสแตนดาร์ด และกรอบโคบิต 2019 ประกอบด้วย ITS, DSS 01-06 และ MEA02 จำนวน 24 ตัวชี้วัด/กระบวนการ จากผู้ตอบแบบสัมภาษณ์จำนวน 17 คน และนำมาผลจากแบบสัมภาษณ์ประเมินด้วยซีเอ็มเอ็มไอโมเดลซอฟต์แวร์ ผลการแปลข้อมูลระบุระดับตามผลงานที่เกิดขึ้นจริงจากประสบการณ์ความเชี่ยวชาญของผู้ตอบแบบสัมภาษณ์ทั้งหมด ผลวิจัยพบว่าการประเมินทั้งหมดภาพรวมอยู่ในขั้นผ่านที่ระดับต้นไปถึงระดับกลางเท่านั้น (Level 1-3) ต้องมีการปรับปรุงพัฒนาการบริการอย่างต่อเนื่องหลายกระบวนการ เพื่อสรุปและนำแนวทางมาตรฐานการดำเนินงาน จัดทำมาตรฐานกระบวนทัศน์ใหม่ อันจะช่วยสนับสนุนการวัดประสิทธิภาพกระบวนการดำเนินงานตามตัวชี้วัดให้สมบูรณ์ รวมทั้งสรุปผลการพัฒนาเกณฑ์การประเมินองค์กร ให้สมาร์ทสามารถเข้าสู่ยุคดิจิทัลทรานส์ฟอร์เมชันอย่างยั่งยืน

คำสำคัญ: การประเมินเทคโนโลยีสารสนเทศ ธุรกิจขนส่ง สคอร์ดิจิทัลสแตนดาร์ด

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1. Introduction

These days numerous leading organizations in Thailand need to create the best practices or a standard as a guideline for preparing the information system for the readiness of the digital transformation era under the information technology governance by using the COBIT2019 framework. Hence, if an organization requires smart transportation, it has to bring such a system to compare with the logistics standard: SCOR digital standard (DS) for evaluating the transportation services and developing to reach higher potential from highly competitive business. Therefore, transportation entrepreneurs must adapt and improve performance characteristics to rapidly respond to customer services in every aspect within the consistently changing environment. Furthermore, it has to improve the internal control to generate the performance evaluation that helps an organization realize that it needs improvement and how to improve it (ISACA, 2018). By this assessment, the data from the performance measurement uses to analyze for developing the system of operations and service management. Therefore, it has to determine the indicators to help the performance reach clarity. This performance evaluation selects the suitable digital standard indicators and COBIT2019 framework, assesses the CMMI model to improve the performance process and service to generate smart transportation and increases the service values and effectiveness according to the standardized enterprise governance for information technology (EGIT) (ITGI, 2018), for supervising the logistics industry and supply chains according to the universal standard (ISACA, 2019).

2. Research's objective

To study the evaluation model of information technology for transportation business on appropriate services using SCOR digital standard (DS) and COBIT2019 framework by CMMI method.

3. Conceptual framework

This research framework expresses the overall strategies and supporting activities for the research and research techniques according to objective and internal control of the management by the information technology for transportation and external determination to recruit the indicators of service management for evaluating the qualities suitable to the transportation business, including using the capability maturity model integration (CMMI) evaluation for the quality measurement of the operation pursuing the connected strategies as shown in Figure 1 and Table 2.

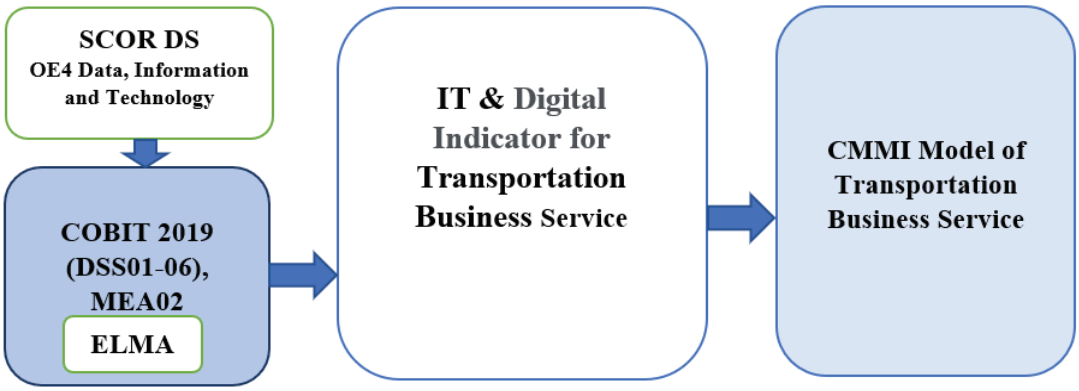

Figure 1 Conceptual framework for methods

Figure 1 is a crucial step of the research process that brings the SCOR digital standard (DS) and (DITP, 2021) ELMA criteria to evaluation through analysis from the COBIT 2019 framework. All seventeen processes are from two domains (Figure 2), including the information technology and digital indicator for transportation, to develop for digital transformation through the evaluation via the CMMI program for meeting the transporting standard of the internal control assessment. It will provide the levels of organizational performance before planning and improving the processes of conducting, following and monitoring, adapting and improving, including developing to achieve a higher standard. All details of the hierarchy indicator used to test, evaluate, and describe are in Table 2.

4. Literature review

The research emphasizes studying the appropriate SCOR digital standard (DS) indicators and COBIIT 2019 framework for the transportation business. Besides, it evaluates with CMMI model that all managers at every level have to use as a tool to control their performance to assess the quality for generating the guideline of developing the technology for organizational management, which consists of principles and theories as follows:

4.1 SCOR digital standard (DS)

The Association for supply chain management (ASCM, 2021), APICS (2017) which is a leading organization globally in the transformation, announces to use of the digital standard to refer to the supply chain operation because of the utmost essential improvement since the establishment of the SCOR in 1996 (The Supply Chain Council: SCC, 2010). The new digital standard (DS) framework is improved to be modern for combining all indicators with flexibility, economy, sustainability, and standardized criteria of process transformation supporting retail trading, strategic provision, and strategic coordination of the supply chain overall. (Figure. 1) to self-assess, and evaluate the

organization and supply chain. It enhances creating bases of the process for digital investment until 2030 The development of SCOR digital standard (DS) is from various expertized groups to let the organization have novel guidance for measuring and improving their supply chain to the growth in the industries covered more. It enhances the organization's reach potential. The use of the model is aware of all six main processes as follows: plan, source, make, deliver, return, and enable. These processes are added to the evaluating criteria, as shown in Figure 2.

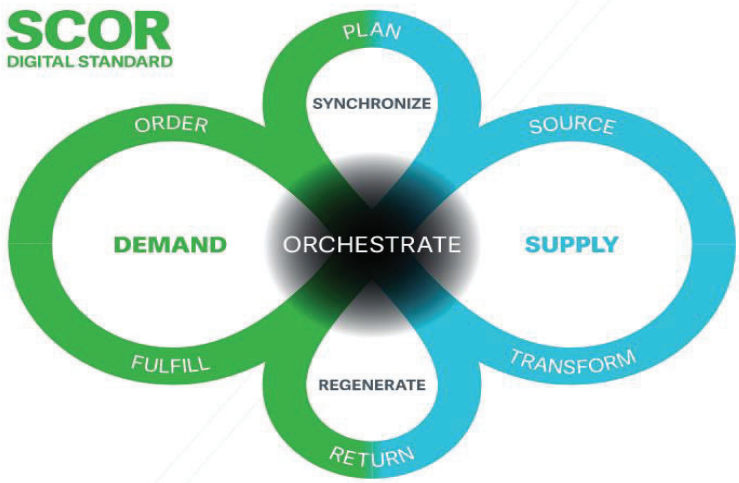

Figure 2 SCOR Digital standard (DS)
Source: Association for Supply Chain Management (ASCM, 2022)

Figure 2 a supply chain, a set of activities that continuously moves without starting or stopping from one process to another. Therefore, increasing the orchestrate is to realize the significance of strategies, business criteria, technologies, and human resources with the directions covering and creating a more effective supply chain. Hence, the study of basic secondary information on the transportation business to create digital transformation is the criteria of the COBIT2019 framework following crucial business strategies that have to possess processes on the information technology (IT) to support every stage starting from planning, operating, supervising, following, and evaluating the results of crucial strategic management.

4.2 COBIT 2019

COBIT is control objectives for information and related technology, a framework created by ISACA for information technology management and information technology governance. managing to reach transformation (ISACA, 2018), it has to be concordant with strategic management for the same goals, such as ISO, COSO, and COBIT, as practical frameworks.

COBIT has been developed and improved until the 2019 generation. It combines good governance of the standardized framework management for information technology (IT) to focus on the standard criteria improvement from the Enterprise Governance for information technology (EGIT) that how to improve and which ways to develop and extend the values to get more benefits according to good governance for achieve purposes. Hence, the COBIT2019 framework is for studying and developing. It divides into 40 processes in 5 domains as follows: 1) Evaluate, Direct and Monitor (EDM), 2) Align, Plan and Organize (APO), 3) Build, Acquire and Implement (BAI), 4) Deliver, Service and Support (DSS), and 5) Monitor, Evaluate and Assess (MEA). The research proposes only uses Deliver, Service and Support (DSS), and 5. Monitor, Evaluate and Assess (MEA). This research proposes the result only the use of Deliver, Service and Support (DSS), 6 Indicators/Process: DSS01-06 and Monitor, Evaluate and Assess (MEA) for 1 Indicator/Process: MEA02-Managed System of internal control (ISACA & CMMI Performance Solution, 2022), selects only two domains and 7 Indicators/Process by focusing on service management, as shown in the red frame of Figure 3.

Concerning Figure 3 is a framework for trying out the service management evaluation to help develop the operational process using the COBIT2019 framework to enable the organization to manage, monitor, follow, and evaluate the results pursuing the main goals, both managers and practitioners. Furthermore, it applies to control the business risks on projects organization that can measure effectiveness clearly and directly to the targets. Moreover, it can construct the digital transformation by expressing the

relationship of the COBIT2019 framework to assess the quality per indicators and enterprise governance for information technology in a global logistics company.

4.3 Information Technology in Transportation

Information technology is in every operating process, such as managing information and resources of the transporting system, such as database administration (DBAD) development, facilities management (DCMA), information technology infrastructure (ITOP), methods and tools (METL), storage management (STMG), the mobile application for transportation, etc., including the quality increase from high technology relevant the smart transportation, ITS: Intelligent transportation system (ITS), information technology management, data sharing and interoperability, transportation applications and information dissemination, and transportation applications of web technologies in applying web technologies, the focus in the digital transformation will be on advances in real-time technologies and push technologies. All of them are the resources that enable sustainable development.

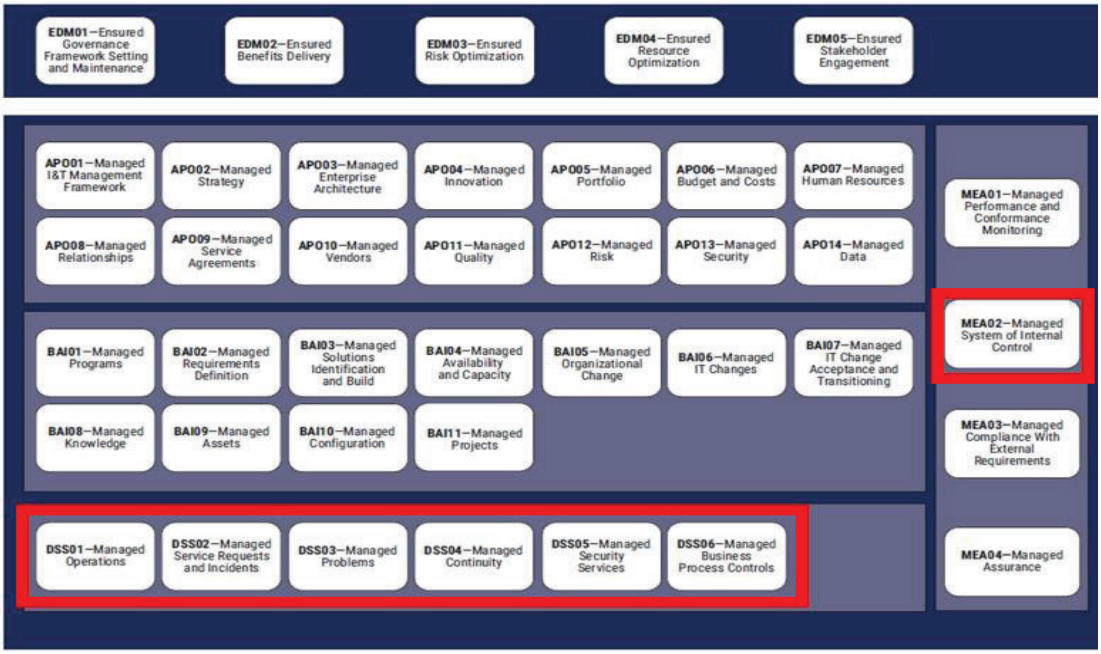

Figure 3 COBIT2019 Process Reference Model Source: (ISACA, 2019)

4.4 CMMI: Capability Maturity Model Integration

The model helps the organization improve the operational process effectively and efficiently, reducing the risks in the software development process, products, and services. It is generated by the software engineering institute, Carnegie Mellon University, USA. (CMMI Specifications, 2021). CMMI is universally acceptable. If any organization is assessed by the CMMI evaluation at a high level of 4-5, it is considered such an organization has excellent products. The development processes are credible among customers and can guarantee contributions. This model is successful from the model of systematic engineering capability from the alliance group of electronic industries to prepare for the mechanism of process adjustment by mixing the model over the disciplines in the descriptive form. CMMI is really suitable for an organization that needs to evaluate the competencies within each aspect of the process on professionals according to the CMMI model, as shown in Figure 4.

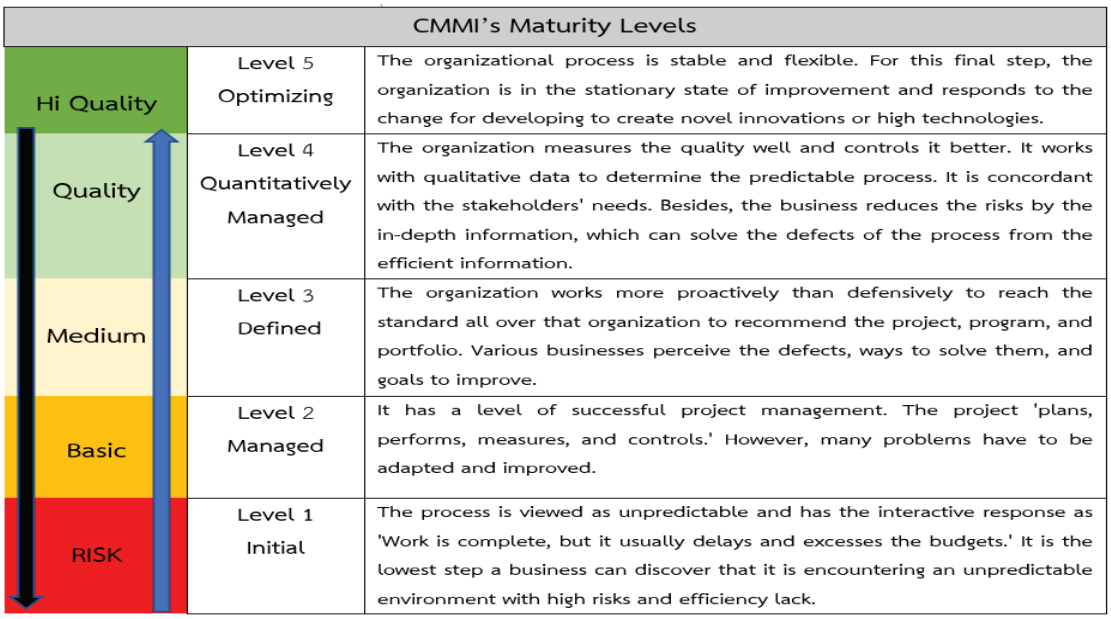

Figure 4 CMMI's Maturity Levels

Figure 4 shows the model as a screen with a maturity level starting from 1-5. The level of evaluation according to the conducted contributions of the organization has to reach 4 and 5 levels, considered high maturity. It has to develop, adapt, and grow continuously to respond to the needs of customers and stakeholders. It is the CMMI's goal to create credible environments, develop products, and improve services to be better consistently and proactively with effectiveness and efficiency.

4.5 Balanced Scorecard (BSC)

A strategic management system is for indicating and adjusting the business functions, internal and external organizations to lead to the practical evaluation that helps the organizations reach concordance and harmony. Moreover, it emphasizes what is crucial for organizational success. The factors supporting success consist of four perspectives: financial perspective, customer perspective, internal process perspective, and learning & growth perspective (Kaplan et al., 2017).

5. Methodology

5.1 Research method

This research studied the techniques used with the research as the mixed methods, which comprises quantitative data and qualitative data. Then the data was used to create the interview form by evaluating thirteen experts for adjustments and recommendations.

5.2 Population and sample

The researcher brought this form to interview 5 managers and 12 personnel, 17 person total, of the corporates relevant to information technology use.

5.3 Research instruments

This interview form is used to interview executives and workers.

5.4 Data collection

The data used to compare the transport business factors, which consisted of ITS01 – ITS09 and evaluated the CMMI forms according to five levels, specifically the information technology service management for transportation business only of the SCOR digital standard (DS) Indicator as a base for recruiting and categorizing the groups as the principles of strategic management that used information technology and digital from the COBIT2019 framework (ISACA, 2018)

5.5 Data analysis

The purpose is to evaluate the crucial processes using the Domain: Deliver, Service and Support (DSS) for the organization to supervise and evaluate the strategic alternatives, monitor the operations management concordant with the service management, (ISACA & CMMI Performance Solution, 2022) and follow the strategic success. The research selects two domains with seven processes: 1) Deliver, Service and Support (DSS) (six processes; DSS01-06), and 2) Enterprise Management Associates (EMA) (1 process; EMA02) (Figure 2). All of these have shown in Table 1 as follows:

Table 1 Comparison of SCOR DS between Hierarchy Indicator and COBIT2019

COBIT2019	SCOR DS	Assessment IT of Transportation
Domain: Deliver, Service and Support (DSS) DSS01 Managed operation DSS02 Managed service requests and incidents DSS03 Managed problems DSS04 Managed continuity DSS05 Managed security services DSS06 Managed business process controls Domain: Enterprise Management Associates (EMA) EMA02 Managed System of Internal Control	OE4 Data, Information, and Technology OE4.1 Define Supply Chain Data, Information and/or Technology Requirements OE4.2 Identify Technology Solution Alternatives OE4.3 Develop the Architecture Plan OE4.4 Select Preferred Technology Solution OE4.5 Plan and Approve an Implementation Roadmap OE4.6 Pilot and Deploy Technology Solution OE4.7 Maintain, Improve, or Retire Technology (ies)	ITS: Intelligent transportation system (ITS) ITS01: Intelligent transportation technologies ITS02: Wireless communications ITS03: Computational technologies ITS04: Floating car data/floating cellular data ITS05: Sensing ITS06: Intelligent transportation applications ITS07: Cooperative systems on the road ITS08: Smart transportation – new business models

Table 1 Comparison of SCOR DS between Hierarchy Indicator and COBIT2019 (Cont.)

COBIT2019	SCOR DS	Assessment IT of Transportation
	OE4.8 Govern Data Integrity and Accountability	ITS09: Transportation Management System (TMS) ITS10: Optimal Use of road traffic and travel data ITS11: Continuity of traffic and freight management ITS Services ITS12: ITS road safety and security applications ITS13: Linking the vehicle with the transport infrastructure

Table 1 is the studied basic information on authentic operation for the organization, (DITP, 2021) a guide for research conduction. The study recruited criteria to evaluate the quality, then brought them to be analyzed by the experts on transportation, which were managers of information technology service management (7 persons) and personnel involved with the operation (10 persons). It is a comparison according to the ELMA criteria covering all seven transporting fields, a total of 17 persons. The conductions are as follows: 1) they concluded from the purposes and operations meeting the standardized IT for transportation service, including the logistics and supply chain. The arithmetic mean of the data distributed by F = Frequency of data. Which quantity can be calculated using the formula as follows:

Substituted the value from the formula

x = Value of data

n = Sum of all frequency

Table 2 Rating scale of process achievement according to SCOR DS/Score Range

Marker	N	P	L	F
Definition	Achieved			
	Not	Partially	Largely	Fully
Achievement Criterion (%)	0-15	>16-50	>51-85	>86-100

From Table 2, the criteria used to compare with Table 1: Rating scale of process achievement according to the SCOR digital standard (DS) as the score range used to evaluate the test results of interview response per the managers and practitioners development

process on the transportation business (17 respondents), resulting in the initiative duration of operation at the value of N, P, L, F, as shown in the mentioned Table.

6. Results

The study guideline for doing the information technology internal audit (Merryana, et al., 2022), is information technology good governance for organizing the internal controlling system, as well as the strategies and analysis process for managing the information technology service management. The researcher studied the fundamental data from various dimensions, selected the mixed methods, and brought the information to create the interview form following the information technology experts' evaluation. Such an interview form was for interviewing five managers and twelve personnel, a total of seventeen persons, of the corporates using the information technology system for operating. The data used to compare with the transport business factor consisted of ITS01 – ITS09 (Table 2) and identified level 1 - level 5 (Table 1) according to the authentic results from the experiences and professionals of all interviewees. The information brought to find out the guidelines for organizing the standardized New Paradigm from the COBIT and SCOR digital standard (DS) framework, which would support the measurement of operational efficiency of the transportation business to adjust and improve the indicator to be complete, including concluding the developmental result of the criteria to evaluate the organization and write the report of research according to the research methodology, as shown in Figure 5.

COBIT2019 Assessment of IT System for Transportation Indicator	
DSS01 Managed operation	
Level 1	OE4.1, OE4.2, OE4.3, OE4.4, OE4.5, OE4.6, OE4.7, OE4.8, ITS01, ITS02, ITS03, ITS04, ITS05, ITS06, ITS07, ITS08, ITS09
Level 2	OE4.1, OE4.2, OE4.3, OE4.4, OE4.5, OE4.6, OE4.7, OE4.8, ITS01, ITS02, ITS03, ITS04, ITS05, ITS06, ITS07, ITS08, ITS09
Level 3	OE4.1, OE4.2, OE4.3, ITS01, ITS02, ITS03, ITS04, ITS05, ITS07, ITS09
DSS02 Managed service requests and incidents	
Level 1	OE4.1, OE4.2, OE4.3, OE4.4, OE4.5, OE4.6, OE4.7, OE4.8, ITS01, ITS02, ITS03, ITS04, ITS05, ITS06, ITS07, ITS08, ITS09
Level 2	OE4.1, OE4.2, OE4.3, OE4.4, OE4.5, OE4.6, OE4.7, OE4.8, ITS01, ITS02, ITS03, ITS04, ITS05, ITS06, ITS07, ITS08, ITS09
Level 3	OE4.1, OE4.2, OE4.3, OE4.4, OE4.5, OE4.6, OE4.7, OE4.8, ITS01, ITS06, ITS08, ITS09
DSS03 Managed problems	
Level 1	OE4.1, OE4.2, OE4.3, OE4.4, OE4.5, OE4.6, OE4.7, OE4.8, ITS01, ITS02, ITS03, ITS04, ITS05, ITS06, ITS07, ITS08 ITS09
Level 2	OE4.1, OE4.2, OE4.3, OE4.4, OE4.5, OE4.6, OE4.7, OE4.8, ITS01, ITS02, ITS03, ITS04, ITS05, ITS06, ITS07, ITS08 ITS09
Level 3	OE4.1, OE4.2, OE4.3, OE4.4, OE4.5, OE4.6, OE4.7, OE4.8, ITS01
DSS04 Managed continuity	
Level 1	OE4.1, OE4.2, OE4.3, OE4.4, OE4.5, OE4.6, OE4.7, OE4.8, ITS01, ITS02, ITS03, ITS04, ITS05, ITS06, ITS07, ITS08, ITS09

Level 2	OE4.1, OE4.2, OE4.3, OE4.4, OE4.5, OE4.6, OE4.7, OE4.8, ITS01, ITS02, ITS03, ITS04, ITS05, ITS06, ITS07, ITS08, ITS09
Level 3	OE4.5, OE4.6, OE4.7, OE4.8, ITS01
DSS05 Managed security services	
Level 1	OE4.1, OE4.2, OE4.3, OE4.4, OE4.5, OE4.6, OE4.7, OE4.8, ITS01, ITS02, ITS03, ITS04, ITS05, ITS06, ITS07, ITS08, ITS09
Level 2	OE4.1, OE4.2, OE4.3, OE4.4, OE4.5, OE4.6, OE4.7, OE4.8, ITS01, ITS02, ITS03, ITS04, ITS05, ITS06, ITS07, ITS08, ITS09
Level 3	OE4.6, OE4.7, OE4.8, ITS01, ITS02, ITS0
DSS06 Managed business process controls	
Level 1	OE4.1, OE4.2, OE4.3, OE4.4, OE4.5, OE4.6, OE4.7, OE4.8, ITS01, ITS02, ITS03, ITS04, ITS05, ITS06, ITS07, ITS08, ITS09
Level 2	OE4.1, OE4.2, OE4.3, OE4.4, OE4.5, OE4.6, OE4.7, OE4.8, ITS01, ITS02, ITS03, ITS04, ITS05, ITS06, ITS07, ITS08, ITS09
Level 3	OE4.5, OE4.6, OE4.7, OE4.8, ITS01, ITS02, ITS03, ITS04, ITS05, ITS06, ITS07, ITS08, ITS09
EMA02 Managed System of Internal control	
Level 1	OE4.1, OE4.2, OE4.3, OE4.4, OE4.5, OE4.6, OE4.7, OE4.8, ITS01, ITS02, ITS03, ITS04, ITS05, ITS06, ITS07, ITS08, ITS09
Level 2	OE4.1, OE4.2, OE4.3, OE4.4, OE4.5, OE4.6, OE4.7, OE4.8, ITS01, ITS02, ITS03, ITS04, ITS05, ITS06, ITS07, ITS08, ITS09
Level 3	OE4.1, OE4.2, OE4.3, OE4.4, OE4.5, OE4.6, OE4.7, OE4

Figure 5 Maturity COBIT2019 & SCOR DS Assessment of IT System for Transportation

From Figure 5, the data analysis is from the questionnaire which brought the COBIT to be as the framework: The first part brought the digital standard (DS) Indicator, which is OE4 Data, information technology, eight indicators: OE4.1- OE4.8 (Table 1) to evaluate using CMMI (Keneth et al., 2019). For the data analysis starting from level 1, the lowest emphasizes the Initial, the moderate level. level 2 focuses on Managed, until level 3, the highest, empha sizes Defined. If required to develop the service management in the digital transformation, it should improve all processes to be up to level 4-5 rapidly and focus on the process of service quality construction.

Part 2: Information technology system is for transportation indicator entitled ITS: Intelligent transportation system (ITS) (Table 2) consisting of nine indicators: ITS01 - ITS09, evaluated according to the COBIT process. Applying operation enhances quality and service development. It is a part of creating digital transformation of the transporting business. The evaluating results of CMMI illustrate as level, as shown in Table 3 and Figure 5 as follows:

Table 3 CMMI scale of ratings

COBIT 2019 Process	CMMI scale of ratings and Maturity Level					
	1	2	3	4	5	Capability Level Achieved
DSS01	F	F	L	N	N	Level 3, 71%
DSS02	F	F	p	N	N	Level 2, 80%
DSS03	F	F	P	N	N	Level 2, 89%

Table 3 CMMI scale of ratings (Cont.)

COBIT 2019 Process	CMMI scale of ratings and Maturity Level					
	1	2	3	4	5	Capability Level Achieved
DSS04	F	F	P	N	N	Level 2, 74%
DSS05	F	F	P	N	N	Level 2, 88%
DSS06	F	F	P	N	N	Level 2, 71%
MEA02	F	F	L	N	N	Level 3, 71%

Table 3 concludes the results from the COBIT analysis selecting only DSS01-06 and EMA02 through CMMI evaluation with level 1-5. However, it can evaluate only to the highest level of level 3, as shown in Figure 6.

Figure 6 Ratings and maturity level chart

According to Figure 6, the COBIT selected in this research used only seven processes to evaluate the service management in SCOR DS from OE4 Data, Information technology of 8 indicators for transportation evaluation, which used the intelligent transportation system (ITS) of 9 indicators, a total of 17 indicators. The assessment results arrange as follows:

The value of level 1 must have the sub-process as the process of COBIT, comparing the achievement criterion at the F level (fully achieved) before up to a higher level. After all, 17 processes were evaluated; the standard was high and could pass to level 2 in every process.

The level 2 value, a number of all sub-processes at the COBIT process, comparing the achievement criterion at the F level (Fully achieved) before up to a higher level could pass to level 3 in every process.

The level 3 value for all of the sub-processes at the COBIT process, compared to the achievement criterion at the L level (largely achieved) for two processes together with the improvement ways, which consisted process of:

1. DSS01 Managed operation: it should develop the information and technology delivery of products performance and the results of service according to the set plan, co-ordinate and do the activities and steps of performance necessary for giving services of information and technology both internal and external, including conducting according to the operation as the standard determined in advance, and necessary investigation activities.

2. MEA02 Managed system of internal Control: it should continuously develop the follow and evaluation of controlling environments, including self-evaluation and self-awareness. It helps the management department indicate the defects to control, which is ineffective and to start improving, planning, organizing, and maintaining the standard for evaluating the internal control and effectiveness of process control.

The level 3 value for all sub-processes at the COBIT process, compared to the achievement criterion at Level P (partially achieved) for five processes, together with the improved methods consisting of as follows:

1. DSS02 Managed service requests and incidents: it should improve the effectiveness and reduce the disruption through the urgent solution for questions and events of the users, evaluate the effects of change and manage the serving situations, edit the users' requests, and recover the service to respond to the situations.

2. DSS03 Managed problems: it should adjust the increase of work readiness and servicing levels, reduce costs, improve convenience and satisfaction of the customers by reducing the number of operating problems, and indicate the real causes, which are parts of the solutions.

3. DSS04 Managed continuity: it should develop the adaptation quickly, continue the business and maintain the work readiness of resources and information to be at the level accepted by the organization in case of disruption significantly, such as threat, opportunity, and need.

4. DSS05 Managed security services: it should develop the business effect reduction from the gap and event of information safety in operation.

5. DSS06 Managed business process controls: it should develop the maintenance of information completeness and safety of information properties managed within the business process in the organization or operation that employs external persons. The sub-process in the level 4 -5 values reveals that according to the research evaluation, no organization can develop until it reaches these levels. If it can improve the process to achieve such high levels perfectly, it will generate digital transformation the most in developing the information technology service management system. It helps enhance the operation and service of every business sector.

7. Discussion and conclusion

For the expected benefits of this study, it intends to use the SCOR DS Indicator

emphasizing the Orchestrate as the main, by using OE4 Data, Information, and Technology Indicator together with Transportation Indicator and using them to operate, monitor, follow, and evaluate the information technology internal audit quality, which categorizes the group according to COBIT2019 framework principles (Muhammad et al., 2020), bring the selection results of related indicators and transporting information to assess through the CMMI method shown in Table 1. For data analysis, the researcher did the contents analysis techniques by categorizing information into groups per various points, then analyzed causes and effects using the objectives and research conceptual ideas as a frame to analyze the management forms. After that, the researchers mapped pursuing the strategic business of such transportation management to create a new paradigm (Steven et al., 2022). In addition, the research results showed the indicators of which qualities are appropriate to the transportation business as the enterprise governance for information technology (EGIT) standard for fundamental supervision to develop the digital transformation sustainably (Svetlana et al., 2019). Besides, it increases the qualitative managing potentials and competitive capacity as the universal standard changeable according to the innovative management and brings information technology and digital to use for the maximum benefits. It can describe the research results according to the research principles of the balanced scorecard (BSC) as follows:

7.1 Financial Perspective

From the research operation, by interviewing managers' performance, every indicator needs to use budgets for operating. The research data collection on transportation is considered one of the most necessary components to determine the cost and reduce it over a long period. Various corporations try to find the efficient methods and utmost worth for continuing service by investing in information technology service management to implement and reduce work time, increasing incomes by accepting more work quantity and getting higher revenues relatively, for instance.

7.2 Customer Perspective

According to the research performance through the interview of managers such operation emphasizes information technology service management and qualitative digital to respond to the service and customers' needs, such as correctness, quickness, safety, cost saving, and quality possession. These are the most important both in transportation and person.

7.3 Internal Process Perspective

The operational measurement has to focus on internal control by evaluating, following, and controlling the internal process according to the SCOR DS and COBIT2019 principles of the transporting business. Both managerial and operating departments emphasize products and services which can satisfy the customers from the transportation, the average time of operation, transportation process, and delivery management using

information technology service management systems as crucial instruments for operating and developing the organization.

7.4 Learning & Growth Perspective

Evaluating with CMMI according to the COBIT 2019 framework is a goal of the organization to develop until it reaches level 5 to be ready for the digital transformation. The necessary components include process, business model and scope, and organizational culture. The model still benefits the organization required to improve all processes with continuity. Moreover, it is flexible to create the servicing innovation and respond to the changeable industry following the learning and growth perspective.

8. Recommendation

According to this research, the transportation business factor emphasizes service management relevant to the decision-making process of the enterprises or transporting requirements that have to conduct by the digital transformation. It has to consist of the factors getting from 5 Key Benefits of COBIT 2019, which include: Customization: COBIT2019 has 40 purposes and managing and supervising the process, which can use especially appropriate to the business or organization, such as transportation business, Integration: COBIT is to mutually work with other ways and frameworks, such as DevOps and ITIL, including SCOR digital standard (DS) (Keysha et al., 2022). It makes all performance easier. Performance: COBIT optimizes efficiency and effectiveness in every IT aspect and can propose the best instrument and guidance to use with any corporation. Direction: it is the same as COBIT management. It still focuses on information technology supervision concordant with the business goals perfectly. Meanwhile, it assures that the stakeholders understand and support the information technology initiative ideas and Evolution: this COBIT uses the open sources model to develop further with the world market. It is agreeable to the essential purposes of the SCOR digital standard (DS) development, which is to be in the same direction and apply to any business but with the information technology and digital system as a fundamental tool for operation in every sector of the organization.

8.1 Recommendations for implementing

This research represents basic information only. It still has an advanced level from further study to research about the SCOR digital standard (DS) and the benefits of using the new model for information technology service management for transportation according to the COBIT2019 framework (Maria et al., 2022). This contribution facilitates the evaluation based on the standardized foundation in Thailand from ELMA criteria to manage objects and optimize digital transformation (DITP, 2021). It can achieve the servicing strategic goals on transportation business factor by the Smart Transportation System. Furthermore, it realizes the usefulness of monitoring processes for the internal organization as the main, optimizing the

evaluation of the IT performance on the effective service management (Vladimir et al., 2022), and being able to plan the consistently strategic process transformation to develop the quality, improving the performance process appropriately for sustainable growth of the business. Digital transformation has to change its foundation in every aspect, such as strategic management, suitable supervision, business style, capability, culture, personnel, investment, or according to the developmental principles of the balanced scorecard to achieve the optimum development until it originates sustainable learning and growth in the future.

8.2 Future research direction

This study shows transportation business only. The techniques and information from this research can be applied to other appropriate Logistics and supply chain management businesses in the future.

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