

Table: Structural Characteristics by each reviewed article

Authors	Year	Objective function	Linearity	Uncertainty	Backward	Closed-loop	limited capacity	Multi-period	Multi-product	Multi-mode	Environmental cons.	Economic cons.	Social cons.	Work conditions	Societal commitment	Customer issues	Others	Modeling Approach	Solution Method
Abdallah et al.	2012a	S	NL	UC		*					*	*						MINLP	CS
Abdallah et al.	2012b	S	L	C					*		*	*						MILP	CS
Abdallah et al.	2013	S	L	C					*		*	*						MILP	EM
Adenso-Diaz et al.	2016	M	L	UC							*	*						Fuzzy	HMAA, MCA
Ahmadi et al.	2015	S	L	C			*	*	*		*	*	*				*	MILP	CS
Akgul et al.	2012	M	L	C				*	*	*	*	*						MILP	CS
Alçada-Almeida et al.	2009	M	L	C					*		*	*						MILP	EM
Allaoui et al. **	2016	M	L	C				*	*	*	*	*	*		*			MILP	CS
Altmann & Bogaschewsky	2014	M	L	UC		*	*	*	*	*	*	*						MILP	CS
Alumur et al.	2012	S	L	C	*		*	*	*	*	*	*						MILP	CS
Ameknassi et al.	2016	M	NL	UC		*	*	*	*	*	*	*					*	NLP	EM
Amin & Zhang	2012a	M	L	UC		*	*	*	*	*	*	-	*	*			*	MILP	CS
Amin & Zhang	2012b	S	L	C		*	*	*	*	*	*	*						MILP	MCA
Amin & Zhang	2013a	S/M	L	C/UC		*	*	*	*	*	*	*						MILP	MCA
Amin & Zhang	2013b	M	L	UC		*	*	*	*	*	*	*						MCDM	MCA
Aras & Aksen	2008	S	NL	UC	*				*	*	*	*						NLP	HMAA
Azadeh et al.	2016	M	L	UC		*	*	*	*	*	*	*						Simulation	SIM ,MCA
Azevedo et al.	2013	-	-	C			-	-	-	-	*	*	*			*		others	Others
Bagherinejad & Hassanpour	2016	M	L	UC		*	*	*	*	*	*	*						MILP	EM
Bai et al.	2016	S	NL	C			*	*	*	*	*	*	*		*			MINLP	CS
Balaman	2016	M	L	UC			*	*	*	*	*	*						MILP	CS
Balaman & Selim	2015	M	L	UC			*	*	*	*	*	*	*		*			Fuzzy	CS, HMAA
Balaman & Selim	2016	M	L	UC			*	*	*	*	*	*						Fuzzy	CS, EM
Baud-Lavigne et al.	2014	M	L	C				*	*	*	*	*						MILP	CS
Beamon & Fernandes	2004	S	L	C		*	*	*	*	*	*	*						MILP	Others
Beheshtifar & Alimoahmadi	2015	M	NL	C								*	*		*			MINLP	HMAA
Berger et al.	1999	M	L	C				*	*	*	*	*						MILP	CS
Bernardi et al.	2013	M	L	C				*	*	*	*	*						MILP	MCA

Bloemhof-Ruwaard et al.	1996	S	L	C	*		*	*	*				LP	Others
Bojarski et al.	2009	M	L	C			*	*	*	*			MILP	MCA
Bouzembrak et al.	2010	M	L	C		*		*	*	*			MILP	CS
Bouzembrak et al.	2011	M	L	C		*		*	*	*			MILP	CS
Bouzembrak et al.	2013	S	L	C				*	*	*	*	*	MILP	CS
Cabral et al.	2012	-	-	-		-	-	-	-	*	*		MCDM	MCA
Cagno et al.	2008	S	L	C	*	*			*	*			MILP	Others
Camero & Sowlati	2016	M	L	C		*	*	*	*	*	*	*	MILP	Others
Cardoso et al.	2016	M	L	UC	*	*	*		*	*			MILP	CS
Caruso et al.	1993	M	L	C					*	*	*	*	MILP	MCA
Chaabane et al.	2011	M	-	C				*	*	*	*		MILP	EM
Chaabane et al.	2012	M	L	C	*	*	*	*	*	*	*		MILP	CS
Chanchaichujit et al.	2016	M	L	C		*	*	*	*	*	*		LP	CS
Chandiran et al.	2008	S	L	C	*	*			*	*			MILP	CS
Charles et al.	2016	S	L	UC			*	*		*	*	*	MILP	Others
Chen et al.	2014	S	NL	C		*			*	*	*	*	NLP	CS
Chibeles-Martins et al.	2016	M	L	C		*	*	*	*	*			MILP	HMAA
Chouinard et al.	2008	S	-	UC	*	*	*	*	*	*			others	Others
Corsano et al.	2011	S	NL	C			*	*	*	*			MINLP	CS
Coskun et al.	2016	M	L	C		*	*	*	*	*	*		LP	CS, EM
Costi et al.	2004	S	NL	C			*	*	*	*			MINLP	CS
Cruz et al.	2006	M	NL	UC		*		*	*	*	*	*	MCDM	MCA, others
Cruz-Rivera & Ertel	2009	S	L	UC	*				*	*			MILP	CS
Das	2012	S	L	UC	*	*	*	*	*	*			MILP	Others
Das & Chowdhury	2012	S	L	UC	*	*	*	*	*	*			MILP	CS
Datta	2012	S	L	C					*	*	*	*	MILP	MCA, others
Dehghanian & Mansour	2009	M	L	C					*	*	*	*	MILP	HMAA
Demirel & Gökçen	2008	S	L	C	*	*	*	*	*	*			MILP	CS
Demirel et al.	2016	S	L	C		*	*	*	*	*			MILP	CS
Deqqaq & Abouabdellah	2016	M	L	C		*		*	*	*	*	*	MILP	CS
Devika et al.	2014	M	L	C	*				*	*	*	*	MILP	HMAA
Diabat & Simchi-Levi	2010	S	L	C		*			*	*			MILP	CS
Diabat et al.	2013	S	L	C	*		*	*	*	*			MILP	CS
Du & Evans	2008	M	L	C	*	*	*	*	*	*			MILP	EM, HMAA
Du et al.	2009	S	NL	C	*	*	*	*	*	*			NLP	HMAA
Duque et al.	2010	M	L	C			*	*	*	*	*		MILP	CS
Dutta et al.	2016	S	L	UC	*	*	*	*	*	*			LP	CS
Easwaran & Üster	2010	S	L	C	*	*	*	*	*	*			MILP	CS, EM
Elhedhli & Merrick	2012	S	L	C					*	*			LP	CS

Elia et al.	2011	S	L	C				*	*	*	*			MILP	CS
El-Sayed et al.	2010	S	L	UC		*	*	*	*	*	*			MILP	others
Erkut et al.	2008	M	L	C						*	*			MILP	HMAA
Eskandarpour et al.	2013	M	NL	C	*			*		*	*			MINLP	HMAA
Faccio et al.	2011	S	L	UC		*	*	*	*	*	*			MILP	CS
Fahimnia & Jabbarzadeh	2016	M	L	UC			*	*	*	*	*	*	*	Fuzzy	EM, HMAA
Fernandes et al.	2010	S	L	C		*	*	*	*	*	*			MILP	CS
Fleischmann et al.	2001	S	L	C		*			*	*	*			MILP	CS
Fonseca et al.	2010	M	L	UC	*		*	*	*	*	*	*	*	MILP	CS
Francas & Minner	2009	S	L	UC		*		*	*	*	*			MILP	SIM
Galante et al.	2010	M	L	C					*	*				MILP	EM, MCA
Gao & Ryan	2014	S	L	UC		*	*	*	*	*	*			MILP	CS
Garcia & You	2015	M	L/NL	C		*	*	*	*	*	*			others	CS
Georgiadis	2013	-	-	UC		*	*	*	*	*	*			Simulation	SIM
Ghadge et al.	2016	S	L	UC		*			*	*	*			MILP	CS
Giarola et al.	2011	M	L	C			*	*	*	*	*			MILP	CS
Giarola et al.	2012a	S	L	UC			*	*	*	*	*			MILP	CS
Giarola et al.	2012b	M	L	C			*	*	*	*	*			MILP	CS
Gong & You	2014	M	NL	C				*	*	*	*			MINLP	CS
Govindan et al.	2014	M	L	C				*	*	*	*			MILP	HMAA
Govindan et al.	2015a	M	L/NL	UC			*	*	*	*	*			MINLP	HMAA
Govindan et al.	2016	M	L	UC	*	*	*	*	*	*	*	*	*	MILP	HMAA
Guillén-Gosálbez & Grossmann	2009	M	NL	UC			*	*	*	*	*			MINLP	CS
Guillén-Gosálbez & Grossmann	2010	M	NL	UC			*	*	*	*	*			MINLP	CS
Guillén-Gosálbez et al.	2010	M	L	C			*	*	*	*	*			MILP	CS
Hale & Moberg	2005	S	L	UC					*	*	*	*	*	others	others
Hammond & Beullens	2007	S	NL	C		*	-		*	*	*			NLP	EM
Harraz & Galal	2011	M	L	C	*			*	*	*	*	*	*	MILP	CS, EM
Hasani et al.	2012	S	NL	UC		*	*	*	*	*	*			MINLP	CS
Hasani et al.	2015	S	NL	UC		*	*	*	*	*	*			NLP	HMAA
Hatefi et al.	2015a	S	L	UC		*			*	*	*			MILP	CS
Hatefi et al.	2015b	S	L	UC		*	*		*	*	*			MILP	EM
Hombach et al.	2016	S	L	C			*	*	*	*	*			MILP	CS
Hosseini & Barker	2016	-	-	UC		*		*	*	*	*			others	HMAA
Jabbarzadeh et al.	2014	S	L	UC		*	*		*	*	*	*	*	LP	CS
Jamshidi et al.	2012	M	L	C				*	*	*	*			MILP	HMAA
Jayaraman et al.	2003	S	L	C	*	*		*	*	*	*			MILP	HMAA

Jeihoonian et al.	2016	S	NL	C	*	*			*	*			MINLP	EM
Jindal & Sangwan	2014	S	L	UC	*	*	*		*	*			MILP	CS
Jindal & Sangwan**	2016	M	L	UC	*	*	*		*	*	*	*	Fuzzy	CS
Kannan et al.	2010	S	L	C	*	*	*	*	*	*			MILP	CS, HMAA
Kannan et al.	2012	S	L	C	*				*	*			MILP	CS
Kanzian et al.	2013	M	L	C				*	*	*			MILP	MCA
Kara & Onut	2010	S	L	UC	*	*			*	*			MILP	CS
Kaur & Singh	2016	S	NL	C		*	*	*	*	*	*		MINLP	HMAA
Kaya & Urek	2016	S	NL	C	*				*	*			MINLP	CS, HMAA
Keyvanshokoo et al.	2016	S	L	UC	*	*	*	*	*	*			MILP	CS, EM
Khatami et al.	2015	S	L	UC	*	*	*	*	*	*			MILP	EM
Kisomi et al.	2016	S	L	UC	*	*		*	*	*			MILP	CS
Kostin et al.	2012	M	L	C			*	*	*	*			MILP	CS
Krikke	2011	S	L	C	*				*	*			MILP	CS
Lam et al.	2010	S	-	C		*		*	*	*			P-graph	CS
Lam et al.	2013	M	L	C			*	*	*	*			MILP	CS
Lee & Chan	2009	S	NL	C	*	*	*	*	*	*			Simulation	HMAA
Lee & Dong	2008	S	L	C	*	*		*	*	*			MILP	HMAA
Lee et al.	2009	S	L	C	*	*	*	*	*	*			MILP	HMAA
Lee et al.	2010	S	L	UC	*		*	*	*	*			MILP	EM
Li et al.	2016	M	L	C	*	*	*		*	*			MILP	HMAA
Lieckens & Vandaele	2007	S	NL	UC	*	*			*	*			MINLP	HMAA
Lieckens & Vandaele	2012	S	NL	UC	*	*			*	*			NLP	HMAA
Liotta et al.	2016	S	L	UC		*	*	*	*	*			Simulation	SIM
Lira-Barragán et al.	2010	S	NL	C				*	*	*			MINLP	CS, others
Lira-Barragán et al.	2012	S	NL	C					*	*			MINLP	CS, others
Listeş & Dekker	2005	S	L	UC	*	*	*	*	*	*			MILP	EM
Liu & Zhang	2016	S	NL	C	*	*			*	*			MINLP	HMAA
Liu et al.	2011	S/M	NL	C			*	*	*	*			MINLP	CS
Lu & Bostel	2007	S	L	C	*				*	*			MILP	CS, HMAA
Malczewski & Ogryczak	1990	M	L	C					*	*	*	*	Fuzzy	HMAA
Mallidis et al.	2012	S	L	C				*	*	*			MILP	CS
Mansour & Zarei	2008	S	L	C	*	*	*		*	*			MILP	HMAA
Mari et al.	2014	M	L	C		*	*	*	*	*			MILP	CS, EM
Marufuzzaman et al.	2014	M	L	C			*	*	*	*			MILP	MCA, CS
Mele et al.	2009	M	L	C			*	*	*	*			MILP	CS
Mele et al.	2011	M	L	C			*	*	*	*			MILP	CS
Meneghetti & Monti	2015	S	NL	C		*	*		*	*			NLP	CS
Metta & Badurdeen	2011	S	L	C	*	*	*	*	*	*	*	*	MILP	CS

Min & Ko	2008	S	NL	C	*	*	*	*	*	*			NLP	HMAA
Min et al.	2006a	S	NL	C	*		*			*	*	*	MINLP	HMAA
Min et al.	2006b	S	NL	C	*		*			*	*	*	MINLP	HMAA
Minciardi et al.	2008	M	NL	C					*	*			NLP	MCA
Miret et al.	2016	M	L	C		*	*		*	*	*	*	MILP	CS
Mohammadi et al.	2014	M	NL	UC					*	*			MINLP	HMAA
Mohseni & Pishvae	2016	S	NL	UC			*	*	*	*	*		MINLP	CS
Mota et al.	2015	M	L	C	*			*	*	*	*	*	MILP	CS
Muñoz et al.	2013	M	NL	C			*	*	*	*			MINLP	CS, others
Nagurney & Masoumi	2012	S	NL	UC		*			*	*	*	*	NLP	CS, others
Nagurney et al.	2012	S	NL	UC					*	*		*	NLP	CS, others
Neto et al.	2008	M	L	C				*	*				MILP	others
Neumüller et al.	2016	M	L	C		*			*	*	*	*	MCDM	CS
Nouira et al.	2016	S	NL	C				*	*	*			NLP	CS
Ouhader & Elkyl	2016	S	L	C		*		*	*	*			MILP	CS
Özceylan & Paksoy	2013a	S	L	UC	*	*	*	*	*	*			MILP	CS
Özceylan & Paksoy	2013b	M	L	UC	*	*	*	*	*	*			MILP	CS
Özceylan et al. **	2016	S	L	C	*	*	*	*	*	*	*	*	LP	CS
Özker & Başlıgil	2013	M	-	UC	*	*	*	*	*	*			Fuzzy	CS
Papapostolou et al.	2011	S	L	C				*	*	*			MILP	CS, others
Papapostolou et al.	2015	S	L	C		*			*	*	*	*	MILP	others
Pati et al.	2008	M	L	C	*			*	*	*			MILP	EM
Peng & Zhong	2007	S	L	C		*	*		*	*			MILP	CS
Pérez-Fortes et al.	2012	M	L	C			*	*	*	*	*	*	MILP	CS
Pinto-Varela et al.	2011	M	L	C			*	*	*	*			Fuzzy	HMAA
Piplani & Saraswat	2012	S	L	UC	*		*	*	*	*			MILP	CS
Pishvae & Razmi	2012	M	L	UC	*				*	*			MILP	CS
Pishvae & Torabi	2010	M	L	UC		*	*	*	*	*			Fuzzy	HMAA
Pishvae et al.	2009	S	L	UC		*	*		*	*			MILP	CS
Pishvae et al.	2010a	M	L/NL	C		*	*		*	*			MINLP	HMAA
Pishvae et al.	2010b	S	L	C	*		*	*	*	*			MILP	HMAA
Pishvae et al.	2011	S	L	UC		*	*		*	*			MILP	CS
Pishvae et al.	2012a	M	L	UC					*	*	*	*	MILP	CS
Pishvae et al.	2012b	M	L	UC				*	*	*			Fuzzy	HMAA
Pochampally & Gupta	2008	S	-	UC	*			*	*	*			Fuzzy	MCA
Pourmohammadi et al.	2008	M	L	C	*		*	*	*	*			MILP	CS
Pozo et al.	2012	M	L	C					*	*			MILP	CS
Qi & Hongcheng	2008	S	L	C	*		*		*	*			MILP	CS
Qin & Ji	2010	S	-	UC	*		*		*	*			Fuzzy	HMAA

Rajesh & Ravi	2015	-	-	UC		-	-	-	-	*	*	*	*		*	MCDM	MCA
Ramezani et al.	2013a	M	L	UC	*	*		*		*	*					MILP	MCA, EM
Ramezani et al.	2013b	S	L	UC	*	*		*	*	*	*					MILP	CS
Ramezani et al.	2014	S	L	C	*	*	*			*	*					MILP	CS
Ramudhin et al.	2010	M	L	C				*	*	*	*					MILP	EM
Realff et al.	2000	S	L	UC	*	*	*	*	*	*	*					MILP	CS
Realff et al.	2004	S	L	UC	*	*	*	*	*	*	*					MILP	CS
Ruimin et al.	2016	S/M	NL	UC	*	*		*		*	*					MINLP	CS
Ruiz-Femenia et al.	2013	M	L	UC			*	*		*	*					MILP	CS
Sadrnia et al.	2013	M	L	C					*	*	*					MILP	others
Saffar & Razmi	2014	M	L	UC	*		*	*		*	*					MILP	HMAA
Saffar & Razmi	2015	M	L	UC	*		*	*		*	*					MILP	HMAA
Saif & Elhedhli	2016	S	NL	C				*		*	*					Simulation	EM
Salema et al.	2006	S	L	UC	*	*		*		*	*					MILP	CS
Salema et al.	2007	S	L	UC	*	*		*		*	*					MILP	EM
Salema et al.	2009	S	L	C	*	*	*	*		*	*					MILP	EM
Salema et al.	2010	S	L	C	*	*	*	*		*	*					MILP	CS
Santibañez-Aguilar et al.	2014	M	L	C			*	*	*	*	*	*	*			MILP	CS
Santibañez-Aguilar et al.	2016	M	L	UC			*	*	*	*	*					MILP	CS
Sasikumar et al.	2010	S	NL	UC	*	*	*			*	*					MINLP	CS
Schweiger & Sahamie	2013	S	L	C	*	*	*	*		*	*					MILP	HMAA
Shaw et al.	2016	S	L	UC			*			*	*					MILP	CS, EM
Sherafati & Bashiri	2016	S	L	UC	*	*			*	*	*					Fuzzy	HMAA
Sitek & Wikarek	2015	S	L/NL	C			*	*	*	*	*					MILP	CS
Soleimani et al.	2013	S	L	C	*	*	*	*		*	*					MILP	CS
Soleimani et al.	2014	S	L	UC	*	*		*		*	*					MILP	CS
Soleimani et al.	2016	S	L	UC	*	*	*	*		*	*					MILP	HMAA
Sohrabi et al.	2018	M	L	UC	*			*	*	*	*	*				MILP	CS
Soufali & Bashiri	2016	M	L	C	*			*		*	*					MILP	HMAA
Srivastava	2008	S	L	UC	*	*	*	*		*	*					MILP	CS
Subramanian et al.	2010	S	L	C	*	*		*		*	*					MILP	CS
Subulan et al.	2015	M	L	UC	*	*	*	*		*	*	*	*	*	*	MILP	CS, EM
Talaei et al.	2016	M	L	UC	*	*		*		*	*					MILP	EM
Tanimizua & Amano	2016	M	L	C			*			*	*					Simulation	HMAA, SIM
Tofighi et al.	2016	M	L	UC			*			*	*	*		*		MILP	CS
Torabi et al.	2016	S	L	UC	*	*				*	*					MILP	CS
Tsao et al. **	2016	S	NL	C	*			*		*	*					NLP	others
Tuzkaya et al.	2011	M	L	C	*					*	*	*	*	*		MILP	HMAA
Üster et al.	2007	S	L	C	*					*	*					MILP	EM

Van Der Vorst et al.	2009	-	-	UC					*	*	*			Simulation	SIM
Van Nguyen et al.	2016	M	L	C	*	*		*	*	*	*	*	*	MILP	CS
Vance et al.	2015	M	-	C				*	*	*				P-graph	CS
Verma et al.	2013	S	L/NL	UC						*	*			MILP	CS
Vidović et al.	2016	S	L	C	*	*			*	*				MILP	HMAA
Wang & Hsu	2010a	S	L	C	*	*			*	*				MILP	HMAA
Wang & Hsu	2010b	S	-	UC	*	*			*	*				Fuzzy	MCA, HMAA
Wang et al.	2011	S/M	NL	C	*	*		*	*	*				MINLP	CS
Wang et al.	2013	M	L	C	*	*			*	*				MILP	CS
Xanthopoulos & Iakovou	2009	S	L	C	*	*	*	*	*	*				MILP	EM, MCA
Xifeng et al.	2013	M	L	C					*	*				others	CS
Yang et al.	2016	S	NL	C			*		*	*				MINLP	CS
Yi et al.	2016	S	L	C		*	*	*	*	*				MILP	CS, HMAA
Yongsheng & Shouyang	2008	S	L	C	*				*	*				MILP	CS
You & Wang	2011	M	L	C			*	*	*	*				MILP	CS
You et al.	2012	M	L	C			*	*	*	*	*	*	*	MILP	CS
Yu & Solvang	2016	M	L	C	*	*		*	*	*				MILP	CS
Yue & You	2016	S	L	UC		*	*	*	*	*				MILP	EM
Yue et al.	2013	M	NL	C				*	*	*	*			MINLP	CS
Yue et al.	2014	M	NL	C			*		*	*	*	*	*	MILP	CS
Zamboni et al.	2009	M	L	C				*	*	*	*			MILP	others
Zandieh & Chensebli	2016	S	L	C	*	*		*	*	*	*			MILP	HMAA
Zarei et al.	2010	S	L	C	*	*		*	*	*	*			MILP	HMAA
Zhalechian et al.	2016	M	NL	UC	*	*	*	*	*	*	*	*	*	MINLP	CS, others
Zhang et al.	2013	M	NL	C				*	*	*	*			NLP	HMAA
Zhang et al.	2016	M	L	C			*		*	*	*	*	*	MILP	HMAA
Zhao & Li	2016	M	L	C			*	*	*	*				others	CS
Zhou & Min	2011	S	NL	UC	*	*			*	*				MINLP	HMAA
Zhou & Zhou	2015	S	NL	C	*	*			*	*				NLP	CS
Zhu & Xiuquan	2013	S	L	UC	*	*	*	*	*	*				MILP	HMAA
Zhuang et al.	2016	M	L	C	*	*			*	*				MILP	HMAA
Zohal & Soleimani	2016	M	L	C	*	*			*	*				others	CS, HMAA

M: multi-objective model, **S:** single-objective model, **L:** linear model, **NL:** non-linear model, **C:** with certain parameters, **UC:** with at least one uncertain parameter, **HMAA:** heuristic and meta-heuristic and approximate algorithm, **EM:** exact method, **CS:** commercial solvers, **MCA:** multi-criterion and other analytical approaches, **SIM:** simulation. ** At the time of the study, these papers were in *In-press* or *Accepted* status, but were published in years 2017 or 2018