

			tahun ini sudah ada sekitar 2000 botol yang balik		
39	Staff Distribusi (Order Taker)	N3	Iya biasanya customer nginfo ke sales kalo ada botol kosong	Peran sales	Peran Aktor
40	Staff Distribusi (Order Taker)	N3	Kalau pas dia ada ngambil barang sekalian belanja sekalian bawa botol kosong. Atau yang deket-deket langsung dia kesini bawa (botol kosong)	Peran customer	Peran Aktor
41	Staff Distribusi (Order Taker)	N3	Botolnya dikumpulin trus dihitung	Proses pengumpulan	Sistem Reverse Logistics
42	Staff Distribusi (Order Taker)	N3	Botolnya disimpan dulu, nanti kalo udah 500 sampai 1000 botol baru dikirim ke pabrik	Penyimpanan botol	Proses Reverse Logistics
43	Staff Distribusi (Order Taker)	N3	Kita udah infoin dulu ke csutomernya kalo botol sparkling engga kita terima, tapi kalo mereka engga tau, tetep kita ambil tapi ga kita setor ke pabrik	Batasan Reuse	Kendala
44	Staff Distribusi (Order Taker)	N3	kalau misalnya yang kita tahu sih, ya cuma untuk diisiin <i>wine</i> aja sih. maksudnya diisi ulang untuk penjualan <i>wine</i> aja	Reuse botol bekas	Keterkaitan dengan Ekonomi Sirkular

45	Staff Distribusi (Order Taker)	N3	Beberapa kali pernah denger ada yang minta botolnya itu untuk dipajang-pajang gitu di outletnya, atau dijadiin dekorasi. Misalnya kaya natal kemarin botol-botol bekasnya dibuat jadi pohon natal	recycling botol bekas	Keterkaitan dengan Ekonomi Sirkular
46	Staff Distribusi (Order Taker)	N3	Kesulitannya itu ya salah satunya dan orang itu mungkin engga semua ingat untuk menginfokan bahwa botol kosong itu bisa dijual kembali ke hatten. trus untuk masalah tempat penyimpanan mereka, mungkin kaya cafe atau restoran yang kecil kan mereka gak punya tempat penyimpanan. kalau mereka ga punya tempat penyimpanan kan otomatis pasti dibuang tuh	Kendala customer	Kendala
47	Staff Distribusi (Order Taker)	N3	Belum optimal, belum mencapai 50% dari penjualan botolnya yang balik	Tingkat optimalitas	Kendala
48	CRE (sales)	N4	Representasi dari Hatten langsung ke customer. customer yang dimaksud ini hotel, restoran, dan cafe (horeca) di wilayah sanur, nusa lembongan, dan nusa penida	Peran sales	Peran Aktor
49	CRE (sales)	N4	Dari kita sendiri dari Hatten Bali ini kan menerima untuk botol recycle, jadi kita dari outlet itu biasanya ngumpulin dia botolnya, lalu dikonfirmasi ke pihak hatten	Program pengembalian botol	Sistem Reverse Logistics

50	CRE (sales)	N4	Nanti pas pengiriman atau dijadwalkan dari pihak Hatten untuk di- <i>pickup</i> botol kosongnya	Peran driver	Proses Reverse Logistics
51	CRE (sales)	N4	Botol kosong itu dibeli jadinya. itu harganya Rp 1000 per botol	Sistem insentif	Sistem Reverse Logistics
52	CRE (sales)	N4	Seminggu sekali biasanya, tergantung dari space mereka.	Frekuensi pengembalian botol kosong	Proses Reverse Logistics
53	CRE (sales)	N4	Kalau space gudang mereka lumayan besar, mungkin bisa lebih lama menyimpannya. Tapi kalau misalkan yang nggak punya gudang itu mungkin ada 2-3 dus itu biasanya diambil. Jadi pas pengiriman barang, mereka titik botol kosongnya dikembalikan	Sistem pengembalian	Proses Reverse Logistics
54	CRE (sales)	N4	Sanur lebih banyak dia di restoran-restoran independen itu ya yang lebih banyak	Kontribusi wilayah	Peran Aktor
55	CRE (sales)	N4	Nah kalau sementara ini kan belum ada itu (botol bekas yang dikembalikan) kalau yang di luar pulau	kendala wilayah	Kendala
56	CRE (sales)	N4	Karena kan ada biaya kargo itu, ya jadi masih sedikit di sana. botol kosongnya	Kendala biaya	Kendala

			masih diolah disana. jadi belum bisa kita ambil langsung		
57	CRE (sales)	N4	Kalau itu fleksibel, maksudnya kalau customer ada yang emang dia pas mau ambil barang, disini collectnya, ada juga yang sebetulnya dibawa botol kosongnya langsung pas pengiriman barang	Proses pengumpulan	Sistem Reverse Logistics
58	CRE (sales)	N4	Untuk botol kosong yang diambil itu botol kosong yang still <i>wine</i> . sama yang fortified <i>wine</i> . jadi yang sparkling <i>wine</i> itu karena memang dipakai sekali aja, nggak diambil	Batasan Reuse	Kendala
59	CRE (sales)	N4	Khusus still <i>wine</i> dan fortified <i>wine</i> itu yang bisa diambil karena bisa diolah lagi	Reuse botol bekas	Keterkaitan dengan Ekonomi Sirkular
60	CRE (sales)	N4	Biasanya dikerdusin, biar gampang juga kita hitung jumlahnya yang ngambilnya juga gampang	Proses pengumpulan	Sistem Reverse Logistics
61	CRE (sales)	N4	engga diwajibkan ya semauanya mereka aja. karena kan kendalanya mereka kan kadang-kadang juga kalau disuruh ngumpulin berhubungan dengan teknis pekerjaan mereka segala macam. jadi ga menutup	Kendala customer	Kendala

			kemungkinan juga mereka ga ngumpulin tapi dibuang langsung		
62	CRE (sales)	N4	Yang pertama karena insentifnya dan yang kedua juga sulit untuk mereka buang (botol bekas) itu juga ya. apalagi dengan situasi kaya sekarang mending mereka jual kan gitu daripada mereka buang sembarangan	Motivasi customer	Upaya & Strategi Peningkatan
63	CRE (sales)	N4	menurut saya penting sekali ya. diluar lingkungan nih apalagi dengan masalah alam yang sekarang di Bali hadapi ini kan sampah ini masalah pelik sekali. dengan kita bisa ambil botol di customer diluar mereka dapet benefit, kita kan juga menjaga lingkungan. jadi engga mencemari lagi dia	Dampak lingkungan	Keterkaitan dengan Ekonomi Sirkular
64	CRE (sales)	N4	Kalau sebelumnya kan kita beli botol yang baru jadi nambah sampah yang baru. sekarang kita bisa pakai yang sudah di recycle. dari sisi bisnis juga lebih murah costnya	manfaat Reverse Logistics	Manfaat
65	CRE (sales)	N4	kendalanya mungkin waktu pengambilan ya, matching waktunya itu aja sih. ya mungkin ada customer yang tergesa-gesa karena spacenya sedikit jadi dia nggak bisa nunggu	Kendala pengambilan botol	Kendala

			mungkin bisa dibawa kesini atau bisa dibuang malahan		
66	CRE (sales)	N4	tapi dengan syarat juga, kondisi botol yang dikembalikan layak untuk di recycle kembali	Kebijakan penerimaan	Sistem Reverse Logistics
67	CRE (sales)	N4	Kedepannya servisnya kita. artinya pengambilan botol bisa dischedulekan lebih cepat sama mungkin informasi ke outlet untuk penyimpanannya lebih rapi lagi jadi ketika diambil, barang itu tinggal pick up aja. beberapa informasi, outlet kurang clear (sistem penyimpanannya) jadi mereka kadang pake plastik nyimpennya, jadi ketika driver ngambil kesana masih berantakan kondisinya, riskan pecah juga terus ngitung ulang lagi	Masalah handling	Upaya & Strategi Peningkatan
68	Leader Driver	N5	Driver ngambil botol tapi ada juga kendalanya. pas emang pengirimannya bayak kadang-kadang kita juga nggak bisa ambil.	Kendala pengambilan botol	Kendala
69	Leader Driver	N5	Kalau kita paksakan, itu juga menjadi penghambat untuk pengiiriman barang. soalnya itu kan barang pecah belah jadi kita	Risiko di lapangan	Kendala

			kan juga takutnya itu riskan, makanya kita koordinasi ke customer		
70	Leader Driver	N5	Wilayah Nusa Dua 1 khususnya di hotel itu bisa sekali ambil langsung 2000 botol, paling sedikit 500 di satu hotel. tapi itu juga di bulan-bulan tertentu	Customer supply	Peran Aktor
71	Leader Driver	N5	Kalo kondisi normal kita bisa ngambil disitu 700-800 botol, kalo high season kadang-kadang kita bisa lebih dari sekali kesitu (ke customer). ya maksimal 2 kali	Kondisi pasar	Peran Aktor
72	Leader Driver	N5	Kalau sanur yang penyumbang botol itu justru dari restoran. kalau high season bisa nyumbang 1000 botol sekali ambil	Customer supply	Peran Aktor
73	Leader Driver	N5	Tidak ada jadwalnya. tapi kalau sekarang dengan kondisi medannya seperti itu, akhirnya dari tim sales koordinasi dengan customer. akhirnya keputusannya kita ambil di rumahnya	peran sales	Peran Aktor
74	Leader Driver	N5	kalau misalkan ada tim yang bisa, langsung diangkut. kalau engga ada tim yang akan mengirim reguler ke are itu yang kita tugaskan	peran driver	Proses Reverse Logistics

75	Leader Driver	N5	driver akan menginfokan kalau botol di customer sudah diambil dengan jumlah segini-segini, nanti petugas sanur ini yang proses ke pabrik, memilah botol	peran driver	Peran Aktor
76	Leader Driver	N5	Supaya cepat prosesnya kalau dia ada waktu luang, dia yang langsung misahin mana yang putih mana yang hijau (jenis botol).	pemilahan botol bekas	Sistem Reverse Logistics
77	Leader Driver	N5	Per botolnya di pabrik ya kalau engga salah 2000, kalau di customer 1000	Sistem insentif	Sistem Reverse Logistics
78	Leader Driver	N5	Kita lihat di customer gimana caranya dia rapiiannya, naruh botolnya. kalau memang dia tetap menggunakan dusnya kita, saya yakin botol itu pasti tidak ada baret	Kondisi botol bekas	Sistem Reverse Logistics
79	Leader Driver	N5	Dan ada pun customer itu dia cuek, dia taruh-taruh aja sampai botol itu bertumpuk-tumpuk dan engga satu jenis.	Partisipasi customer rendah	Kendala
80	Leader Driver	N5	Nah itu kan engga ditempatin sama dia, berserakanlah. dari situ saya yakin botol kita itu pasti ada baretnya, ya gak layak lah jadinya ga dipakai lagi	Kualitas Botol	Kendala

81	Leader Driver	N5	Kita ambil semua kalau memang botolnya jadi satu (botol hatten), walaupun terkecuali ujungnya pecah tidak kita ambil	Kondisi botol bekas	Sistem Reverse Logistics
82	Leader Driver	N5	yang saya tahu itu, udah dipilah sesudah itu disortir kan jadi satu itu, dibuka tuh ujungnya, tutupnya dipilah. terus kalau udah gitu dibuka labelnya, habis itu baru direndam. lalu saya lihat itu ada pembersih dalamnya	proses awal sortir botol bekas	Sistem Reverse Logistics
83	Leader Driver	N5	iya biar bersih, supaya bisa dipakai lagi	manfaat Reverse Logistics	Manfaat
84	Leader Driver	N5	dan pabrik itu hemat dengan botol recycle walau tidak terlalu banyak	manfaat Reverse Logistics	Manfaat
85	Leader Driver	N5	kadang-kadang kita bilang ke customernya "bu boleh kita ambil botolnya ini supaya tidak berserakan" istilahnya bilang ke dia itu ada program ini (pengembalian botol bekas), supaya tidak ada limbah	komunikasi ke customer	Peran Aktor
86	Leader Driver	N5	kita selesaikan dulu pengiriman, entar kalau udah selesai dan waktunya masih, baru kita ambil	prioritas operasional	Proses Reverse Logistics
87	Leader Driver	N5	yang restoran-restoran kecil itu yang bisa langsung terima, yang cepat prosesnya, nah	prioritas operasional	Proses Reverse Logistics

			itu yang kita ambil dulu, baru kita nyasar ke yang ngembaliin botol itu		
88	Leader Driver	N5	dari customernya yang skala kecil, yaudah berserakan botolnya. akhirnya dia tidak mau bertanggung jawab atas botol lombahnya. tergantung ruang penyimpanannya juga	Kendala customer	Kendala
89	Leader Driver	N5	terus tergantung kondisi pengiriman, kalau misalkan lagi full/padat, akhirnya kita gak bisa juga menerima atau ngambil botol kosong itu	Kendala pengambilan botol	Kendala
90	Leader Driver	N5	kita harus komunikasi ke customer, bilang aja kita ada rogram ini. paling tidak kita harus ada selebaran (flyer) ya di satu box untuk mendapatkan botol kosongnya kita	Informasi ke customer	Upaya & Strategi Peningkatan
91	Leader Driver	N5	Ada pihak ketiga, dia yang ngumpul. contohnya di wilayah karangasem	Pihak ketiga pengembalian botol	Peran Aktor
92	Leader Driver	N5	wastanya banyak sekali dari pihak ketiga. dia cuma pake karung kan, itu botolnya bisa lecet buat dia rusak gitu malahan	Kualitas Botol	Kendala
93	PIC Botol	N6	Suppliernya dari Hatten sama dari rongsokan. Siapapun boleh bawa ke sini	Sumber pengembalian	Peran Aktor

94	PIC Botol	N6	Tahun lalu kan 90% botol recycle datang ke sini. Kalau sekarang cuma 50% an	Penurunan volume pengembalian	Kendala
95	PIC Botol	N6	bagian saya, lagi ada supplier botol dari Hatten saya mengecek, menulis berapa dia bawa botol ke sini sudah saya hitung dan saya menyetor ke kasir	Proses pencatatan	Peran Aktor
96	PIC Botol	N6	kalau ada yang pecah saya kembaliin lagi ke sana saya cari yang mulus yang udah bersih	penanganan reject	Sistem Reverse Logistics
97	PIC Botol	N6	yang datang kesini ya dari seluruh supplier dari rongsokan Hatten yang sudah bisa dipakai, yang tidak bisa dipakai baru dikembalikan	Penyortiran botol	Sistem Reverse Logistics
98	PIC Botol	N6	sortiran dua kali jadinya	Sortir berulang	Sistem Reverse Logistics
99	PIC Botol	N6	kalau dari efisiensi biaya juga menekan efisiensi biaya, karena kan di Bali lagi konsen banget nih sampah milik sendiri, diolah sendiri	Manfaat Reverse Logistics	Manfaat
100	PIC Botol	N6	banyak orang-orang kayak tamu-tamu buangnya ke TPA, nggak dikumpulin, nggak dibawa ke sini	Kehilangan potensi pengembalian	Kendala

101	PIC Botol	N6	yang penting intinya enggak di atas kalau lihat kelihatan... kalau dibawahnya bisa dipakai	Kriteria kualitas	Sistem Reverse Logistics
102	PIC Botol	N6	nanti di tahap label atau bottling akan dicek lagi sama quality control	kontrol kualitas	Sistem Reverse Logistics
103	PIC Botol	N6	sistemnya kayak first in first out juga pakai botolnya	sistem FIFO	Sistem Reverse Logistics
104	PIC Botol	N6	kalau botol recycle kita ada botol recycle kita akan duluan keluar baru botol barunya	prioritas reuse	Sistem Reverse Logistics
105	PIC Botol	N6	driver di hatten suplai hotel-resort... lebih banyak	peran driver hatten dominan	Peran Aktor
106	PIC Botol	N6	kita naikkan... supaya driver-driver tuh lebih semangat untuk mengembalikan botol	Sistem insentif	Sistem Reverse Logistics
107	PIC Botol	N6	kalau tidak ada supplier yang mengirimkan botol bekas lagi ke sini mungkin kami yang mulai mencari botol recycle	ketergantungan reverse logistics	Upaya & Strategi Peningkatan
108	PIC Botol	N6	satu mobil bisa bawa 200 botol... kira-kira memakan waktu sampai satu jam	waktu penyortiran	Sistem Reverse Logistics
109	PIC Botol	N6	proses cleaning bisa satu hari sampai dua hari	durasi proses	Sistem Reverse Logistics

110	PIC Botol	N6	kalau kotor... mesti ngelap dulu dia kelihatan dengan jelas yang mana yang ada lecetnya	keterbatasan teknologi	Kendala
111	PIC Botol	N6	kalau dari sistem pengembalian botol sendiri... harus lebih gencar lagi memberitahukan	kebutuhan sosialisasi	Upaya & Strategi Peningkatan
112	PIC Botol	N6	botol sparkling tidak bisa... lebih banyak yang pecah	Batasan Reuse	Kendala
113	PIC Botol	N6	pernah ada yang membeli dari tabanan untuk botol yang ga bisa dipakai lagi	Pihak ketiga pengolahan botol	Keterkaitan dengan Ekonomi Sirkular
114	PPIC (Production Planning & Inventory Control)	N7	botol menjadi salah satu bahan pendukung produksi	Peran botol	Sistem Reverse Logistics
115	PPIC (Production Planning & Inventory Control)	N7	komitmennya adalah sustainability... salah satu yang bisa di recycle adalah botol	Komitmen sustainability	Keterkaitan dengan Ekonomi Sirkular
116	PPIC (Production Planning & Inventory Control)	N7	proses penerimaan botol itu kita masih bergantung dengan pihak luar	Ketergantungan eksternal	Peran Aktor

117	PPIC (Production Planning & Inventory Control)	N7	proses penerimaan itu sangat bergantung dari tim distribusi PT Hatten	Ketergantungan distribusi	Peran Aktor
118	PPIC (Production Planning & Inventory Control)	N7	hampir 90% itu berasal dari distribusi dari PT Hatten	Sumber pengembalian	Peran Aktor
119	PPIC (Production Planning & Inventory Control)	N7	dari pihak luar masih kecil volumenya, inilah tantangannya	volume eksternal rendah	Peran Aktor
120	PPIC (Production Planning & Inventory Control)	N7	kita juga pengen... botol yang kita pakai bisa kita gunakan kembali	Tujuan reuse	Keterkaitan dengan Ekonomi Sirkular
121	PPIC (Production Planning & Inventory Control)	N7	bibir botol harus tetap utuh... kalau tidak akan menyebabkan oksidasi	Kriteria kualitas	Kendala
122	PPIC (Production Planning & Inventory Control)	N7	goresan bisa menyebabkan oksigen masuk ke dalam botol	risiko kualitas	Kendala
123	PPIC (Production Planning & Inventory Control)	N7	total yang kita terima masih di bawah 10% dari total produksi	Tingkat pengembalian rendah	Kendala

124	PPIC (Production Planning & Inventory Control)	N7	kita coba cari pola supaya tidak bergantung dari distribusi saja	diversifikasi sumber	Upaya & Strategi Peningkatan
125	PPIC (Production Planning & Inventory Control)	N7	customer horeca tempat penyimpanannya kecil	Kendala customer	Kendala
126	PPIC (Production Planning & Inventory Control)	N7	kita sangat ingin menerima lebih banyak botol	kebutuhan volume	Sistem Reverse Logistics
127	PPIC (Production Planning & Inventory Control)	N7	secara operasional cost lebih murah dibanding botol baru	manfaat Reverse Logistics	Manfaat
128	PPIC (Production Planning & Inventory Control)	N7	efisiensi bisa 30–40% bahkan bisa 50–60%	besaran efisiensi	Manfaat
129	PPIC (Production Planning & Inventory Control)	N7	ekonomi sirkular... ada penambahan nilai dalam setiap proses	pemahaman ekonomi sirkular	Keterkaitan dengan Ekonomi Sirkular
130	PPIC (Production Planning & Inventory Control)	N7	botol ini 100% impor	ketergantungan impor	Sistem Reverse Logistics

131	PPIC (Production Planning & Inventory Control)	N7	kita bisa menghemat waktu tunggu	manfaat Reverse Logistics	Manfaat
132	PPIC (Production Planning & Inventory Control)	N7	kita tidak bergantung 100% dari importasi	kemandirian supply	Manfaat
133	PPIC (Production Planning & Inventory Control)	N7	luar Bali tidak ada pengembalian karena biaya tidak efisien	kendala geografis	Kendala
134	PPIC (Production Planning & Inventory Control)	N7	sub-distribusi membuat penarikan lebih kompleks	kompleksitas sistem	Kendala
135	PPIC (Production Planning & Inventory Control)	N7	ini adalah kebijakan perusahaan karena concern lingkungan	kebijakan perusahaan	Keterkaitan dengan Ekonomi Sirkular
136	PPIC (Production Planning & Inventory Control)	N7	kita beli semua botol dari customer sebagai insentif	Sistem insentif	Sistem Reverse Logistics
137	PPIC (Production Planning & Inventory Control)	N7	kita terima 100% dari driver tanpa sortir awal	Kebijakan penerimaan	Sistem Reverse Logistics

138	PPIC (Production Planning & Inventory Control)	N7	kita kerjasama dengan pihak ketiga untuk olah limbah	Pihak ketiga pengolahan botol	Keterkaitan dengan Ekonomi Sirkular
139	PPIC (Production Planning & Inventory Control)	N7	pernah dibuat gelas tapi biaya terlalu tinggi	keterbatasan inovasi	Kendala
140	PPIC (Production Planning & Inventory Control)	N7	reverse logistics penting dari sisi lingkungan, biaya, dan supply	urgensi reverse logistics	Manfaat
141	PPIC (Production Planning & Inventory Control)	N7	tantangannya adalah volume yang kembali	kendala utama	Kendala
142	PPIC (Production Planning & Inventory Control)	N7	kita buka peluang dari pihak luar untuk menambah volume	strategi ekspansi	Upaya & Strategi Peningkatan
143	PPIC (Production Planning & Inventory Control)	N7	kita tambah insentif untuk meningkatkan pengembalian	strategi reverse logistics	Upaya & Strategi Peningkatan

Lampiran 5. Surat Ijin Penelitian dari Fakultas



**FAKULTAS BISNIS
DAN EKONOMIKA**
UNIVERSITAS ATMA JAYA YOGYAKARTA

Nomor: 935/Pen/I
Lamp.: -
Hal: Ijin Penelitian, Permohonan Data, Wawancara

09 April 2026

Kepada Yth.
Pimpinan PT Hatten Bali Tbk
Jl. Bypass Ngurah Rai No.393, Sanur Kauh, Denpasar Selatan, Kota Denpasar
Bali 80227

Dengan hormat,

Sehubungan dengan penulisan Skripsi yang berjudul "*Implementasi Reverse Logistics dalam Mendukung Ekonomi Sirkular: Studi Kasus pada PT Hatten Bali Tbk*" yang dilakukan oleh mahasiswa kami dengan identitas:

Nama : Ida Ayu Trisna Mahaputri
NPM/Program Studi : 220327025/Manajemen
No. Handphone : 082247969201

Kami mohon Bapak/Ibu berkenan memberikan Ijin Penelitian kepada mahasiswa tersebut untuk mendapatkan data yang diperlukan.

1. Wawancara dengan pihak terkait:
 - Manager Operasional
 - *Corporate Secretary*
 - Staff Divisi Distribusi
 - *Customer Relation Executive (salesman)*
 - Staff Produksi PT Arpan Bali Utama
2. Observasi
3. Data pendukung seperti jumlah pengembalian botol dalam 3 tahun terakhir, dan lainnya

Skripsi yang ditulis oleh mahasiswa ini merupakan karya ilmiah yang memiliki tujuan dan sifat keilmuan. Oleh karenanya tidak akan dipergunakan untuk hal-hal yang merugikan.

Atas perhatian dan bantuannya, kami mengucapkan terima kasih.

Dekan



Wenefrida Mahestu N. Krisjanti, SE., M.Sc., Ph.D.

Alamat

Kampus III Gedung Bonaventura
Jalan Babarsari 43 Yogyakarta 55281
Indonesia

URL

<https://fbe.uajy.ac.id/>

Kontak

Telepon : +62-274-487711 ext 3120, 3127
Fax : +62-274-485227
Surel : fbe@uajy.ac.id



Lampiran 6. Surat Ijin Penelitian dari Perusahaan



PT. HATTEN BALI Tbk
The Cellardoor, Jl. Bypass Ngurah Rai
No. 393, Sanur - Bali 80227

Denpasar, 15 April 2026
No: 1426/HR/PT.HB/IV-2026

Kepada Yth.
Dekan Program Studi Manajemen Fakultas Bisnis dan Ekonomika
Universitas Atma Jaya Yogyakarta
Di-Tempat

Perihal : Persetujuan Permohonan Ijin Penelitian, Permohonan Data, Wawancara

Dengan Hormat,

Menanggapi surat permohonan ijin penelitian, permohonan data dan wawancara dari Universitas Atma Jaya Yogyakarta dengan nomor surat 935/Pen/I tanggal 09 April 2026, maka bersama ini kami sampaikan bahwa pada prinsipnya kami menyetujui dan menerima mahasiswa tersebut dibawah ini untuk menjalani proses penelitian, permohonan data dan wawancara di perusahaan kami.

Nama : Ida Ayu Trisna Mahaputri
NIM : 220327025
Program Studi : Manajemen

Sesuai jadwal yang direncanakan, yaitu pada 15 April 2026 sampai dengan 20 April 2026.
Demikian penyampaian kami, atas kerjasama yang baik diucapkan terima kasih.

Hormat kami,



Ni Wayan Natalyani
HR Supervisor

Lampiran 7. Data Jumlah Pengembalian Botol

No	Item Botol	2024	2025	Jan – Mar 2026
1	Antique Green 750 mL	27,294	28,555	8,893
2	Antique Flint 750 mL	30,942	28,082	6,595
3	Antique Burgundy 750 mL	20,607	18,910	5,571

Lampiran 8. Jurnal Acuan Penelitian



Production Planning & Control
The Management of Operations



ISSN: (Print) (Online) Journal homepage: <https://www.tandfonline.com/ol/tppc20>

The role of reverse logistics in a circular economy for achieving sustainable development goals: a multiple case study of retail firms

Atif Saleem Butt, Imran Ali & Kannan Govindan

To cite this article: Atif Saleem Butt, Imran Ali & Kannan Govindan (2023): The role of reverse logistics in a circular economy for achieving sustainable development goals: a multiple case study of retail firms, *Production Planning & Control*, DOI: [10.1080/09537287.2023.2197851](https://doi.org/10.1080/09537287.2023.2197851)

To link to this article: <https://doi.org/10.1080/09537287.2023.2197851>

Published online: 10 Apr 2023.

Submit your article to this journal

View related articles

View Crossmark data

Full Terms & Conditions of access and use can be found at
<https://www.tandfonline.com/action/journalInformation?journalCode=tppc20>

The role of reverse logistics in a circular economy for achieving sustainable development goals: a multiple case study of retail firms

Atif Saleem Butt^a, Imran Aif^b and Kannan Govindan^{c,d,e,f,g}

^aDepartment of Management, School of Business, American University of Ras Al Khaima, Ras Al Khaima, United Arab Emirates; ^bSchool of Business and Law, Central Queensland University, Melbourne Campus, Melbourne, Australia; ^cDepartment of Technology and Innovation, The University of Southern Denmark, Odense, Denmark; ^dInstitute of FTZ Supply Chain, Shanghai Maritime University, Shanghai, China; ^eDepartment of Technology and Innovation, Center for Sustainable Supply Chain Engineering, Danish Institute for Advanced Study, University of Southern Denmark, Odense, Denmark; ^fYonsei Frontier Lab, Yonsei University, Seoul, South Korea; ^gSchool of Business, Woxian University, Salsolpet, India

ABSTRACT

Contemporary business models need to reimagine the production and distribution of goods and services embedding social, economic, and environmental goals concurrently. To this end, reverse logistics is streamlining a circular economy (take, make, use, reuse, repair, and recycle) catapulted to the top of the discussion for collecting and distributing products. Yet, little is empirically known about the role of reverse logistics in the circular economy. This study attempts to fill this knowledge gap in theory and practice through a multiple case study approach including 40 semi-structured interviews with reverse logistics specialists from the four largest retailing firms in the United Arab Emirates (UAE). Findings reveal multiple ways by which reverse logistics contributes to a circular economy; for instance, reverse logistics enables firms to develop a circular product design; the combination of reverse flow with the forward flow consolidates the high volume of products, thus mitigating waste; use of innovative tools (robots, autonomous bikes) in reverse logistics increases the used products' return rate and thereby enhancing recycling; technological advances (e.g. big data and IoT) in reverse logistics help trace the product thus reducing waste. The paper offers several valuable insights for practitioners to build a circular economy via reverse logistics (waste reduction, responsible consumption, and sustainable logistics). Our study also contributes to multiple United Nations Sustainable Development Goals (SDG 11, SDG 12, and SDG 13).

ARTICLE HISTORY
Received 16 April 2022
Accepted 27 March 2023

KEYWORDS
Reverse logistics
sustainable development
goals (SDGs); circular
economy; retailers; case
study

1. Introduction

Despite the acknowledged benefits of a circular economy (CE), the current dynamics of a linear economy, including taking, making, using, disposing, and polluting, have still made the way for many industries for the production and distribution of products and services (Zhang et al. 2021). A circular offers promising solutions to manage disposals and reduce waste that is often generated by a linear economy (Kazancoglu et al. 2021). It is based on the principles of keeping products and materials in use and protecting the people and planet (EMF 2021). While it is evident that much waste is generated in a production and distribution system (Susanty, Tjahjono, and Sulistyani 2020), a circular economy seeks to reduce such waste to its utmost possible potential.

In recent times, reverse logistics has appeared as a critical lever to building a circular economy. Reverse logistics is defined as the logistics going on in the opposite direction (Makrova, Shubenkova, and Pashkevich 2018; Guide, and Van Wassenhove 2009). A more holistic view of reverse logistics includes reducing materials in the forward system so that fewer materials flow back, reusing materials is possible, and recycling is facilitated (Guide et al. 2003). It is a process

whereby companies can become more environmentally efficient through recycling, reusing, and reducing the number of materials used (Alghababeh et al. 2022; Zhang et al. 2021). Hence, recycling is considered an important component of reverse logistics. For instance, Makrova, Shubenkova, and Pashkevich (2018) conformed that recycling is processing waste materials into new products. Farooque, Zhang, and Liu (2019) indicated that recycling aims to limit the loss of potentially useful materials, reduce the consumption of new materials, reduce water pollution produced by landfill by reducing the need for 'conventional' waste disposal methods, and lower the emissions of greenhouse gases. Moreover, a closed-loop supply chain uses reverse logistics to feed products that have served their purpose back into the forward logistics process. A manufacturer creates a product, ships it to customers, and then encourages customers to return it once they no longer need it (Guide and Van Wassenhove 2009). These used products become part of the manufacturer's supply through repair, resale, or reuse.

These systems are an essential part of the circular economy, which aims to eliminate waste. Waste reduction begins with closed-loop supply chains, using what would otherwise

be waste as manufacturing supply (Zhang et al. 2021). A new, potentially profitable supply methodology, 'circular supply/logistics chains', is gaining popularity. Essentially, circular logistics system encourages suppliers and manufacturers of products to take back the used material and remake them for future sale (Mubarik et al. 2021). Circular logistics also puts firms at less risk of price volatility and provides the ultimate value to the customers.

Nonetheless, numerous firms in contemporary logistics networks are neither well-prepared nor willing to address these challenges. A recent survey, for example, suggests that <10% of the manufacturers design their products and packaging conducive to reverse logistics (Renewable-Matters 2020). Yet many manufacturers globally do not have a reverse logistics department (Wilson, Paschen, and Pitt 2022). Perhaps there is a little or no incentive for logistics firms to invest in reverse logistics because the profit margins are far below what one can expect in forward logistics. Also, the capabilities of reverse logistics are at minimal levels. For instance, a survey found that only 7 out of 400 training programs on supply chain management in the USA included reverse logistics (Renewable-Matters 2020). As such, the costs associated with reverse logistics are considerably higher and undermine its operationalization in a circular economy.

While supply chain literature does argue that reverse logistics may enable a successful transition to a CE (Wilson, Paschen, and Pitt 2022), the connection between reverse logistics and CE has yet to be examined. Zhang et al. (2021) also argued that a CE has been the subject of limited or no research in the logistics and supply chain management discipline. They raised a call for research to help firms understand the role played by reverse logistics in a circular economy. Our study attempts to fill this gap in the logistics and supply chain management literature. In doing so, we use the retailer's perspective to understand the role of reverse logistics in a CE as retailers are closer to the point of sale and are likely to initiate resource circularity at the end of the product life cycle. To achieve this objective, we develop the following research question: *What role does reverse logistics play in the circular economy?*

To address this research question, we use the United Arab Emirates as an empirical context. The UAE is committed to contributing to a seamless transition into a circular economy with an active role played by the Ministry of Climate Change and Environment (MOCCAE). The MOCCAE is responsible for overseeing the development and implementation of effective strategies for the UAE Circular Economy Initiatives. The Ministry also aims to enhance the United Arab Emirates' efforts to address the issue of climate change by implementing comprehensive policies and initiatives to mitigate and adapt to climate change and protect our unique environmental systems. MOCCAE is also working on the sidelines with UNO to support SDGs. For instance, UNO is supporting MOCCAE in decoupling economic growth from resource use, setting global standards in product sustainability, keeping resource use within planetary boundaries, and promoting the reuse of materials.

The study contributes to the circular logistics and supply chain management literature in the following ways. First, perhaps it is among the few studies exploring the link between reverse logistics and a CE from retailers' perspective using the Middle East as a unique context. Specifically, this study outlines different ways reverse logistics can benefit the CE. Second, this study contributes to the practice by developing a pictorial model depicting links between reverse logistics and CE. We argue that retailers (and potentially other firms in the supply chain) can use the model presented in this study to optimize their current business practices for a seamless transition into a CE. It also uses the Middle East (particularly United Arab Emirates) as an empirical context to establish how prosperous this region has been in realizing the CE through efficient reverse logistics operations.

The rest of the paper is structured as follows. First, the literature on reverse logistics is reviewed. The literature further discusses the concept of CE and reverse logistics within a circular economy. It also examines the link between reverse logistics/closed-loop supply chains and CE. Second, the qualitative case study methodology has been elaborated. This includes demystifying the sample, sampling, and data collection process. It further discusses the data coding and analysis process and steps to maintain rigour in this qualitative and multiple case study design. Fourth, results and raw findings are presented in detail thematically. Fifth, the study's theoretical and practical contributions are elaborated on. Finally, the paper discusses its limitations and future research direction in this promising area.

2. Literature review

2.1. Reverse logistics

The process of planning, implementing, and regulating the most effective and efficient transfer of raw materials, completed goods, in-process inventories, and associated information from the point of consumption to the place of origin (capture value is referred to as reverse logistics (Rogers and Tibben-Lembke 2001). Because of the potential for value recovery from old items, reverse logistic research has received deep interest since the 1970s. Fleischmann et al. (2004) compared the differences and similarities between reverse and forward logistics strategies using quantitative models. Distribution planning, inventory control, and production planning were the domains they separated the field of reverse logistics into. Carter and Ellram (1998) looked into reverse logistics from reverse distribution and resource minimization. They argued that cost reductions were noted in addition to government regulation and environmental concerns in the reverse logistics process. Supply chain coordination and reverse logistics were used in certain prior studies. Tang and Teunter (2009) looked at the value of a shared cycle time for the multi-product economic lot scheduling problem, including new and remanufactured items from returns. The authors focussed on a case study of a firm that produces and remanufactures various items on the same production line, determining the ideal lot sizes and

be waste as manufacturing supply (Zhang et al. 2021). A new, potentially profitable supply methodology, 'circular supply/logistics chains', is gaining popularity. Essentially, circular logistics system encourages suppliers and manufacturers of products to take back the used material and remake them for future sale (Mubarik et al. 2021). Circular logistics also puts firms at less risk of price volatility and provides the ultimate value to the customers.

Nonetheless, numerous firms in contemporary logistics networks are neither well-prepared nor willing to address these challenges. A recent survey, for example, suggests that <10% of the manufacturers design their products and packaging conducive to reverse logistics (Renewable-Matters 2020). Yet many manufacturers globally do not have a reverse logistics department (Wilson, Paschen, and Pitt 2022). Perhaps there is a little or no incentive for logistics firms to invest in reverse logistics because the profit margins are far below what one can expect in forward logistics. Also, the capabilities of reverse logistics are at minimal levels. For instance, a survey found that only 7 out of 400 training programs on supply chain management in the USA included reverse logistics (Renewable-Matters 2020). As such, the costs associated with reverse logistics are considerably higher and undermine its operationalization in a circular economy.

While supply chain literature does argue that reverse logistics may enable a successful transition to a CE (Wilson, Paschen, and Pitt 2022), the connection between reverse logistics and CE has yet to be examined. Zhang et al. (2021) also argued that a CE has been the subject of limited or no research in the logistics and supply chain management discipline. They raised a call for research to help firms understand the role played by reverse logistics in a circular economy. Our study attempts to fill this gap in the logistics and supply chain management literature. In doing so, we use the retailer's perspective to understand the role of reverse logistics in a CE as retailers are closer to the point of sale and are likely to initiate resource circularity at the end of the product life cycle. To achieve this objective, we develop the following research question: *What role does reverse logistics play in the circular economy?*

To address this research question, we use the United Arab Emirates as an empirical context. The UAE is committed to contributing to a seamless transition into a circular economy with an active role played by the Ministry of Climate Change and Environment (MOCCAE). The MOCCAE is responsible for overseeing the development and implementation of effective strategies for the UAE *Circular Economy Initiatives*. The Ministry also aims to enhance the United Arab Emirates' efforts to address the issue of climate change by implementing comprehensive policies and initiatives to mitigate and adapt to climate change and protect our unique environmental systems. MOCCAE is also working on the sidelines with UNO to support SDGs. For instance, UNO is supporting MOCCAE in decoupling economic growth from resource use, setting global standards in product sustainability, keeping resource use within planetary boundaries, and promoting the reuse of materials.

The study contributes to the circular logistics and supply chain management literature in the following ways. First, perhaps it is among the few studies exploring the link between reverse logistics and a CE from retailer's perspective using the Middle East as a unique context. Specifically, this study outlines different ways reverse logistics can benefit the CE. Second, this study contributes to the practice by developing a pictorial model depicting links between reverse logistics and CE. We argue that retailers (and potentially other firms in the supply chain) can use the model presented in this study to optimize their current business practices for a seamless transition into a CE. It also uses the Middle East (particularly United Arab Emirates) as an empirical context to establish how prosperous this region has been in realizing the CE through efficient reverse logistics operations.

The rest of the paper is structured as follows. First, the literature on reverse logistics is reviewed. The literature further discusses the concept of CE and reverse logistics within a circular economy. It also examines the link between reverse logistics/closed-loop supply chains and CE. Second, the qualitative case study methodology has been elaborated. This includes demystifying the sample, sampling, and data collection process. It further discusses the data coding and analysis process and steps to maintain rigour in this qualitative and multiple case study design. Fourth, results and raw findings are presented in detail thematically. Fifth, the study's theoretical and practical contributions are elaborated on. Finally, the paper discusses its limitations and future research direction in this promising area.

2. Literature review

2.1. Reverse logistics

The process of planning, implementing, and regulating the most effective and efficient transfer of raw materials, completed goods, in-process inventories, and associated information from the point of consumption to the place of origin recapture value is referred to as reverse logistics (Rogers and Tibben-Lembke 2001). Because of the potential for value recovery from old items, reverse logistic research has received deep interest since the 1970s. Fleischmann et al. (2004) compared the differences and similarities between reverse and forward logistics strategies using quantitative models. Distribution planning, inventory control, and production planning were the domains they separated the field of reverse logistics into. Carter and Ellram (1998) looked into reverse logistics from reverse distribution and resource minimization. They argued that cost reductions were noted in addition to government regulation and environmental concerns in the reverse logistics process. Supply chain coordination and reverse logistics were used in certain prior studies. Tang and Teunter (2009) looked at the value of a shared cycle time for the multi-product economic lot scheduling problem, including new and remanufactured items from returns. The authors focused on a case study of a firm that produces and remanufactures various items on the same production line, determining the ideal lot sizes and

Table 1. Profile of firms and interviewees.

Number of retailers/cases	Industry	Headquarters	Number of stores worldwide	Respondents codes	No. of years spent in the role	Demographics of interviewees
Retailer I	Clothing	United Arab Emirates	150	P1, P2, P3, P4, P5, P6, P7, P8	5 years on average	Local nationals: 3 Expatriates: 5
Retailer II	Food and Grocery	France	320	P9, P10, P11, P12, P13, P14, P15, P16, P17, P18, P19, P20	3 years on average	Local nationals: 5 Expatriates: 7
Retailer III	Electronic appliances	United Arab Emirates	500	P 21, P22, P23, P24, P25, P26, P27, P28, P29, P30	2.5 years on average	Local nationals: 3 Expatriates: 7
Retailer IV	Fashion Apparel	United Arab Emirates	200	P31, P31, P33, P34, P35, P36, P37, P38, P39, P40	5 years on average	Local nationals: 4 Expatriates: 6

manufacturing sequence for each product. Table 1 provides key definitions of reverse logistics.

2.2. Circular economy

A CE is a systemic approach to economic development designed to benefit businesses, society, and the environment. In contrast to the 'take-make-waste' linear model, a circular economy is regenerative by design and aims to gradually decouple growth from the consumption of finite resources (EMF 2021). The idea of a CE has received much attention from consultants, scientists, and legislators, with a profound interest in creating a more sustainable society (Reike, Vermeulen, and Wijes 2018). The significant actors engaged, including legislative and governmental agencies, non-governmental organizations (NGOs), and consulting firms, have established several circular economy activities, such as stock optimization, eco-efficiency and eco-effectiveness, waste reduction, and the 4Rs (Kalmukova, Sadagopan, and Rosado 2018; Batista et al. 2018). From the extraction of raw materials through the final disposal of trash, the phrase 'cradle to grave' was used to characterize the life cycle of a product or service, represented by the steps of the manufacturing and marketing process (De Angelis, Howard, and Mienczyk 2018).

The cradle environment is where natural resources are harvested, while the grave environment is eventually disposed of trash. The concept of 'cradle to cradle' goes beyond the usual 'cradle-to-grave' approach to include waste as a resource in the manufacturing process (Misha, Hopkinson, and Tidridge 2018). However, Andersen published the first circular economy study. This idea appears implicit in the 'cradle-to-grade' concept, which provided an overview of important concepts and approaches in environmental economics targeted at long-term sustainability. Consider the residue as 'food' for a new product in the same or different production processes, resulting in a product life cycle that never ends (McDonough and Braungart 2002). A circular economy supports decreasing waste disposal to landfills and incinerators by returning leftovers to lucrative business cycles.

2.3. Reverse logistics in a circular economy

Reverse logistics is compatible and fits well within a circular economy, particularly the reverse route of technical items,

which closely mimics the reverse logistics operations described in numerous academic works (Rogers and Tibben-Lembke 2001). Reverse logistics can further aid the shift to a circular economy by closing the loop on product life cycles (Makarova, Shubenkova, and Pashkevich 2018). It is well established that recovering and recycling a product is crucial to reducing waste, and efficient reverse logistics may reduce waste from the beginning of the product design process to the end of the production process, resulting in a lower carbon footprint for a brand. Burke, Zhang, and Wang (2021) also indicated that designing end-of-life products is an excellent place to start while establishing a circular supply chain in the transition to a circular economy. Furthermore, to promote a circular economy and reduce waste generation, businesses must dispose of garbage in an environmentally appropriate manner. As a result, efficient reverse logistics can help with the most efficient reuse, recycling, and waste disposal (Wang et al. 2019).

Furthermore, reverse logistics allows for forming new businesses because the original objects are made of recyclable materials (Farooque, Zhang, and Liu 2019). On the other hand, a CE encourages logistics and reverse manufacturing resulting in social, environmental, and economic benefits, such as job creation and environmental protection (Zhang et al. 2021). Alternately, enterprises must develop innovative, more sustainable manufacturing methods that minimize natural resource extraction and can be reused multiple times before becoming challenging to reintegrate into the production chain (Renewable-Matters 2020). Because the abandoned product is returned to the manufacturer, it is processed and recycled, and reverse logistics may play a vital role in this scenario. Although the importance of reverse logistics in a CE is now well established, many studies argued that it is becoming increasingly difficult for firms to operationalize the idea of reverse logistics in a CE (Makarova, Shubenkova, and Pashkevich 2018; Wang et al. 2019). While these studies outline challenges that reverse logistics can encounter in a CE, there is limited evidence for the connection or link between reverse logistics and CE.

2.4. Closed-loop supply chains and circular economy

The CE can be achieved through long-lasting design, maintenance, repair, reuse, remanufacturing, refurbishing, and

recycling (MahmoudGonbadi, Genovese, and Sgalambro 2021). Extensively introducing these new activities into current industrial systems may create positive environmental benefits while disrupting current organizations and supply chains. In this regard, it is necessary to redesign current supply chains (CLSCs) emerges as a response to this need to reinterpret supply chains within the CE. The CE can also be achieved through long-lasting design, maintenance, repair, reuse, remanufacturing, refurbishing, and recycling. Introducing these new activities into current industrial systems may create positive environmental benefits while disrupting the way organizations and supply chains work (Tseng et al. 2020). In this regard, it is necessary to redesign current supply chains. The concept of CLSCs emerges as a response to this need to reinterpret supply chains within the CE. Research efforts frequently focus on closed loops at the end-of-life (EOL) of consumer products. However, closing the loop happens throughout product life cycles and for other primary and secondary products.

Interestingly, few studies try to explain the role of closed-loop supply chains in a CE (Belhadi et al. 2022). For example, Wells and Seitz propose four types of closed loops—internal or within the manufacture, post-business, post-consumer, and post-society—and discuss different characteristics and challenges for each type. This limited analysis of closed-loop combined with reverse logistics invites further research on this topic, especially as new CE practices and business models gain popularity in businesses (Zhang et al. 2021). In addition, CLSCs are at the core of CE business models; however, they have been mainly studied as separate research streams (Tseng et al. 2020). Moreover, limited efforts have clarified the relationship between CE and CLSCs in literature and practice.

3. Methodology

This study is based on multiple case study analyses using four largest retailers of the United Arab Emirates—each retailer is treated as a case in this study. Eisenhardt (1989) argues that multiple case studies should be preferred as they allow researchers to analyze in-depth analysis and elicit hidden patterns of information in each case. The case study methodology is the most appropriate approach for the unexplored research topic and helps answer how and/or why questions (Butt 2022a; Welch et al. 2011). Since studies have explored the link between reverse logistics and CE in the supply chain and logistics management literature (Zhang et al. 2021), the case study method was found to be the most appropriate approach to achieve the objectives of this study.

3.1. Study sample

Gustafsson (2017) advised that a minimum of four cases would be sufficient to study an unexplored topic. As such, we sampled four major retailers and interviewed reverse logistics specialists who manage the entire returns process,

including communicating with suppliers, manufacturers, and distributors. These specialists are also responsible for material planning, warranty, repair processing, and purchasing. Overall, we conducted 40 semi-structured interviews. We assured the respondents of anonymity and confidentiality throughout the interview process, which resulted in accurate and unbiased responses to the phenomenon of interest. Brief information about the four firms (cases) is provided below in Sections 3.1.1, 3.1.2, 3.1.3, and 3.1.4.

3.1.1. Retailer I

This retailer has evolved to become a highly successful textile producer in the UAE and the Middle East. Their services have been sought out by several major companies, including a strong staff of 400 people and a monthly capacity of 500,000 garments. Dresses, Ladies' Tops, Skirts, Shorts, T-shirts, Polo T-shirts, Sweatshirts, Hoodies, Joggers, Jumpsuits, Nightwear, and Swimwear are among our core product strengths as Knit, Woven, and personal protective equipment manufacturing setup. This firm is proud of its product quality and efficiency.

3.1.2. Retailer II

This is the UAE's second-largest food and grocery store, with over 30 countries across the Middle East, Africa, and Asia. They operate over 320 stores in 16 countries, serve around 750,000 customers daily, and employ about 37,000 people. The retailer operates various store formats and online services to address the rising demands of its diverse customer base and delivers an unrivalled selection of over 500,000 food and non-food products and locally influenced, exceptional customer service to produce memorable moments for everyone every day.

3.1.3. Retailer III

This business is an integrated packaging firm in the UAE and Saudi Arabia that manufactures a comprehensive range of rigid and flexible packaging goods for the beverage, food, and personal care industries. This company has set a world-class standard for Quality, Reliability, and Finish by utilizing operational and corporate best practices for over 55 years. This company is one of the Middle East's major packaging businesses, with production facilities covering over 300,000 m² in Saudi Arabia, Egypt, and the United Arab Emirates. With a turnover of over \$ 800 million annually, this business serves the food and beverage sectors throughout the Middle East, East Africa, and North Africa.

3.1.4. Retailer IV

This is a fashion retailer in the Middle Eastern and leads in luxury shopping, carrying some of the world's best luxury labels in clothing, jewellery, home, and department store categories. Its presence in luxury retail has forayed into lifestyle retail by serving leading brands in the Beauty, Home, and Fashion categories. This store has solidly developed itself as a regional retail leader due to its ability to harness brand

potential and intuitive consumer awareness. The retail division, which employs about 9000 employees and is based in the United Arab Emirates, has expanded its operations to the Middle East, including the Kingdom of Saudi Arabia, Kuwait, Bahrain, Qatar, and Oman, and currently operates nearly 200 stores across the region.

3.2. Sampling and data collection

Our initial meetings with the respondents from these four retail firms indicated that these firms had developed robust reverse logistics operations to enable a CE transition. In addition, they strictly adhere to the principles of SDGs and standards proposed by MOCCAE to play their part in achieving CE. To capture multiple perspectives, we chose firms from multiple industries (food and grocery, fashion, clothing, electronic appliances, etc.) to determine any convergence or divergence between firms for a seamless transition into CE (Fusch and Ness 2015; Butt 2022). Table 2 provides detailed information on the retailers participating in the study and the participants' demographics.

For data collection, we used one professional industrial forum to discuss the research objectives and exchange contact information with knowledgeable respondents. We then used purposive sampling to initiate the sampling process. This process was further complemented with snowball sampling to ease the sampling of reverse logistics experts. That is, we used purposive sampling to select the respondents and then requested these participants to help us get in touch with other respondents (additional 20 respondents using snowball sampling) on the phenomena of interest. This entire process resulted in a final sample of 40 respondents.

Prospective respondents were emailed with interview questions, and study objectives before the interviews. Interviews were conducted over four months, from July to October 2021. In addition, all interviews lasted for 60–90 min and were transcribed and recorded verbatim. After 40 interviews, new themes ceased to emerge, which indicates data saturation (Fusch and Ness 2015). We, therefore, inferred that 40 interviews would be enough for data collection purposes. McCracken (1988) found that mostly eight interviews allow a study to reach saturation. In addition to interviews, we accessed firm policy documents, websites, and blogs to triangulate the findings (Creswell 2014 and Yin 2009). An interview protocol is provided in Appendix A.

To validate the findings, we ran a second phase of interviews with another 8 respondents (2 respondents from each retailer) to discuss any potential or actual discrepancies in the interview and the secondary data. The respondents suggested some minor corrections. For instance, our interview data unveiled that retailers are working with third-party logistics to collect returnables. At the same time, the firm's policy documents suggested that firms operate their own logistics departments to collect returnable products. Moreover, the interview guide was prepared following a thorough brainstorming session conducted by researchers.

First, we wrote down questions that came to our mind, and then we cut down any questions that seemed redundant and irrelevant to the topic of interest. All questions were constructed to fit the case study method analysis. Besides engaging in a brainstorming session, we also referred to current literature to determine the interview questions other studies might have asked on a relevant topic (Butt et al. 2022; Welch et al. 2011).

3.3. Data coding and analysis

Strauss and Corbin (1990) propose three different coding types, including open, axial, and selective coding, to code and analyze. All interviews were analyzed line by line. Overall, three analysts analyzed the data. A specific code was assigned to each incident or event during initial coding. We used Nvivo for initial coding including the comparison of the inter-coder reliability. Next, we used axial coding to rearrange data initially divided into categories/codes. Axial coding was then employed to understand how different categories relate to each other and are cross-cut. Finally, selective coding was used to restrict the coding process to variables of interest (e.g. amend product design, e.g.) and further analyze their relationship.

Guba and Lincoln's four principles (1994) were strictly followed to ensure the trustworthiness of the results: (1) Credibility: participants were asked to review transcripts and provide feedback about any misunderstandings or omissions; (2) Transferability: different participants were selected to represent differing positions, responsibilities, and regions. This study also includes the number of organizations, number and type of participants, data collection, and interview period; (3) Dependability: other researchers compared the codes for the same transcripts produced. With 91 percent similarity, the inter-code comparison was found satisfactory; (4) Conformity: conclusions backed by quotations, routine data review, and judgmental bias prevention.

4. Results

The narratives from 40 respondents revealed some interesting findings. Respondents pointed out that circular product design, product consolidation, using multiple transport modes, investment in technology, and collaboration in reverse logistics can operationalize a CE in the retail industry. To this end, Table 2 provides a detailed cross-case analysis of the findings.

4.1. Circular product design

Thirty-eight (95%) respondents highlighted the importance of designing products conducive to reverse logistics. A detailed discussion with five reverse logistics experts (P5, P8, P9, P14, P17) revealed that their manufacturers struggle to

design products conducive to reverse logistics, eventually contributing to waste mitigation (Figure 1).

Respondents pointed out that an eco-friendly product design in reverse logistics is key to enhancing a CE base. They further stated a green product design can last longer and contributes to a CE. Furthermore, such products are easy to reuse and recycle in reverse supply chains. Further discussion with five respondents (P1, P8, P11, P25, P31) revealed that they are working with their manufacturers to design a product based on the principles of a CE. Such products are durable, easy to reuse, recycle, and profitable simultaneously. Respondents further noted that designing products that meet a CE's principles would not be easy. However, having a robust product development process that can determine the production methods, sales, marketing, and other aspects of making goods can help firms play their part in a CE. Respondents also noted that the design thinking approach could help firms develop products that can last longer and are easily recycled and reused. The quote below by P1 testifies to this:

I know many firms in our industry are using circular-economy principles to design and create products that can last longer. Businesses are also designing products that are easy to reuse and recycle. While implementing these principles is not easy, a highly collaborative product-development system and a robust design-thinking approach can help in the regard and firms can play their role in enhancing a circular economy (P1)

4.2. Product consolidation

24 respondents narrated (60%) that it is common in the food industry to collect usually geographically dispersed goods. They further contended that such dispersed and low-value products required aggregated volume. Furthermore, they have consolidated the returns flow to reach its sufficient scale because it is considered easier to consolidate across different companies than forward flows. Also, the return flows are not subject to confidentiality constraints. Further discussion with three reverse logistics specialists (P31, P32, P33) revealed that they now offer aggregate return flows within the industry to consolidate the waste. For instance, particularly in the fashion and apparel industry, these respondents pointed out that their logistics departments have managed the reclamation of over 15,000 tons of used apparel daily in over 15 countries for some well-known large apparel brands.

Interestingly, six specialists (P22, P27, P31, P36, P37, and P38) from the food and grocery industry argued that return flows can be supplemented with an idea of forward flows. Combining reverse flow with forwarding flows would mitigate the waste at the outset and make the recycling process easy for firms. For instance, these specialists argued that their logistics services provider delivers fresh meat to its customers on the south side of the UAE. It usually picks up containers filled with meat waste that will be potentially used for fertilization purposes. The following quote by P23 testifies to this:

We have consolidated our return flows of different food items to save time and mitigate waste. I also believe that consolidating return flows is easy and not challenging. Food industries can merge return flows with forward flows for fertilization. Our logistics department delivers fresh meat to our customers in southern UAE. It also picks up containers filled with meat waste that will be used to produce fertilizers in the future (P23).

4.3. Provide convenience to consumers

Over 32 (80%) respondents from all four retailers stressed that it is essential for firms to provide their end-consumers with an easy option to return the product so they can recycle their products. These respondents argued that end-consumers can decide to drop the used product at their various among various pickup and drop-off options. Moreover, they have offered their consumers other options, including collection from neighbourhood containers, courier service centres, and automated parcel lockers. These respondents also said they are working with a courier services provider responsible for collecting used products from the owners. Another return specialist associated with the electrical appliance industry pointed out that his firm works with the local postal services that collect end-of-life electric appliances from consumers' homes. Consider the quote below:

We want to ensure our customers can return the products conveniently. To facilitate the process, we are now actively working with different logistics companies to pick up end-of-life products from the convenience of the owner's home so they do not go to waste. Consumers can also return products through the courier services providers we have collaborated with (P19).

Further discussion with six reverse specialists (P7, P8, P9, P11, P22, P32) endorsed working on frictionless collection schemes to facilitate the reverse logistics process and operationalize a CE. They further stated the idea of providing reusable and returned bags to their end-consumers to facilitate the return process and mitigate waste. The following quote testifies to this:

We provide a specially designed bag for returning used apparel as a part of a trade-up program. We also provide various services to our customers at the time of collection such as disassembly, packaging, and labelling, and accepting "happy returns" so we can receive and recycle as many reused products as possible and minimize waste (P27).

Five respondents (P17, P19, P28, P29) also pinpointed the idea of incentivizing end customers to return their used products for recycling purposes. For instance, they noted that firms can incentivize end customers to reduce collection costs. This will encourage consumers to return the used products instead of discarding them, resulting in higher waste in the system. One respondent narrated that in one of their stores, customers can return the used apparel and get paid back in the form of store vouchers, which they can use for up to one year. Such a strategy has helped them increase the return rate of used products by up to 50%.

4.4. Use multiple transport modes

Thirty (75%) respondents unveiled the importance of adopting alternative modes of transport to streamline the reverse

logistics process, which eventually contributes to a CE. Six reverse logistics experts (P31, P33, P37, P38, P39, P40) argued that traditional modes of transport (trucks, e.g.) could not advance reverse logistics and operationalize a CE base. They further argued that such traditional modes of transport are optimized for forward logistics and do not always fulfill the reverse logistic costs and the specific service requirements. The respondents further stressed that adopting alternative modes of transport, such as autonomous vehicles and different electric cargo bikes, can result in higher return pickups and reduce waste in the system. These respondents further mentioned that they have opted for specific cargo bikes for collecting used appliances in some areas of Dubai and Abu Dhabi. As a result, these cities are now witnessing reduced disposal of unwanted and unnecessary products.

Discussion with four additional respondents (P6, P15, P22, P31) stressed the importance of using a courier or electric cargo bike, in particular, to enhance the return pickup rates. For instance, they pointed out that they developed a partnership with companies manufacturing autonomous robots to pick up the returned items on their behalf to play their part in a CE base. They are also conducting a pilot study on returns pickup services in Dubai's expensive and high posh areas. Consider the quote below:

My firm recently entered into an MOU with a manufacturing firm that will provide us with over 30 small four-wheeled autonomous courier robots, picking up returns and any leftovers that eventually go to waste. Although we are just in a pilot phase, I believe this is an excellent way to attain the specific service requirements (P31).

Five reverse logistics specialists (P5, P6, P9, P13, P14) also endorsed relying on alternative modes of transport, such as courier robots and cargo bikes, to enhance the collection of used items and mitigate waste.

We have electronic cargo bikes that are more relevant to meet reverse logistics needs. Our staff uses electronic cargo bikes to collect used electronic equipment in some mid-end areas of Dubai. This way, we can recycle this used electronic equipment and play our role in mitigating the waste (P36).

4.5. Invest in technology

Thirty-seven (92%) respondents highlighted how technological investment in reverse logistics has immense power to transform traditional business. Respondents noted that technological investments, such as cloud computing, big data analytics, predictive data analytics, and the Internet of Things (IoT) in reverse logistics will make a CE model more optimal and cost-effective. Eleven respondents (P1, P7, P13, P22, P24, P26, P31, P33, P36, P37, P38) narrated that these technological investments in reverse logistics would bring environmental improvements and lead to better economic benefits. Moreover, such technological investments in reverse logistics would bring a paradigm shift and provide tools to the firms that would substantially lower the costs associated with reverse supply chains and create substantial economic value. Consider the quote below by P37:

I can certainly tell you that cloud computing, big data analytics, and predictive analytics have the immense power to transform traditional supply chains. I am sure that these technologies will

accelerate a circular economy and provide information about modifying the current business model through the application of digital cloud computing technology (P37).

Other respondents argued that the blockchain has evolved in reverse logistics and helped firms excel in their business operations through decentralization, better tracking processes, and further monitoring of the goods delivered to the end consumers. Furthermore, blockchain can also contribute to the regeneration of nature. For instance, water and waste management firms can use blockchain to record all the stages potentially involved in shifting sludge from waste to agricultural lands. Blockchain technology is also helping firms in task circulation and further identifies and monitors materials and other components through the reverse logistics process. Consider the quote below:

Blockchain in reverse logistics supports circular economy through monitoring the materials. Our blockchain is linked with additional technological tools, such as Internet of Things sensors that help us to track the movement of goods and their adaptation. This way, we can find updated information about the product on a blockchain which helps us make a well-informed decision about materials management.

Other respondents highlighted the importance of big data analytics, leading to an enhanced CE. Respondents stated that through big data analytics, they can better manage any predictive maintenance. Respondents argued that they can manage and optimize routes by applying big data. Moreover, firms can understand and make decisions about the patterns of the products and the customer requirements. Through the application of big data, firms would be stronger to improve their connections and exchange of information with internal and external stakeholders. Consider the quote below by P32:

I firmly believe that big data is now a key for firms to achieve sustainability. The application of big data can create additional opportunities for even broader and extensive reuse of the products, their components, and materials. Firms would be in a better position to understand real-time route optimization and customer requirements (P32).

Respondents also pointed out how the Internet of Things (IoT) can play its part in a CE. They narrated that CE principles demand industrialists to rethink their current supply chain processes to avoid emissions and waste. They argued that products should ideally be designed to last longer to minimize waste. And the Internet of Things enabled system can optimize the entire product cycle, from material procurement to further dismantling and reusing products to minimize waste. Consider the quote below:

IoT helps us to drive the sustainability of materials used. This can range from one industry to another. IoT is crucial in minimizing waste to design products that can last longer and be refurbished for reuse in the short and long run. I believe that the Internet of Things has the potential to transform the product's entire life cycle, all in all.

4.6. Supply chain collaboration

Many respondents pointed out that they are working with the manufacturers and taking a closer look at the agreements they have in place with the manufacturers. Respondents further argued that price sometimes becomes the major cause of

concern between retailers and manufacturers. In addition, manufacturers, in general, are not encouraged to process returns from retailers. Hence, there is a lot of overhead and disputed returns from wholesale customers. Consider the quote below:

I believe that returns are one of the major issues in the electronics industry. The annual GDP of this industry is very high and figuring out what to do with all the returns has been a growing challenge for the retail sector and manufacturers. Both stakeholders need to get together on one page and lay down a plan to address these challenges in reverse logistics and play their role in achieving UAE's policy statement on circular economy.

Further discussion with respondents revealed that the collaboration among the supply chain partners can potentially eliminate any additional duties which rest with the manufacturers in the supply chains. There are plenty of companies currently offering reverse logistics solution. These companies claim to help retailers boost their recovery rates and further reduce dependence on the current liquidators. These service providers also argue for automating the disposition process to enhance the recycling process. The following quote testifies to this:

Manufacturers would aim to take everything in the electronics industry to protect their brands. They also feared they would end up liquidating somewhere, which might affect their ability to contribute to a circular economy.

Additional respondents revealed the importance of taking on different board stakeholders (both internal and external)

and developing a cross-functional business approach to enhance a CE. These respondents argued that a robust supply chain collaboration will mitigate waste and lower the costs associated with reverse logistics. Respondents further stressed that firms need to work collaboratively with external stakeholders in reverse logistics to address the challenges of higher waste, recycling, and reusing the products. For instance, three respondents pinpointed that only cross-functional work within firms is insufficient to address the environmental-related challenges (i.e. waste reduction). Instead, they need to work across the relationship between the stakeholders in the supply chain, such as retailers, logistics services providers, customers, and even the manufacturers, to play their part in streamlining a CE. However, these respondents also pointed out that aligning different stakeholders' objectives in an industry is challenging. Consider the excerpt below by P40:

The onus is on all stakeholders to contribute to the success of reverse logistics and environmental challenges. Yet, the challenge here is to get everybody's objective aligned in the supply chain industry (P40)

The idea of developing a cross-function approach outside the boundaries of the firms was further endorsed by eleven reverse logistics specialists. They argued that developing such an approach requires senior supply chain leadership to effectively communicate the bigger picture with the relevant external

Table 2. Cross case analysis of the role of reverse logistics in a circular economy for achieving.

No. of cases	Efficient product design	Product consolidation	Provide convenience to consumers	Use multiple transport modes	Invest in technology	Supply chain collaboration
Retailer I	Products are easy to dismantle and can be reused	Consolidate the return flow for low volume	Provide reusable bags to consumers to return the products. Allow customers to return products through local pickup/drop off points.	Use courier robots to collect products from high and difficult areas to increase the product return rate.	Big data in reverse logistics provides better track and traceability of the product to enhance the recycling process.	Supply chain collaboration to strengthen reverse logistics capabilities and minimize waste.
Retailer II	Products come in protective packaging to facilitate the return process	Consolidate return flow with the forward flows in the low volumes (food, etc.)	Work with local postal services to pick up returns on the retailer's behalf.	Use of electric cargo bikes to pick up used products from far and areas.	Blockchain in reverse logistics can lower transaction costs and enhance logistics performance.	Establish relationships with external stakeholders to mitigate reverse logistics costs and waste flows.
Retailer III	Products are easy to dismantle and compact and can be reused	Consolidate return flow with the forward flows in the food industry. Consolidate the return flow for low volume products.	Incentivizing customers increases return rates of used products. Provide reusable bags to consumers to return the products.	Use of autonomous vehicles to pick up used products from remote areas. Use courier robots to collect products from high and difficult areas.	Blockchain in reverse logistics can reduce the carbon footprint. Predictive analytics in reverse logistics can help mitigate waste from the system.	Supply chain collaboration can help firms trace the product in reverse logistics and increase return pickup.
Retailer IV	Products come in protective packaging to facilitate the return process	Consolidate return flow with the forward flows.	Provide a return bag to end-consumers. Allow customers to return products through local pickup/drop off points.	Use a combination of electric cargo bikes and courier robots to pick up products from far and areas.	Blockchain technology in reverse logistics can enhance the ecosystem. Predictive analytics in reverse logistics can help mitigate waste from the system.	Supply chain collaboration can help map the material flows in reverse logistics and build infrastructure conducive to circular economy.

logistics hinders the development of collaborative relationships. So, they are taking on board the senior leaders from different stakeholders in the supply chain within the industry to develop familiarity and understanding of these concepts. The following quote by P33 testifies to this:

We need to work with supply chain industry leaders and develop a prominent position around our relationship's boundaries to address environmental issues. Most supply chain leaders believe that the relationship is just an extension of a specific plan, lacking understanding and interplay between reverse logistics and a circular economy (P33).

5. Implications for theory

The primary goal of this study was to explore the link between reverse logistics and CE. Upon pursuing this goal, this study unveils that robust reverse logistics operations can play a pivotal role in the transition to CE. In doing so, our study responds to the recent calls by Zhang et al. (2021) and Farooque, Zhang, and Liu (2019) who suggested to establish the missing link between reverse logistics and its smooth transition to CE. Perhaps, another considerable contribution of this study is that it uses Middle Eastern (UAE, in particular) as an empirical context and thereby supporting this region in achieving the UN Sustainable Development Goals (SDGs).

In addition, UAE introduced a 'Circular Economy Policy' in 2021 (MOCCAE 2021) which is a comprehensive framework that defines the UAE's directions in achieving sustainable management and efficient use of natural resources by adopting innovative consumption and production methods. The policy aims to minimize natural resource consumption, reduce waste, and ensure the quality of life for current and future generations (MOCCAE 2021). Correspondingly, This study is potentially a step forward in helping UAE to achieve the UN Sustainable Development standards and adopt sustainability across the economy by optimizing their reverse logistics operations.

Moreover, our results can help the retail industry implement the idea of CE in a more effective way. Current literature argues that retailers are the first point of contact for end-consumers to initiate resource circularity. Yet, limited empirical evidence exists from the retailer's perspective about how they might contribute to the CE.

Our results suggest that retailers' role would be crucial in a CE. Recycling is considered at the early stages of new product development. And, only at this stage retailers can be assured of a sustainable and, potentially, long-term vision for the products that do not just aim to discard them. Also, placing more onus on the retailers to deliver sustainability goals would mean more accountability and action.

First, we highlight that an efficient circular product design can complement a CE framework. An efficient product design will minimize waste and facilitate recycling once the product enters the return flow. A recent study by Wang et al. (2019) argued that standardization in circular product design can result in waste mitigation. The results of this study are in agreement with these studies. Second, because the goods to be collected are geographically dispersed, it is essential to consolidate products, particularly low-value products in the food industry, to eliminate waste from the system. Extant

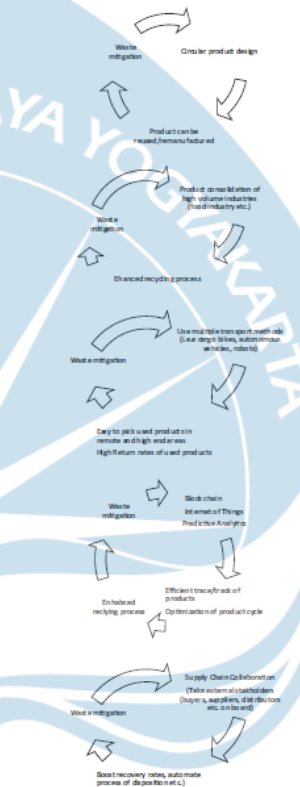


Figure 1. Reverse logistics and circular economy in the retail industry.

stakeholders and address environmental-related challenges, waste minimization, and higher return pickups. They further noted that a lack of understanding of the concepts and an interplay between corporate social responsibility, CE, and reverse

literature highlights that an efficient reverse flow can enhance waste elimination. For instance, Burke, Zhang, and Wang (2021) and Kazancoglu et al. (2021) also noted that an efficient reverse flow can eliminate waste greatly. However, these studies did not point out that a return flow combined with a forward flow can further mitigate waste from the system. Our study contributes to this body of literature. It argues that forward flows should complement return flows. Doing so will eliminate the waste from the beginning of the product design and further facilitate the recycling and recovery of the product.

Third, the results suggest that the end consumers should be included in the reverse logistics process to operationalize the CE. Firms should incentivize their users when they return end-of-life and end-of-use products. They should also be provided with returnable bags. This will intimate the consumers and competitors that the firm is seriously considerate about environmental issues and further strives to reduce waste. Susanty, Tajhono, and Sulistyani (2020) highlighted the importance of facilitating the end-consumers when it comes to returning the used product, while Guarnieri, Cerqueira-Streit, and Batista (2020) stated that easy and convenient drop-off options for end-consumers can result in a higher collection of used products, thereby minimizing the waste in the system. However, these are just anecdotal evidence. The results of this study have empirically shown that consumer involvement in the return process can result in a higher return rate of the used products. Fourth, findings reveal the importance of opting for alternative modes of transport (cargo bikes, electric bikes) in reverse logistics. Particularly, utilizing electric cargo bikes and autonomous vehicles can enhance the collection rate as these transports can reach far-end and remote areas that are difficult to access with a traditional mode of transport. Such transportation methods can also result in a higher return rate for used products. These findings are new to the circular supply chain management literature as previous studies have mainly focussed on traditional modes of transport in reverse logistics to enhance the collection of products.

Fifth, technological investment in reverse logistics will potentially create a digital road map for a CE. Firms would improve connections and exchange information with internal and external stakeholders. Investing in technology in reverse logistics will also help firms make products, processes, and services more circular; and influence and empower citizens and consumers. These results provide empirical support to the extant literature on the importance of technology in reverse logistics to operationalize a CE. Julianelli et al. (2020), for example, proposed that technology can help the firm achieve higher efficiency and proper optimization of the different processes, while Wilson, Paschen, and Pitt (2022) argued that firms can achieve improvement in the reuse, repair, remanufacturing, and waste management through technological investment in reverse logistics.

Sixth, our results highlight supply chain collaboration's importance in streamlining reverse logistics and eventually enhancing a CE base. Supply chain collaboration is seen as

an important means for stimulating the transition to circularity and generating the necessary innovations. Circular business models will need to develop and manage relationships, as they move forward in continuous improvement. Bearard and Brito (2021) also note that supply chain collaboration is fundamental to advancing a CE. Yet, firms are lagging in terms of developing a trustworthy relationship to address challenges related to a CE.

6. Practical implications

CE can potentially boost the UAE's GDP growth and bring environmental and social benefits to the country and the region (Middle East). We believe that our findings can help this region pursue a better path towards sustainability and establish additional targets, such as zero waste, no emission, and utilizing resources to the best of their potential. Moreover, efficient reverse logistics can play a very strong role in helping UAE' achieve these targets. However, we believe these targets cannot be easily sustainable, and a holistic approach is needed to address them. Our findings can also help UAE firms to achieve economic growth as well. For instance, by investing in technology and taking end-consumers on board to mitigate the waste from the system at the outset, companies would be in a stronger position to play their role in reducing wasteful consumption and extracting additional value from the waste. This will ultimately boost the GDP growth of the UAE and further bring environmental benefits to the country.

We also argue that combining reverse and forward flows can contribute to the UAE's commitment to waste reduction. Specifically, the largescale food industry of the UAE can make the best use of resources and minimize the generated waste. In the clothing industry, UAE firms can contribute to CE by ensuring that end-consumers are taken on board and encouraged to return the product through different channels (courier services, etc.). Using big data and predictive analytics can help the electronics industry track the product (and its components) thoroughly. This can further contribute to minimizing lost products, resulting in waste generation. Middle Eastern firms can also learn from our findings about successful supply chain collaboration to achieve CE. We encourage firms to develop strategic alliances or partnerships with local and potentially international partners (Oman, Kuwait, Bahrain, etc.) to delve deeper into achieving CE. We propose that firms map their resources and refine their current initiatives based on the principles of the CE model. This will ensure that firms can apply up-to-date knowledge and build on their proven practices.

In summary, leveraging reverse logistics with CE can help firms transit into CE. So far, UAE has taken a reasonable number of steps to realize this transition but partnering with internal and external stakeholders to optimize the reverse logistics operations can help them swiftly accelerate the adoption of CE. From a policy perspective, our study also contributes to several United Nations Sustainable Development Goals (SDGs), including SDG-11—Sustainable

Cities and Communities; SDG-12—Sustainable Consumption and Production; SDG-13—Climate Action.

7. Limitations and future research direction

This study comes with certain limitations. First, the results of this study rely on a limited sample of 40 participants. Therefore, caution should be taken while generalizing the results of this study. Second, this study relies on a cause-and-effect relationship. Hence it might be difficult to predict the true picture of the phenomenon under investigation. Third, this study relies on respondents' perceptions from one country only.

This study opens up some future research areas. First, the results of this study must be empirically tested through quantitative methods, to demonstrate its generalisability. Second, future research should aim to collect data from different countries to ascertain any divergence or convergence in terms of strategies employed to address reverse logistics challenges. Third, we suggest that future research collect data on a longitudinal basis to reflect any long-term changes to the strategies employed to streamline reverse logistics operations in a CE. Fourth, many respondents pointed out that technology is critical in streamlining reverse logistics operations. It has its inherent negative sides. Therefore, future research should explore the dark sides of investing in reverse logistics in a CE. Fifth, some respondents argued that relying on alternative modes of transport can streamline the collection of used products and mitigate waste. However, the idea comes with certain limitations. Future research should explore the extent to which alternative modes of transport are helpful in reverse logistics operations. Sixth, while incentivizing end-consumers if they return the product can result in a higher collection of reusable items/products, some respondents pointed out that this can affect the consumer perceptions to return the product. Future research should explore any demerits associated with incentivizing consumers and if such demerits could adversely affect reverse logistics operations. While this study undertakes the perspective of retailers in the UAE, future research can replicate this study on the other industry. For example, food and healthcare industries have recently received a lot of attention for digital transformation and supply chain management (Ali 2019; Ali, Golgeci, and Arslan 2021; Ali and Kannan 2022) and could be a given avenue to expand upon our study.

Notes on contributors



Dr. Atif Saleem Butt is an Associate Professor at the American University of Ras Al Khaimah, United Arab Emirates. He is an inter-disciplinary researcher with particular focus on supply chain management, and studies at the intersection of supply chain management and knowledge management. Atif has published over 40 articles in journals of international standing, including many articles as sole-author. His work has appeared in the *International Journal of Physical Distribution and Logistics Management*, *Journal of Purchasing and Supply Management*, *Service Industries Journal*, *Journal of Knowledge Management*, *Production Planning and Control*, *Journal of Cleaner*

Production, Management Decision, *Total Quality Management and Business Excellence*, to name a few. He is also an Associate Editor of *Frontiers in Environmental Sciences* (Q1) and *Heliyon—Supply Chain Management Section* (Q1).



Dr. Imran Ali is a Senior Lecturer (Assistant Professor) in Operations and Innovation Management at the School of Business and Law, Melbourne Campus, Central Queensland University, Australia. He earned his PhD in Business Management from the University of South Australia. His current research focuses on Industry 4.0 technologies, risk and resilience, climate change, and sustainable supply chain performance. Imran's research has been featured in numerous high-quality

journals and conference proceedings, such as the *International Journal of Operations & Production Management*, *IEEE Transactions on Engineering Management*, *Industrial Marketing Management*, *Production Planning & Control*, *Supply Chain Management: An International Journal*, *International Journal of Physical Distribution and Logistics Management*, and *Academy of Management Best Paper Proceedings*. Imran has also collaborated with UNDP and FAO of the UN on several promising projects related to operations and supply chain management.



Kannan Govindan is a Distinguished Professor at the China Institute of FTZ Supply Chain, Head of the Intelligent Supply Chain Centre, and Professor and Head of the Centre for Sustainable Supply Chain Engineering at the Department of Technology and Innovation, University of Southern Denmark, Odense. He has been recognized as a Highly Cited Researcher in the field of Engineering for three consecutive years (2018, 2019, and 2020) by Thomson-Reuters/Claude Analytics. He has published over 285 international journal articles (with 46% citations and an H-index of 114) in prestigious journals, such as *Nature*, *European Journal of Operational Research*, *Omega*, *Decision Sciences*, *Journal of the Operational Research Society*, *Journal of Environmental Management*, *Journal of Cleaner Production*, *Computers & Industrial Engineering*, *Transportation Research Part E: Logistics and Transportation Review*, *Transportation Research Part D: Transport and Environment*, *European Management Journal*, *International Journal of Production Economics*, and *International Journal of Production Research*. Many of his papers were selected as the ISI top 1% highly cited papers or 0.1% hot papers and highlighted as Key Scientific Articles contributing to excellence in Engineering and Environmental research. Kannan serves as Executive Editor of the *Journal of Cleaner Production*, Associate Editor of *Transportation Research Part E: Logistics and Transportation Review*, Senior Editor of *Industrial Management & Data Systems*, Editor of *Annals of Operations Research*, Area Editor of *INFORM: Information Systems and Operational Research*, and has served as a Guest Editor in journals, such as *Decision Sciences*, *European Journal of Operational Research*, *Annals of OR*, *Journal of Cleaner Production*, *International Journal of Production Economics*. His research interests include digital supply chain, Industry 4.0 on supply chain, sustainable development goals, reverse logistics, closed-loop supply chain, digitalized sustainable circular economy, green supply chain management, and sustainable supply chain management.

ORCID

Imran Ali <http://orcid.org/0000-0002-8912-5760>

References

Alghababbeh, M., D. E. Abu Khader, A. S. Butt, and M. A. Mokdadi. 2022. "Business Strategy, Green Supply Chain Management Practices, and Financial Performance: A Nuanced Empirical Examination."

- ## Appendix A
- ### Interview protocol

- What is your current position in this firm?
- How long have you been associated with this firm?
- Could you please tell me about your key stakeholders, including your customers/suppliers?
- What does reverse logistics mean to you?
- What does the term circular economy mean to you?
- How important is reverse logistics for a circular economy?
- What are some of the current challenges reverse logistics faces in the context of a circular economy?

Lampiran 9. Hasil Cek Turnitin

SKRIPSI MO_220327025_IDA AYU TRISNA MAHAPUTRI.pdf			
ORIGINALITY REPORT			
7%	7%	6%	6%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS
PRIMARY SOURCES			
1	e-journal.uajy.ac.id Internet Source		1%
2	Submitted to American Public University System Student Paper		<1%
3	Submitted to Chester College of Higher Education Student Paper		<1%
4	www.mdpi.com Internet Source		<1%
5	digilib.uinkhas.ac.id Internet Source		<1%
6	rudyct.com Internet Source		<1%
7	Submitted to Indian School of Mines Student Paper		<1%
8	Submitted to Curtin University of Technology Student Paper		<1%
annalsfeaa.usv.ro			

9	Internet Source	<1 %
10	Submitted to University of St. Gallen Student Paper	<1 %
11	Submitted to University of Melbourne Student Paper	<1 %
12	etheses.uin-malang.ac.id Internet Source	<1 %
13	repositorio.ulisboa.pt Internet Source	<1 %
14	Submitted to Cranfield University Student Paper	<1 %
15	jems.ink Internet Source	<1 %
16	Submitted to UIN Sunan Ampel Surabaya Student Paper	<1 %
17	Submitted to University of Manouba Student Paper	<1 %
18	cms.ciltuk.org.uk Internet Source	<1 %
19	Submitted to Universitas Islam Bandung Student Paper	<1 %
20	hdl.handle.net Internet Source	<1 %

21	repository.pnb.ac.id Internet Source	<1 %
22	isl21.org Internet Source	<1 %
23	ejurnal.ung.ac.id Internet Source	<1 %
24	ejournal3.undip.ac.id Internet Source	<1 %
25	research.chalmers.se Internet Source	<1 %
26	Submitted to UIN Sunan Gunung Djati Bandung Student Paper	<1 %
27	ouci.dntb.gov.ua Internet Source	<1 %
28	uis.brage.unit.no Internet Source	<1 %
29	www.coursehero.com Internet Source	<1 %
30	Sukma Cahyani. "Pemetaan konseptual peran agroforestri dalam pertanian berkelanjutan dan ekonomi sirkular", Journal of Economics Research and Policy Studies, 2025 Publication	<1 %



31	Atun, Ariani. "Transformasi Asset - Based Community Development (ABCD) Dalam Meningkatkan Output Pada Pendidikan Menengah Kejuruan di SMK Muhammadiyah 2 Ajibarang Banyumas.", Universitas Islam Negeri Saifuddin Zuhri (Indonesia) Publication	<1%
32	Submitted to School of Business and Management ITB Student Paper	<1%
33	www.diva-portal.org Internet Source	<1%
34	Submitted to Universitas Jambi Student Paper	<1%
35	Submitted to Belgrade School of Engineering Management Student Paper	<1%