Faculty of Technology Management and Technopreneurship

DEVELOPING COLLABORATIVE PERFORMANCE SYSTEM FRAMEWORK FOR FRESH PRODUCE SUPPLY CHAIN IN WEST JAVA, INDONESIA

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DEDICATION

My mother 'Nurachni Sodikin' and my father 'Dasmun Suryadi’

My childrens who loved me, 'Mba Bila'; 'Kak Arumi'; 'Mas Rabbany'; and 'Dek Abiem’

My wife 'Deajeng Desi’

ABSTRACT

Considering the current context of business competition, it exists not only between individual companies but also between supply chain organizations. Supply chain organizations in business competition need a performance system that enables all simultaneous performance in a collaborative performance with all parties involved. Fresh produce is an important element of a healthy lifestyle for most individuals. Studies on collaborative performance systems (CPS) in fresh produce supply chains (FPSC) have attracted public attention due to their important role in food availability, safety, and security (SAS). Unfortunately, the use of performance management systems (PMS) as part of supply chain management systems is still lacking, and studies focused on CPS in FPSC systems are still limited. Therefore, this study aim at determining the prospective application of CPS in FPSC. This study attempts to identify whether the implementation of CPS is proven to be successful in improving the performance of SC actors and provides evidence of whether CPS can improve the overall performance of the supply chain, explores the factors that influence the implementation of CPS, and develops a proposed framework to improve the implementation of CPS in the FPSC. The aim of this study was achieved through a thorough literature review, consists of the following: CPS in the supply chain, factors affecting CPS, individual company performance (CIP), and supply chain performance (SPO). The research methodology used a mixed method with a structural equation model-partial least squares (SEM-PLS) to evaluate theoretical models and hypotheses based on a sample of 190 respondents from FPSC partners. This study further employed a qualitative approach with semi-structured interviews with 21 farmer group informants (abbreviated as Gapoktan: farmer collectives are agricultural institutions formed to facilitate agricultural activities from the capital sector to processing agricultural products) and non-Gapoktan farmers, collectors/distributors, owners of transportation modes, supermarkets, experts in the field, academics and related associations. The mixed method approach is valuable for future research on CPS implementation development; practical contribution by investigating CPS factors that influence the composition of CPS actors, the influence of CIP and SPO that contribute to improving CPS implementation; the benefits and reasons why CPS needs to be implemented by producing certain CPS metrics, considered for the sustainability of CPS implementation in FPSC. These findings will help managers/owners and implementing farmers to understand external barriers and support for FPSC actors. In conclusion, these results have contributed to the literature on the implementation of CPS and the implications of its management for actors; managers should review and improve their multitasking and time management skills in engagement, supervision, and support at the partner and employee levels; a proactive approach is recommended to acquire external knowledge and integrate it with existing internal knowledge. Practitioners (academics/researchers) should take a long-term and holistic view of the overall benefits of implementing CPS rather than focusing only on the short-term benefits and risks usually associated with initial costs and hidden costs, seeking to gain management, motivation, and communication skills. The government is the policy maker; carry out the socialization of sustainability programs to activate all partners involved and provide appropriate education or knowledge to increase FPSC actors' understanding of sustainable development by the SDG.

MEMBANGUNKAN RANGKA KERJA SISTEM PRESTASI KOLABORATIF UNTUK RANTAI BEKALAN HASIL SEGAR DI JAWA BARAT, INDONESIA

ABSTRAK

Mengambil kira konteks semasa persaingan perniagaan, ia wujud bukan sahaja antara syarikat individu tetapi juga antara organisasi rantaian bekalan. Organisasi rantaian bekalan dalam persaingan perniagaan memerlukan sistem prestasi yang membolehkan semua prestasi serentak dalam prestasi kerjasama dengan semua pihak yang terlibat. Hasil segar adalah elemen penting dalam gaya hidup sihat bagi kebanyakan individu. Kajian mengenai sistem prestasi kolaboratif (CPS) dalam rantaian bekalan hasil segar (FPSC) telah menarik perhatian orang ramai kerana peranan penting mereka dalam ketersediaan, keamanan dan keselamatan makanan (SAS). Malangnya, penggunaan sistem pengurusan prestasi (PMS) sebagai sebahagian daripada sistem pengurusan rantaian bekalan masih kurang, dan kajian tertumpu kepada CPS dalam sistem FPSC masih terhad. Oleh itu, kajian ini bertujuan untuk menentukan aplikasi prospektif CPS dalam FPSC. Kajian ini cuba mengenal pasti sama ada pelaksanaan CPS terbukti berjaya dalam meningkatkan prestasi aktor SC dan memberikan bukti sama ada CPS boleh meningkatkan prestasi keseluruhan rantaian bekalan, meneroka faktor yang mempengaruhi pelaksanaan CPS, dan membangunkan rangka kerja yang dicadangkan untuk menambah baik pelaksanaan CPS dalam FPSC. Matlamat kajian ini dicapai melalui tinjauan literatur yang menyeluruh, terdiri daripada yang berikut: CPS dalam rantaian bekalan, faktor yang mempengaruhi CPS, prestasi syarikat individu (CIP), dan prestasi rantaian bekalan (SPO). Metodologi penyelidikan menggunakan kaedah bercampur dengan model persamaan struktur-separa kuasa dua terkecil (SEM-PLS) untuk menilai model teori dan hipotesis berdasarkan sampel 190 responden daripada rakan kongsi FPSC. Kajian ini seterusnya menggunakan pendekatan kualitatif dengan temu bual separa berstruktur dengan 21 informan kumpulan peladang (disingkat Gapoktan: kolektif peladang ialah institusi pertanian yang dibentuk untuk memudahkan aktiviti pertanian daripada sektor modal kepada memproses hasil pertanian) dan petani, pengumpul/pengedar bukan Gapoktan. , pemilik mod pengangkutan, pasar raya, pakar dalam bidang tersebut, ahli akademik dan persatuan berkaitan. Pendekatan kaedah campuran adalah berharga untuk penyelidikan masa depan mengenai pembangunan pelaksanaan CPS; sumbangan praktikal dengan menyiasat faktor CPS yang mempengaruhi komposisi pelakon CPS, pengaruh CIP dan SPO yang menyumbang kepada penambahbaikan pelaksanaan CPS; faedah dan sebab mengapa CPS perlu dilaksanakan dengan menghasilkan metrik CPS tertentu, dipertimbangkan untuk kemampanan pelaksanaan CPS dalam FPSC. Penemuan ini akan membantu pengurus/pemilik dan petani pelaksana untuk memahami halangan luaran dan sokongan untuk aktor FPSC. Kesimpulannya, keputusan ini telah menyumbang kepada literatur tentang pelaksanaan CPS dan implikasi pengurusannya untuk pelakon; pengurus harus menyemak dan meningkatkan kemahiran berbilang tugas dan pengurusan masa mereka dalam penglibatan, penyeliaan dan sokongan di peringkat rakan kongsi dan pekerja; pendekatan proaktif disyorkan untuk memperoleh pengetahuan luaran dan mengintegrasikannya dengan pengetahuan dalaman sedia ada. Pengamal (akademik/penyelidik) harus mengambil pandangan jangka panjang dan holistik tentang faedah keseluruhan pelaksanaan CPS dan bukannya menumpukan hanya pada faedah dan risiko jangka pendek yang biasanya dikaitkan dengan kos awal dan kos tersembunyi, berusaha untuk mendapatkan pengurusan, motivasi, dan kemahiran komunikasi. Pemerintah adalah pembuat dasar; menjalankan sosialisasi program kelestarian untuk mengaktifkan semua rakan kongsi yang terlibat dan menyediakan pendidikan atau pengetahuan yang sesuai untuk meningkatkan pemahaman aktor FPSC tentang pembangunan mampan oleh SDG.

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LIST OF PUBLICATIONS

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Indexed Journal

Susanto, E., Othman, NA., Tahir, MNH., 2020. A Review Of Collaborative Performance System Implementation In The Fresh Produce Supply Chain To Improve Performance. *HSSR Journal*, 8(3), pp.1363-1382. (Scopus indexed Q1- IF:2.73 (2020).

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Susanto, E., Othman, NA., Rahayu, S., Dzakiyullah, N., Handayani, E., Gunawan, S. and Hadiguna, R., 2022. Mediation effect of collaborative performance system on fresh produce supply chain performance with a lateral collaboration structure model. *Uncertain Supply Chain Management*, 10(4), pp.1147-1160. (Scopus Indexed – Q2 - IF:2.84) (Published)

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Susanto, E., Othman, NA., Saptari, A., and Hayati, M.N. 2018. Collaborative Performance System in Fresh Produce Supply Chain: The State-of-the-art and Recent Developments. *4thAsia International Conference - Advances Management Operation and Sustainable (AIC-AMOS-2018)*, 8-9 December 2018- Langkawi Malaysia.

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Book Chapters

Susanto, E., Othman, NA., 2022. Collaborative Performance System Classification Models in Fresh Produce Supply. ChainValue Chain Marketing: Strategy for Consumer Value Creation 1, 25-66. 1st Edition, UTeM Press. (Published)

LIST OF SYMBOLS AND ABBREVIATIONS

3PL	-	Third Party Logistics
4PL	-	Fourth Party Logistics
ABC	-	Activity Based Costing
AHP	-	Analytic Hierarchy Process
APL	-	Action-Profit Linkage Model
AVE	-	Average Variance Extracted
B2B	-	Business to Business
BAM	-	Business Activities Monitoring
BAS	-	Business Activity Services
BEM	-	Business Excellence Model
BP	-	Business Performance
BRIN	-	Badan Riset dan Inovasi Nasional (National Research and Innovation Agency Republic of Indonesia)
BSC	-	Balanced Scorecard
BSCt	-	Business Service Center
BSCS	-	Balanced Supply Chain Scorecard
BSR	-	Buyer-Supplier Relations
CAGR	-	Compound Annual Growth Rate
CBE	-	Digital Business Ecosystem
CBS	-	Comparative Business Scorecard
CEVITAe	-	Capability Economic Value of Intangible and Tangible Assets Model
CFA	-	Confirmatory factor analysis
CIP	-	Company Individual Performance
CM	-	Centralized Model
COC	-	Collaborative culture
CP	-	Collaborative Performance
CPMS	-	Consistent Performance Measurement System
CPP	-	Collaborative Performance Planning (CPP)
CPS	-	Collaborative Supply Chain

CPS-ILCS	-	CPS Integrated with Lateral Collaboration Structure
CRM	-	Customer Relationship Management
CSP	-	Collaborative Supply Chain
CV	-	Commanditaire Vennootschap
CVA	-	Customer Value Analysis
CVM	-	Customer Value Management
DC	-	Distribution Centre
DDP	-	Dynamic Development Process
DEA	-	Envelopment Analysis
DFC	-	Desire/reluctance to change
DPMS	-	Dynamic Performance Measurement System
DPMS-CN	-	Designing a PMS for a Collaborative Network
EFS	-	Environment Friendly
ERP	-	Enterprise Resource Planning
EVA	-	Economic Value Added
F3B	-	Farm Fresh Food Box
FAHP	-	Fuzzy Analytic Hierarchy Process
FAO	-	Food and Agriculture Organization of United Nations
FDI	-	Foreign Direct Investment
FFV-SC	-	fresh fruit vegetable SC
FIC	-	Factors Influencing of CPS
FLW	-	Food Loss and Waste
FPSC	-	Fresh Produce Supply Chain
FSC	-	Food supply chains
FSQS	-	Food Safety and Quality System
GAN	-	Global Agriculture Network
GAP	-	Agricultural Practice
GHP	-	Good Hygienic Practice
GMP	-	Good Manufacturing Practices
GSCM	-	Green Supply Chain Management
GPS	-	Global Positioning System
GVC	-	Global Value Chains
HACCP	-	Hazard Analysis Critical Control Point
ICT	-	Information and Communication Technology

IoFTNP	-	Internet of Food Things Network Plus
IoT	-	Internet of Things
IPM	-	Integrated Pest Control
IPMF	-	Integrated Performance Measurement Framework
IPMS	-	Integrated Performance Measurement System
ISH	-	Information sharing
IT	-	Information Technology
JIT	-	Just in Time
KBP	-	Knowledge and benefits on CPS
KPI	-	key performance indicators
LCA	-	Life Cycle Assessment
MNE	-	Multinational Corporations
MOD	-	Make on-demand
MSDD	-	Manufacturing System Design Decomposition
MTO	-	Make-to-order
PDCA	-	Plan-Do-Check and Action
PDGBS	-	Performance, Development, Growth Benchmarking System
PLS	-	Partial Least Square
PMQ	-	Performance Measurement Questionnaire
PMS	-	Performance Management System
PMS-CSC	-	PMS-collaborative supply chain
PP	-	Performance Prism
PPM	-	Performance Measurement Matrix
PPVC	-	Performance Planning Value Chain
PT	-	Perseroan Terbatas (Limited Liability Company)
QCC	-	Quality Control Circle
RDF	-	Results and Determinants Framework
RL	-	Reverse Logistics
ROE	-	Return on Equity
ROI	-	Return on Investment
ROQ	-	Return on Quality Approach
RSH	-	Resource sharing
SAP	-	Systems Applications and Products
RTM	-	Joint modes of transportation

RTF	-	Contract Farming
SAS	-	Sustainability-Safety and Security
SC	-	Supply Chain
SCC	-	Supply Chain Council
SCI	-	Supply Chain Indonesia
SCM	-	Supply Chain Management
SCOR	-	Supply Chain Operations Reference
SCP	-	Supply Chain Partnership
SCR	-	Supply Chain Resistance
SD	-	System Dynamics
SDG	-	Sustainable Development Goal
SEM	-	Structural Equation Modelling
SET	-	Social Exchange Theory
SFM	-	Sustainability forestry management
SK3	-	Sistem Keselamatan dan Kesehatan Kerja (occupational safety and health system)
SMCE	-	Spatial Multi Criteria Evaluation
SME	-	Small and Medium Enterprise
SOE	-	State-Owned Enterprise
SOR	-	Social relationship
SPC	-	Service Profit Chain
SPO	-	Supply Chain Performances
SSCM	-	Sustainability Supply Chain Management
TBL	-	Triple Bottom Line
TCE	-	Transaction Costs
TIF	-	Technology of Information
TOPSIS	-	Technique for Order Performance by Similarity to Ideal Solution
TPB	-	Theory of Planned Behaviour
TRO	-	Trust others
UCDF	-	Unused Capacity Decomposition Framework
UN	-	United Nations
VBSC	-	Value-Based Supply Chain
VIF	-	Variance Inflation Factor

CHAPTER 1

INTRODUCTION

1.1 Background

Currently, supply chain (SC) organizations in business competition require a performance management system (PMS) that can view observe performances simultaneously in one collaborative performance (CP) with its partners. A collaborative performance system (CPS) is one of the PMS. CPS is required to cope with the issue of the involvement of SC actors and their role in disclosing evidence and identifying in their environment between supplier chain partnership (SCP) in establishing solid relationships with each other, as a requirement of single control management (Chenhall and Moers, 2015). Collaboration encourages successful supply chain management (SCM) and fundamental skills (Gichuru et al., 2015; Park et al., 2022). In most SC organizations (SCOs) in various sectors, which demand collaboration in sustaining high levels of commitment, information sharing, and trust across SCPs within a single SCM organization, collaborative systems apply to establish CPS frameworks in present production systems.

Since the 1980s, various PMS models have been developed to help companies maintain performance and remain competitive. However, there is a lack of literature on collaborative PMS at the farm level, which requires collaboration with wholesalers like supermarkets. Collaborative performance is crucial for business actors to survive, while

smallholders face pressure from retailers and regulators to maintain and enhance their performance.

CPS is a relatively new integrated system that will keep evolving. Implementing CPS at the SC level has been extensively discussed previously requiring a total commitment to establishing long-term relationships with suppliers and other partner interests (Kurznack, Schoenmaker and Schramade, 2021), must incorporate information sharing, decisions, and incentive alignment to increase competitive advantage for firms (Shalle, Guyo and Amuhaya, 2014). Nevertheless, it is merely limited to adopt the relationship between buyers and suppliers in the procurement function (Ampe-N'DA et al., 2020) and less strong partnerships (Brüning and Bendul, 2017; Salam, 2017; Dania, Xing and Amer, 2018), which demand total commitment to build long-term relationships with the suppliers and other stakeholders (Kurznack, Schoenmaker and Schramade, 2021).

The study of Gichuru et al. (2015) stated that they were unable to illustrate how information sharing, joint decisions, and incentive alignment contribute to create suppliers and other stakeholders, and CSC involves all supply chain partners, such as supplier, distributor, wholesaler, retailer, and end-customer relationships (Petrovic-Lazarevic, Sohal and Perry, 2007). Performance measurement is the basis for improving performance; companies or farmers must have data on their present performance and need to know how good or poor it is before developing improvement plans (Cai et al., 2009); hence, the PMS is essential in its simplest form (Kubheka and Tshiyoyo, 2018). Currently, it is not provided much yet empirical evidence on the possibility for implementing CPS in FPSC (Crum and Palmatier, 2004) to improve the overall performance of supply chain performance (SPO) due to complex structural factors making it challenging to deploy a CPS system (Shalle, Guyo and Amuhaya, 2014).

This study examines the process of identifying current CPS implementations to determine if they are effective in boosting the performance of SC actors and presenting evidence of whether CPS kight enhance the entire SCP. Furthermore, it analyzes and generates factors influencing CPS implementation and proposes a framework for developing CPS implementation for FPSC.

1.2 Problem statement

In recent years, Indonesia's economy and infrastructure development have improved significantly and the agricultural sector has increased rapidly. The government has invested a lot in infrastructure specifically to support this industrial sector in various regions. Investment in the infrastructure sector has been extensive in several areas including the West Java region in the national strategic program in supporting the SDGs in Indonesia and the Indonesian Ministry of Agriculture's 2045 long-term program. On the other hand, the issue of sustainability is a critical issue to support the world community in program goals. sustainable development (SDGs); where Indonesia is one of the participants in this program the SDGs priorities focus on reducing poverty in the agricultural sector (Nugroho et al., 2022), it is important to have an in-depth study to improve the welfare, especially of farmers, as stated in the Ministry's long-term work program RI Agriculture in 2045. Meanwhile, with sustainability in efforts to maintain food safety and security, this is feasible to be realized amidst the issue of sustainability which is a critical issue to support the world community in the SDGs goal program. All require the collaboration of all stakeholders in an integrated system, where CPS is important as a solution to problems with this fresh produce commodity.