Supplementary material

Classification of short-listed articles

Author and Year		System configuration	Learning effect									Deteriorating effect			Solution method				
			Position-Based Learning Effect	Truncated position-based learning effect	Exponential position-based learning effect	Sum-of-processing-time based learning effect	Truncated sum-of-processing-time based learning	Exponential learning effects based on Sum-of-processing-time	Combining position and sum of processing time-based learning effect	Delong's learning effect	Other approaches	Starting-time deterioration effect	Position-based deterioration effect	Cumulative deterioration effect	Exact method	Heuristic leading to optimal solutions	Heuristics	Metaheuristics	Other considerations
[1]	(Abedi et al., 2020)	Job shop												x				MPMO-MA	
[2]	(Ahmadizar & Hosseini, 2011)	Single machine	x													x			
[3]	(Ahmadizar & Hosseini, 2012)	Single machine				x									x			ACO	
[4]	(Ahmadizar & Hosseini, 2013)	Single machine	x													x			
[5]	(Amirian & Sahraeian, 2015)	Flowshop								x							x		
[6]	(Amirian & Sahraeian, 2016)	Flowshop									x							SA	
[7]	(Araghi et al., 2014)	Flexible Job Shop	x											x				GVNSWAF	
[8]	(Arigliano et al., 2017)	Single machine				x						x				x			
[9]	(Arık & Toksarı, 2018)	Parallel machine							x			x					x		
[10]	(Arık & Toksarı, 2021)	Parallel machine	x									x						GA	
[11]	(Arik, 2021)	Flowshop	x									x					x	TSPOP	
[12]	(Azadeh et al., 2017)	Single machine	x									x						GA-TS	
[13]	(Azizi et al., 2016)	Flowshop		x											x			GA, SA	
[14]	(Azizi & Hu, 2020)	Flowshop		x												x			
[15]	(Azzouz et al., 2020)	Flexible Job Shop	x									x						Bi-GTS	
[16]	(Azzouz et al., 2020)	Flowshop		x												x	x		
[17]	(Bachman & Janiak, 2004)	Single machine	x													x			
[18]	(Bai & Zhao, 2020)	Single machine								x		x				x			
[19]	(Bai et al., 2021)	Flowshop	x													x	x	DABC	
[20]	(Bai et al., 2018)	Flowshop	x												x	x	x		
[21]	(Bai et al., 2012)	Single machine						x								x			
[22]	(Bai et al., 2012)	Single machine	x									x				x			
[23]	(Bai et al., 2020)	Single machine	x												x	x	x	DE	
[24]	(Behnamian, 2014)	Hybrid flowshop	x									x						HCCA	
[25]	(Behnamian & Zandieh, 2013)	Hybrid flowshop	x															HSA	
[26]	(Bektur, 2021)	Parallel machine	x															NSGA-II	
[27]	(Biskup, 1999)	Single machine	x													x			
[28]	(Bozorgirad & Logendran, 2016)	Hybrid flowshop	x												x		x	GA, SA, TS	
[29]	(Ceylan, 2014)	Single machine	x									x				x			
[30]	(Chang et al., 2008)	Single machine	x													x			
[31]	(Chang et al., 2009)	Single machine	x										x			x			
[32]	(Chen et al., 2020)	Single machine - Parallel machine	x													x			
[33]	(Chen et al., 2006)	Flowshop	x													x		SA	
[34]	(Chen et al., 2017)	Flowshop	x															PSO	
[35]	(Cheng, 2013)	Flowshop			x											x			
[36]	(Cheng et al., 2007)	Flowshop	x													x			
[37]	(Cheng et al., 2015)	Single machine						x								x			
[38]	(Cheng et al., 2018)	Single machine	x													x			
[39]	(Cheng, 2012)	Single machine					x									x		GA	
[40]	(Cheng, et al., 2011)	Single machine					x									x		SA	

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[41]	(Cheng et al., 2014)	Single machine - Flowshop												x		x			
[42]	(Cheng et al., 2010)	Single machine				x							x			x			
[43]	(Cheng & Wang, 2000)	Single machine	x													x			
[44]	(Cheng et al., 2008)	Single machine - Flowshop	x									x				x			
[45]	(Cheng et al., 2013a)	Single machine - Flowshop							x							x			
[46]	(Cheng et al., 2009)	Single machine				x										x			
[47]	(Cheng et al., 2013)	Single machine				x										x			
[48]	(Cheng et al., 2014)	Single machine									x					x			
[49]	(Cheng et al., 2013)	Flowshop		x												x		GA	
[50]	(Cheng et al., 2011)	Single machine	x										x			x		SA	
[51]	(Chung et al., 2019)	Single machine											x				x		
[52]	(Chung & Tong, 2011)	Flowshop	x													x	x		
[53]	(Chung & Tong, 2012)	Flowshop	x													x	x		
[54]	(Deliktaş ,2021)	Single machine	x															SSMMA	
[55]	(Eren, 2013)	Flowshop	x												x		x		
[56]	(Eren, 2009)	Parallel machine									x				x		x		
[57]	(Eren, 2009)	Parallel machine	x												x		x		
[58]	(Eren, 2009)	Single machine	x										x		x				
[59]	(Eren, 2009)	Single machine	x												x				
[60]	(Eren & Güner, 2007)	Single machine	x												x		X		
[61]	(Eren & Güner, 2007)	Single machine	x												x			TS, SA	
[62]	(Eren & Güner, 2008)	Flowshop	x												x		x	TS	
[63]	(Eren & Güner, 2009)	Parallel machine	x												x				
[64]	(Expósito-Izquierdo et al., 2019)	Parallel machine									x							VNS	x
[65]	(Fan et al., 2018)	Single machine		x								x						VNS–ASHLO	
[66]	(Fazlollahtabar et al., 2012)	Parallel machine									x				x			GA	
[67]	(Fichera et al., 2015)	Flowshop									x				x			GHA	
[68]	(Fichera et al., 2017)	Flowshop									x				x			GA	
[69]	(Fu et al., 2018)	Flowshop	x									x						FWA	
[70]	(Fu et al., 2019)	Flowshop	x									x						ACRO	
[71]	(Gao et al., 2018)	Flowshop	x													x			
[72]	(Geng et al., 2019)	Flowshop	x													x			
[73]	(Geyik & Elibal, 2017)	Parallel machine									x						x		
[74]	(Ghodratnama et al., 2010)	Single machine				x									x			SA	
[75]	(Gordon et al., 2008)	Single machine	x										x	x		x			
[76]	(Hamta et al., 2014)	Flowshop	x									x			x			VNS-TS	
[77]	(He et al., 2020)	Parallel machine										x				x			
[78]	(He et al., 2017)	Single machine		x												x			
[79]	(He, 2016)	Flowshop						x								x	x		
[80]	(He & Sun, 2015)	Single machine	x									x				x			
[81]	(Hidri & Jemmali, 2020)	Parallel machine								x							x		
[82]	(Hosseini & Tavakkoli-Moghaddam, 2013)	Flowshop	x												x			MOGA, MOST	
[83]	(Hsu & Yang, 2014)	Parallel machine	x									x				x			
[84]	(Hsu et al., 2011)	Parallel machine	x													x			
[85]	(Huang et al., 2010)	Single machine			x									x		x			
[86]	(Huang & Wang, 2014)	Single machine	x													x			
[87]	(Huang et al., 2020)	Single machine										x				x			

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[88]	(Huang, 2019)	Single machine										x				x			
[89]	(Huang et al., 2013)	Single machine	x											x		x			
[90]	(Huang et al., 2014)	Parallel machine	x									x				x			
[91]	(Huang et al., 2011)	Single machine	x									x				x			
[92]	(Janiak & Rudek, 2010)	Single machine											x			x			
[93]	(Janiak et al., 2009)	Single machine	x													x	x	SA	
[94]	(Janiak & Rudek, 2009)	Single machine									x					x			
[95]	(Jemmali & Hidri, 2021)	Parallel machine								x						x	x	GA	
[96]	(Ji, et al., 2021)	Parallel machine								x						x			
[97]	(Ji et al., 2015)	Single machine	x													x			
[98]	(Ji et al., 2016)	Parallel machine								x		x				x			
[99]	(Ji et al., 2015)	Single machine - Parallel machine								x						x			
[100]	(Ji & Li, 2015)	Single machine	x									x				x			
[101]	(Jiang et al., 2013)	Single machine				x										x			
[102]	(Jiang et al., 2017)	Single machine				x										x			
[103]	(Jiang et al., 2012)	Single machine				x										x			
[104]	(Jiang et al., 2021)	Single machine					x									x	x		
[105]	(Jin & Ji, 2018)	Single machine	x									x				x			
[106]	(Joo & Kim, 2015)	Single machine												x				HGA	
[107]	(Kong et al., 2020)	Parallel machine	x									x					x	BRKGA-DE	
[108]	(Koulamas & Kyparisis, 2008)	Single machine				x										x			
[109]	(Kung & Shu, 2015)	Single machine	x									x				x			
[110]	(Kuo, 2012)	Single machine				x										x			
[111]	(Kuo et al., 2012)	Flowshop				x											x		
[112]	(Kuo & Yang, 2011)	Single machine	x									x				x			
[113]	(Kuo & Yang, 2006)	Single machine				x										x			
[114]	(Kuo & Yang, 2006)	Single machine				x										x			
[115]	(Kuo & Yang, 2006)	Single machine				x										x			
[116]	(Kuo & Yang, 2007a)	Single machine				x										x			
[117]	(Kuo & Yang, 2007b)	Single machine	x													x			
[118]	(Lai et al., 2014)	Flowshop					x									x		SA	
[119]	(Lai & Wu, 2015)	Single machine - Parallel machine	x															GA, SA, ACO, PSO	
[120]	(Lai & Lee, 2011)	Single machine							x							x			
[121]	(Lai & Lee, 2013)	Single machine				x								x		x			
[122]	(Lee et al., 2013)	Parallel machine											x			x			
[123]	(Lee & Yang, 2012)	Parallel machine											x			x			
[124]	(Lee, 2011)	Single machine				x										x			
[125]	(Lee, 2011)	Single machine - Flowshop	x													x			
[126]	(Lee & Chung, 2013)	Flowshop	x													x	x	SA	
[127]	(Lee & Lai, 2011)	Single machine	x											x		x			
[128]	(Lee et al., 2015)	Single machine	x													x		GA	
[129]	(Lee & Wu, 2009)	Single machine - Flowshop							x							x			
[130]	(Lee & Wu, 2009)	Single machine	x													x			
[131]	(Lee et al., 2010)	Single machine	x													x	x		

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[132]	(Lee et al., 2009)	Single machine	x													x		GA	
[133]	(Lee, 2014)	Single machine				x						x				x			
[134]	(Lee et al., 2012)	Parallel machine	x														x	GA, PSO	
[135]	(Lee & Wu, 2004)	Flowshop	x													x	x		
[136]	(Lee et al., 2004)	Single machine	x													x	x		
[137]	(Li & Hsu, 2012)	Single machine	x													x		GA	
[138]	(Li & Hsu, 2013)	Single machine	x													x		SA	
[139]	(Li et al., 2014)	Single machine				x										x		GA	
[140]	(Li et al., 2011)	Flowshop		x												x		SA	
[141]	(Li et al., 2015)	Single machine	x													x			
[142]	(Li, 2017)	Single machine	x																x
[143]	(Li et al., 2014)	Single machine				x										x			
[144]	(Li et al., 2020)	Parallel machine								x			x		x			SOLS	
[145]	(Li & Wang, 2018)	Single machine										x				x			
[146]	(Li et al., 2018)	Single machine	x													x			
[147]	(Li et al., 2013)	Single machine					x									x			
[148]	(Li et al., 2019)	Single machine - Parallel machine												x		x			
[149]	(Li et al., 2018b)	Single machine - Flowshop				x					x					x	x		
[150]	(Liang et al., 2019)	Flowshop				x										x	x		
[151]	(Liao et al., 2020)	Parallel machine		x														LIMA-IRG	
[152]	(Liao et al., 2017)	Single machine	x											x				GA	
[153]	(Lin, & Chuang, 2015)	Parallel machine					x										x	SA, ACO	
[154]	(Lin, 2020)	Single machine		x												x			
[155]	(Lin, 2018)	Flowshop				x												CSA, IG	
[156]	(Lin et al., 2017)	Flowshop				x											x	GA	
[157]	(Lin, 2013)	Parallel machine	x												x	x			
[158]	(Lin, 2014)	Parallel machine	x												x	x			
[159]	(Liu et al., 2018)	Parallel machine	x													x	x	HDE	
[160]	(Liu et al., 2019)	Single machine										x				x	x		
[161]	(Liu et al., 2017)	Single machine	x													x			
[162]	(Liu & Zhou, 2015)	Single machine	x									x				x			
[163]	(Liu et al., 2018)	Flowshop						x								x	x		
[164]	(Liu, 2013)	Parallel machine	x													x			
[165]	(Liu et al., 2010)	Single machine	x													x			
[166]	(Liu, 2020)	Flowshop				x												SA	
[167]	(Liu et al., 2018)	Single machine				x										x		x	
[168]	(Liu et al., 2015)	Single machine				x										x			
[169]	(Liu et al., 2020)	Single machine - Parallel machine									x							CS-JADE	
[170]	(Liu & Jiang, 2020)	Single machine	x													x	x		

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[171]	(Liu et al., 2020b)	Single machine										x				x			
[172]	(Liu & Feng, 2014)	Flowshop	x													x			
[173]	(Liu et al., 2019)	Single machine										x						MOPSO-LS	
[174]	(Liu et al., 2017)	Single machine	x													x			
[175]	(Liu & Xiong, 2021).	Single machine	x									x				x			
[176]	(Low & Lin, 2011)	Single machine							x							x			
[177]	(Low & Lin, 2012)	Single machine							x							x			
[178]	(Low & Lin, 2013)	Single machine - Flowshop				x						x				x			
[179]	(Lu et al., 2015)	Single machine							x							x			
[180]	(Lu et al., 2015)	Single machine							x							x	x		
[181]	(Lu et al., 2012)	Single machine							x							x			
[182]	(Lu et al., 2016)	Parallel machine	x									x				x			
[183]	(Lu et al., 2014)	Single machine	x													x			
[184]	(Lu & Wang, 2013)	Single machine	x											x		x			
[185]	(Ma et al., 2014)	Single machine						x								x	x		
[186]	(Mani et al., 2009)	Single machine	x													x			
[187]	(Mani et al., 2011)	Single machine	x													x			
[188]	(Marichelvam et al., 2020)	Hybrid flowshop									x							PSO	
[189]	(Mazdeh et al., 2010)	Parallel machine										x			x			TS	
[190]	(Meghdari et al., 2015)	Hybrid flowshop	x												x				
[191]	(Moghadam et al., 2015)	Single machine									x							ICA-GA	
[192]	(Mor et al., 2020)	Flowshop	x													x			
[193]	(Mosheiov, 2001)	Parallel machine	x													x			
[194]	(Mosheiov & Pruwer, 2021)	Single machine - Flowshop	x									x					x		
[195]	(Mosheiov & Shabtay, 2013)	Single machine	x													x			
[196]	(Mosheiov & Sidney, 2005)	Single machine	x													x			
[197]	(Mosheiov, 2001)	Single machine - Parallel machine	x													x	x		
[198]	(Mosheiov & Sidney, 2003)	Single machine	x													x			
[199]	(Mousavi et al., 2018)	Hybrid Flowshop	x															GA	
[200]	(Mousavi et al., 2018)	Hybrid Flowshop	x												x			VNS-PA	
[201]	(Mousavipour et al., 2019)	Job shop	x												x			GWO, IWO	
[202]	(Mustu & Eren, 2018)	Single machine	x													x	x	GA	
[203]	(Muştu & Eren, 2018b)	Flowshop	x												x			GA, KA, GAKA	
[204]	(Muştu & Eren, 2021)	Single machine							x					x		x			
[205]	(Najari et al., 2016)	Flowshop				x							x		x			GA	
[206]	(Niu et al., 2015)	Single machine							x							x			
[207]	(Niu et al., 2015)	Single machine		x								x				x			
[208]	(Nouri et al., 2019)	Flowshop	x												x			GA, SA, ICA, LCA	
[209]	(Okołowski & Gawiejnowicz, 2010)	Parallel machine								x						x	x		
[210]	(Oron, 2014)	Single machine	x									x				x			
[211]	(Ostermeier, 2020)	Flowshop									x			x					x
[212]	(Ouazene & Yalaoui, 2018)	Parallel machine										x				x	x		
[213]	(Pakzad-Moghaddam, 2016)	Parallel machine									x				x			LFEPSO	
[214]	(Pakzad-Moghaddam et al., 2014)	Single machine									x				x			ACO- based hybrid ICA–GA	
[215]	(Pan et al., 2014)	Single machine									x						x	GA	

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[216]	(Pargar & Zandieh, 2012)	Hybrid flowshop	x												x			WFA	
[217]	(Pargar et al., 2018)	Hybrid flowshop	x												x			NSWFA, NRWFA	
[218]	(Pei et al., 2018)	Single machine	x															GSA–TS	
[219]	(Pei et al., 2017)	Single machine	x									x				x			
[220]	(Pei et al., 2021)	Parallel machine	x									x						SC-VNS	
[221]	(Pei et al., 2019)	Single machine - Parallel machine	x															VNS–GSA	
[222]	(Peng et al., 2021)	Flexible Job Shop								x								HDMICA	
[223]	(Przybylski, 2018)	Parallel machine									x					x			
[224]	(Qian et al., 2020)	Single machine						x								x	x		
[225]	(Qian & Steiner, 2013)	Single machine							x							x			
[226]	(Qian & Steiner, 2013)	Single machine	x													x			
[227]	(Qian & Zhan, 2021)	Single machine					x									x			
[228]	(Qin et al., 2016)	Flowshop	x														x	GA	
[229]	(Roohnavazfar et al., 2021)	Single machine	x																x
[230]	(Rostami et al., 2020)	Single machine	x										x			x		x	
[231]	(Rostami et al., 2015)	Parallel machine	x									x			x	x	x		
[232]	(Rudek & Rudek, 2013)	Flowshop	x										x				x	TS, SA	
[233]	(Rudek, 2012)	Single machine	x										x			x			
[234]	(Rudek, 2012)	Single machine				x										x	x	SA	
[235]	(Rudek, 2013)	Single machine	x													x	x	SA	
[236]	(Rudek, 2013)	Flowshop	x										x			x			
[237]	(Rudek, 2014)	Single machine				x										x			
[238]	(Rudek, 2011)	Flowshop									x					x	x		
[239]	(Rudek, 2017)	Parallel machine				x								x		x			
[240]	(Rudek, 2017)	Single machine				x								x		x			
[241]	(Rudek, 2021)	Parallel machine									x						x	SA, TS, PSO	
[242]	(Rustogi & Strusevich, 2014)	Single machine - Parallel machine	x									x				x			
[243]	(Rustogi & Strusevich, 2015)	Single machine										x				x			
[244]	(Saidi-Mehrabad & Bairamzadeh, 2018)	Parallel machine										x			x			HGA	
[245]	(Salama & Srinivas, 2021)	Single machine										x			x			SA	
[246]	(Salehi Mir et al., 2020)	Parallel machine	x									x			x		x	GA, ACO	
[247]	(Santos & Arroyo, 2017)	Parallel machine											x					IG	
[248]	(Seidgar et al., 2015)	Hybrid flowshop	x												x	x			
[249]	(Sekkal & Belkaid, 2020)	Parallel machine											x		x			MOSA	
[250]	(Shahvari & Logendran, 2018)	Hybrid Flowshop	x												x			PSO, TS	
[251]	(Shen, 2019)	Parallel machine	x									x						GA	
[252]	(Shen, 2020)	Single machine	x									x				x			
[253]	(Shen & Wu, 2013)	Single machine							x							x			
[254]	(Shen et al., 2013)	Single machine												x		x			
[255]	(Shi & Wang, 2020)	Flowshop	x													x			
[256]	(Shiau et al., 2015)	Flowshop	x													x		GA	
[257]	(Soleimani et al., 2020)	Parallel machine							x			x			x			GA, CSO, IABC	
[258]	(Soper & Strusevich, 2020)	Single machine											x	x		x			

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[259]	(Soroush, 2012)	Single machine	x													x			
[260]	(Soroush, 2013)	Single machine	x													x			
[261]	(Soroush, 2014)	Single machine	x													x			
[262]	(Soroush, 2014)	Single machine	x													x			
[263]	(Soroush, 2015)	Single machine	x													x	x		
[264]	(Soroush, 2016)	Single machine	x									x	x			x			
[265]	(Soroush & Amin, 2013)	Single machine	x														x		
[266]	(Sun & Li, 2009)	Single machine							x							x			
[267]	(Sun et al., 2016)	Single machine	x									x				x			
[268]	(Sun et al., 2013)	Flowshop	x													x			
[269]	(Sun et al., 2013)	Flowshop	x													x	x		
[270]	(Sun, 2009)	Single machine	x											x		x			
[271]	(Sun et al., 2020)	Single machine								x						x			
[272]	(Sun et al., 2021)	Parallel machine								x						x			
[273]	(Sun et al., 2020)	Single machine	x													x			
[274]	(Sun et al., 2020)	Flowshop							x								x	SA	
[275]	(Sun et al., 2019)	Flowshop	x													x			
[276]	(Shokoufi et al., 2019)	Parallel machine				x									x			HGA-PSO	
[277]	(Taghavi-Fard et al., 2011)	Flowshop								x								NSGA-II, NRGA	
[278]	(Tian et al., 2019)	Flowshop	x													x			
[279]	(Tigane et al., 2019)	Parallel machine										x						NSGA-II	
[280]	(Toksar, 2011)	Single machine	x									x				x	x		
[281]	(Toksar et al., 2010)	Single machine				x						x				x			
[282]	(Toksari & Güner, 2009)	Parallel machine	x									x			x	x			
[283]	(Toksari, 2016)	Single machine	x									x				x			
[284]	(Toksarı & Arık, 2017)	Single machine	x												x	x			
[285]	(Toksari & Güner, 2008)	Parallel machine	x									x			x				
[286]	(Toksari & Güner, 2009)	Single machine - Flowshop	x									x				x			
[287]	(Toksari et al., 2009)	Single machine				x						x				x			
[288]	(Toksari & Güner, 2010)	Parallel machine				x						x				x			
[289]	(Toksarı & Güner, 2010)	Parallel machine	x									x				x			
[290]	(Vahedi Nouri et al., 2013)	Flowshop	x												x		x		
[291]	(Vahedi-Nouri et al.,2013)	Flowshop	x												x		x	GA, SA	
[292]	(Vahedi-Nouri et al., 2014)	Flowshop	x												x		x	SA	
[293]	(Vahedi-Nouri., et al., 2013)	Single machine	x												x			HFSA	
[294]	(Wang et al., 2016)	Parallel machine		x												x	x	HDE, HGA	
[295]	(Wang & Wang, 2014)	Single machine							x							x			
[296]	(Wang et al., 2019)	Flowshop									x							DR-OPSO	
[297]	(Wang et al., 2010)	Single machine	x													x			
[298]	(Wang et al., 2019)	Flowshop										x						MVO	
[299]	(Wang, 2010)	Single machine				x						x			x		x		

Author and Year	System configuration	Learning effect									Deteriorating effect			Solution method				
		Position-Based Learning Effect	Truncated position-based learning effect	Exponential position-based learning effect	Sum-of-processing-time based learning effect	Truncated sum-of-processing-time based learning	Exponential learning effects based on Sum-of-processing-time	Combining position and sum of processing time-based learning effect	Dejong´s learning effect	Other approaches	Starting-time deterioration effect	Position-based deterioration effect	Cumulative deterioration effect	Exact method	Heuristic leading to optimal solutions	Heuristics	Metaheuristics	Other considerations
[300] (Wang et al., 2020)	Single machine							x							x		SA	
[301] (Wang & Guo, 2010)	Single machine	x									x				x			
[302] (Wang & Wang, 2013)	Single machine - Flowshop							x							x			
[303] (Wang et al., 2021)	Single machine										x				x			
[304] (Wang et al., 2009)	Single machine	x									x				x			
[305] (Wang & Li, 2011)	Single machine							x							x			
[306] (Wang et al., 2019)	Flowshop							x							x	x		
[307] (Wang & Wang, 2013)	Single machine	x											x		x			
[308] (Wang et al., 2021)	Single machine		x												x	x		
[309] (Wang et al., 2010)	Single machine						x								x			
[310] (Wang et al., 2010)	Single machine						x								x			
[311] (Wang & Wang, 2011)	Single machine	x									x				x			
[315] (Wang & Wang, 2015)	Single machine	x													x			
[316] (Wang & Wang, 2010)	Single machine	x													x			
[317] (Wang & Wang, 2012)	Single machine										x					x		
[318] (Wang & Wang, 2014)	Single machine	x													x			
[319] (Wang, et al., 2013)	Single machine					x									x			
[320] (Wang, 2005)	Flowshop	x													x			
[321] (Wang, 2006)	Single machine - Flowshop	x									x				x			
[322] (Wang, 2009)	Single machine				x						x				x			
[323] (Wang et al., 2008)	Single machine				x										x	x		
[324] (Wang & Wang, 2012)	Flowshop			x											x	x		
[325] (Wang & Xia, 2005)	Flowshop	x													x			
[326] (Wang & Zhang, 2015)	Flowshop							x							x	x		
[327] (Wang, 2020)	Parallel machine	x													x			
[328] (Wang, 2007)	Single machine	x									x				x			
[329] (Wang, 2008)	Single machine				x										x			
[330] (Wang, 2008)	Single machine				x										x			
[331] (Wang, 2009)	Single machine	x									x				x			
[332] (Wang et al., 2012)	Flowshop	x									x				x	x		
[333] (Wang et al., 2009)	Single machine	x									x				x			
[334] (Wang et al., 2008)	Flowshop	x									x				x			
[335] (Wang & Liu, 2009)	Flowshop	x									x				x	x		
[336] (Wang et al., 2010)	Single machine	x													x			
[337] (Wang et al., 2009)	Single machine						x								x			
[338] (Wang, et al., 2010)	Single machine				x										x	x		
[339] (Wang & Wang, 2011)	Single machine						x								x			

Author and Year	System configuration	Learning effect									Deteriorating effect			Solution method				
		Position-Based Learning Effect	Truncated position-based learning effect	Exponential position-based learning effect	Sum-of-processing-time based learning effect	Truncated sum-of-processing-time based learning	Exponential learning effects based on Sum-of-processing-time	Combining position and sum of processing time-based learning effect	Dejong´s learning effect	Other approaches	Starting-time deterioration effect	Position-based deterioration effect	Cumulative deterioration effect	Exact method	Heuristic leading to optimal solutions	Heuristics	Metaheuristics	Other considerations
[340] (Wang & Wang, 2014)	Flowshop						x									x		
[341] (Wang et al., 2009)	Single machine	x													x	x		
[342] (Wang & Wang, 2011)	Flowshop	x														x		
[343] (Wang, et al., 2021)	Single machine										x	x			x	x		
[344] (Wang et al., 2018)	Flowshop	x													x	x	MOMA	
[345] (Wang et al., 2009)	Single machine				x						x				x			
[346] (Wang et al., 2011)	Single machine				x										x			
[347] (Wang et al., 2015)	Single machine	x											x		x			
[348] (Wang et al., 2010)	Single machine	x									x				x	x		
[349] (Wang, et al., 2021)	Single machine	x													x	x	TS	
[350] (Wang et al., 2010)	Single machine	x													x			
[351] (Wang et al., 2014)	Single machine		x												x			
[352] (Wang et al., 2013)	Single machine	x									x				x			
[353] (Wang & Wang, 2014)	Parallel machine	x									x				x			
[354] (Wang et al., 2013)	Flowshop		x													x		
[355] (Wang & Cheng, 2007)	Single machine	x									x				x			
[356] (Wang et al., 2017)	Single machine				x										x	x		
[357] (Wei, 2019)	Single machine	x			x							x	x		x			
[358] (Wu et al., 2019)	Flowshop										x				x		SA, CSA	
[359] (Wu et al., 2020)	Flowshop	x													x		GA, SA, CSA, ABC	
[360] (Wu et al., 2011)	Single machine				x										x		SA	
[361] (Wu et al., 2013)	Single machine	x													x	x		
[362] (Wu et al., 2019)	Parallel machine				x										x		SA, ABC.PSO	
[363] (Wu et al., 2018)	Flowshop				x											x	SA	
[364] (Wu, et al., 2018)	Flowshop	x													x		SA	
[365] (Wu et al., 2012)	Flowshop					x									x		GA	
[366] (Wu et al., 2011)	Single machine					x									x			
[367] (Wu et al., 2016)	Single machine	x													x		GA, QDEA	
[368] (Wu et al., 2012)	Single machine					x									x			
[369] (Wu et al., 2020)	Flowshop					x										x	GA	
[370] (Wu et al., 2015)	Single machine				x								x		x			
[371] (Wu et al., 2016)	Single machine							x					x		x			
[372] (Wu et al., 2013)	Single machine - Flowshop		x													x		
[373] (Wu et al., 2011)	Single machine				x										x		GA	
[374] (Wu et al., 2011)	Single machine				x										x		SA	
[375] (Wu et al., 2011)	Single machine	x													x	x		
[376] (Wu & Lee, 2007)	Single machine	x													x			
[377] (Wu & Lee, 2008)	Single machine							x							x			

Author and Year		System configuration	Learning effect									Deteriorating effect			Solution method				
			Position-Based Learning Effect	Truncated position-based learning effect	Exponential position-based learning effect	Sum-of-processing-time based learning effect	Truncated sum-of-processing-time based learning	Exponential learning effects based on Sum-of-processing-time	Combining position and sum of processing time-based learning effect	Dejong´s learning effect	Other approaches	Starting-time deterioration effect	Position-based deterioration effect	Cumulative deterioration effect	Exact method	Heuristic leading to optimal solutions	Heuristics	Metaheuristics	Other considerations
[378]	(Wu & Lee, 2009)	Single machine - Flowshop							x							x			
[379]	(Wu et al., 2007)	Single machine	x													x	x	SA	
[380]	(Wu et al., 2007)	Flowshop	x													x	x	SA	
[381]	(Wu & Liu, 2010)	Single machine				x										x	x		
[382]	(Wu et al., 2018)	Flexible Job Shop									x							GA-VNS	
[383]	(Wu, 2013)	Single machine				x						x				x		SA	
[384]	(Wu, 2014)	Single machine				x										x		SA	
[385]	(Wu et al., 2015)	Flowshop					x									x		GA	
[386]	(Wu et al., 2014)	Single machine		x												x		GA	
[387]	(Wu et al., 2017)	Single machine				x										x		GA, SA	
[388]	(Wu et al., 2019)	Flexible Job shop										x	x					MOHPIOSA	
[389]	(Wu & Wang, 2016)	Single machine					x									x			
[390]	(Wu et al., 2011)	Single machine	x									x				x			
[391]	(Wua et al., 2011)	Flowshop					x									x		SA	
[392]	(Xingong & Guangle, 2010)	Single machine	x									x				x			
[393]	(Xingong & Yong, 2015)	Single machine				x										x			
[394]	(Xingong et al., 2016)	Single machine	x									x				x			
[395]	(Xu et al., 2016)	Flowshop	x														x	GA	
[396]	(Xu et al., 2014)	Single machine										x					x		
[397]	(Xu et al., 2008)	Flowshop	x													x			
[398]	(Yan et al., 2019)	Single machine						x								x		PSO	
[399]	(Yan et al., 2009)	Single machine	x									x				x			
[400]	(Yang et al., 2013)	Single machine - Flowshop							x							x			
[401]	(Yang & Kuo, 2009)	Single machine							x							x			
[402]	(Yang & Kuo, 2010)	Single machine - Flowshop	x									x				x			
[403]	(Yang & Kuo, 2011)	Single machine	x									x				x			
[404]	(Yang & Kuo, 2007)	Single machine				x										x			
[405]	(Yang & Kuo, 2009)	Single machine	x									x				x			
[406]	(Yang et al., 2011)	Single machine	x									x				x			
[407]	(Yang & Lu, 2019)	Single machine - Parallel machine	x													x			
[408]	(Yang & Lu, 2021)	Single machine - Parallel machine	x													x			
[409]	(Yang et al.,2013)	Single machine	x											x		x			
[410]	(Yang, 2010)	Single machine				x							x			x			
[411]	(Yang, 2011)	Single machine	x									x				x			
[412]	(Yang, 2011b)	Parallel machine											x			x			
[413]	(Yang, 2013)	Parallel machine										x	x			x			
[414]	(Yang et al., 2010)	Parallel machine	x													x			
[415]	(Yang et al., 2013)	Single machine											x			x			
[416]	(Yang & Yang, 2011)	Single machine							x							x			

Author and Year	System configuration	Learning effect									Deteriorating effect			Solution method				
		Position-Based Learning Effect	Truncated position-based learning effect	Exponential position-based learning effect	Sum-of-processing-time based learning effect	Truncated sum-of-processing-time based learning	Exponential learning effects based on Sum-of-processing-time	Combining position and sum of processing time-based learning effect	Dejong's learning effect	Other approaches	Starting-time deterioration effect	Position-based deterioration effect	Cumulative deterioration effect	Exact method	Heuristic leading to optimal solutions	Heuristics	Metaheuristics	Other considerations
[418] (Yang & Yang, 2010)	Single machine	x			x						x				x			
[419] (Yang & Chand, 2008)	Single machine									x					x	x		
[420] (Yeh et al., 2014)	Parallel machine	x														x	SA, GA	
[421] (Yin, 2018)	Single machine	x													x			
[422] (Yin et al., 2014)	Single machine	x									x				x			
[423] (Yin et al., 2010)	Single machine	x											x		x			
[424] (Yin & Wang, 2011)	Single machine	x													x			
[425] (Yin et al., 2013)	Single machine	x													x			
[426] (Yin et al., 2012)	Single machine	x									x				x			
[427] (Yin et al., 2014)	Single machine	x													x		MBO	
[428] (Yin & Xu, 2011)	Single machine	x									x				x			
[429] (Yin et al., 2012)	Single machine	x													x	x		
[430] (Yin et al., 2010)	Single machine							x							x			
[431] (Yin et al., 2010)	Single machine							x							x			
[432] (Yin et al., 2013)	Single machine									x					x			
[433] (Yin et al., 2009)	Single machine - Flowshop							x							x			
[434] (Ying et al., 2017)	Single machine							x							x			
[435] (Yu et al., 2013)	Single machine - Flowshop							x							x			
[436] (Yue et al., 2016)	Single machine							x									HPABC	
[437] (Yue & Wan, 2016)	Single machine										x				x			
[438] (Zhang et al., 2011)	Single machine	x									x				x			
[439] (Zhang, 2020)	Single machine - Flowshop							x							x	x		
[440] (Zhang et al., 2011)	Single machine			x							x				x			
[441] (Zhang et al., 2012)	Single machine - Flowshop							x							x			
[442] (Zhang et al., 2017)	Single machine										x				x			
[443] (Zhang et al., 2013a)	Single machine									x					x			
[444] (Zhang et al., 2018)	Single machine	x										x			x			
[445] (Zhang et al., 2018)	Single machine									x					x			
[446] (Zhang & Yan, 2010)	Single machine - Flowshop							x							x			
[447] (Zhang et al., 2013b)	Single machine	x													x			
[448] (Zhao, 2021)	Flowshop	x													x			
[449] (Zhao & Tang, 2011)	Single machine	x													x			
[450] (Zheng et al., 2019)	Single machine				x									x	x		TS	
[451] (Zhu et al., 2011)	Single machine	x									x				x			
[452] (Zhu et al., 2011)	Single machine	x													x			
[453] (Zhu et al., 2016)	Single machine	x													x			
[454] (Zou et al., 2020)	Flowshop				x											x	GA, CSA	
[455] (Tai, 2021)	Single machine	x																

The following are the conventions used in this document for metaheuristic notation:

Algorithm Genetic Variable Neighborhood Search with Affinity Function (GVNSWAF)
Ant Colony Optimization (ACO)
Artificial Bee Colony (ABC)
Artificial-based-Molecule Chemical Reaction Optimization Algorithm (ACRO)
Biased Random-Key Genetic and Differential Evolution (BRKGA-DE)
Bi-level Evolutionary Algorithm (Bi-GTS)
Cat Swarm Optimization (CSO)
Cloud Theory-Based Simulated Annealing (CSA),
Cuckoo Search Algorithm and Self-Adaptive Differential Evolution (CS-JADE)
Discrete Artificial Bee Colony Algorithm (DABC)
Dominance Rule and Opposition-Based Particle Swarm Optimization Algorithm (DR-OPSO)
Fireworks Algorithm (FWA)
Genetic Hybrid Algorithm (GHA)
Genetic-Kangaroo Hybrid Algorithm (GAKA)
Grey Wolf Optimizer (GWO)
Hybrid Algorithm Genetic Algorithm and Variable Neighborhood Search (GA-VNS)
Hybrid Colonial Competitive Algorithm (HCCA)
Hybrid Differential Evolution Heuristic (HDE)
Hybrid Discrete Multi-objective Imperial Competition Algorithm (HDMICA)
Hybrid Firefly-Simulated Annealing Algorithm (HFSA)
Hybrid Genetic Algorithm (HGA)
Hybrid Genetic Algorithm-Tabu Search (GA-TS)
Hybrid Gravitational Search Algorithm –Tabu Search Algorithm (GSA–TS)
Hybrid Imperialistic Competitive Algorithm and Genetic Algorithm (ICA-GA)
Hybrid of Genetic Algorithm and Particle Swarm Optimization (HGA-PSO)
Hybrid Pareto Artificial Bee Colony Algorithm (HPABC)
Hybrid Simulated Annealing Metaheuristic (HSA)
Imperialist Competitive Algorithm (ICA)
Imperialist Competitive Algorithm and Genetic Algorithm (ICA–GA)
Interactive Artificial Bee Colony Algorithm (IABC)
Invasive Weed Optimizer (IWO)
Iterated Greedy Algorithm (IG)
Kangaroo Algorithm (KA)
League Champions Algorithms (LCA)
Less-is-more-Based Iterative Reference Greedy Algorithm (LIMA-IRG)
Lévy Fight Embedded Particle Swarm Optimization (LFEPSO)
Marriage-in-honey-bees Optimization Algorithms (MBO)
Multi-objective Genetic Algorithm (MOGA)
Multi-objective Hybrid Pigeon-inspired Optimization and Simulated Annealing Algorithm (MOHPIOSA)
Multi-objective Memetic Algorithm (MOMA)
Multi-objective Memetic Algorithm (MPMO-MA)
Multi-objective Particle Swarm Optimization Algorithm Enhanced by a Local Search (MOPSO-LS)
Multi-objective Simulated Annealing (MOSA)
Multi-verse Optimizer (MVO)
Non-dominated Rank Genetic Algorithm (NRGA).
Non-dominated Ranking Water Flow-Like Algorithms (NRWFA)

Non-dominated Sorting Water Flow-Like Algorithms (NSWFA)
Non-dominated Sorting-Based Multi-Objective Algorithm (NSGA-II)
Population-based Tabu Search Algorithm (TSPOP)
Quantum Differential Evolutionary Algorithm (QDEA)
Simplified Swarm Optimization with Local Search (SSOLS).
Society and Civilization Algorithm with Variable Neighborhood Search (SC-VNS)
Steady-stage Multi-meme Memetic Algorithm (SSMMA)
Tabu Search (TS)
Tabu Search Within the Variable Neighborhood Search (VNS-TS)
Variable Neighborhood Search (VNS)
Variable Neighborhood Search and Adaptive Simplified Human Learning Optimization Algorithm (VNS- ASHLO)
Variable Neighborhood Search Priori Approach (VNS-PA)
Variable Neighborhood Search with Gravitational Search Algorithm (VNS - GSA)
Water Flow-Like Algorithm (WFLA)

References

1. Abedi, M., Chiong, R., Noman, N., & Zhang, R. A multi-population, multi-objective memetic algorithm for energy-efficient job-shop scheduling with deteriorating machines. *Expert Systems with Applications.* (2020). 157.
2. Ahmadizar, F., & Hosseini, L. Single-machine scheduling with a position-based learning effect and fuzzy processing times. *International Journal of Advanced Manufacturing Technology. (2011)*, 56(5–8), 693–698.
3. Ahmadizar, F., & Hosseini, L. Bi-criteria single machine scheduling with a time-dependent learning effect and release times. *Applied Mathematical Modelling*. (2012), 36(12), 6203–6214.
4. Ahmadizar, F., & Hosseini, L. Minimizing makespan in a single-machine scheduling problem with a learning effect and fuzzy processing times. *International Journal of Advanced Manufacturing Technology*. (2013), 65(1–4), 581–587.
5. Amirian, H., & Sahraeian, R. Augmented ε-constraint method in multi-objective flowshop problem with past sequence set-up times and a modified learning effect. *International Journal of Production Research*. (2015), 53(19), 5962–5976.
6. Amirian, H., & Sahraeian, R. A hybrid differential evolution for general multi-objective flow shop problem with a modified learning effect. *Proceedings of the Institution of Mechanical Engineers, Part B: Journal of Engineering Manufacture.* (2016) , 230(12), 2275–2285.
7. Araghi, M. E. T., Jolai, F., & Rabiee, M. Incorporating learning effect and deterioration for solving a SDST flexible job-shop scheduling problem with a hybrid meta-heuristic approach. *International Journal of Computer Integrated Manufacturing*. (2014), 27(8), 733–746.
8. Arigliano, A., Ghiani, G., Grieco, A., & Guerriero, E. Single-machine time-dependent scheduling problems with fixed rate-modifying activities and resumable jobs. *4OR*. (2017), 15(2), 201–215.
9. Arık, O.A., & Toksarı, M. D. Multi-objective fuzzy parallel machine scheduling problems under fuzzy job deterioration and learning effects. *International Journal of Production Research*. (2018), 56(7), 2488–2505.
10. Arık, O. A. Population-based Tabu search with evolutionary strategies for permutation flow shop scheduling problems under effects of position-dependent learning and linear deterioration. *Soft Computing*. (2021), 25(2), 1501–1518.
11. Arık, O. A., & Toksarı, M. D. (2021). A genetic algorithm approach to parallel machine scheduling problems under effects of position-dependent learning and linear deterioration: Genetic algorithm to parallel machine scheduling problems. International Journal of Applied Metaheuristic Computing, 12(3), 195–211.
12. Azadeh, A., Habibnejad-Ledari, H., Abdolhossein Zadeh, S., & Hosseinabadi Farahani, M. A single-machine scheduling problem with learning effect, deterioration and non-monotonic time-dependent processing times. *International Journal of Computer Integrated Manufacturing.* (2017), 30(2–3), 292–304.
13. Azizi, V., Jabbari, M., & Kheirkhah, A. S. M-machine, no-wait flowshop scheduling with sequence dependent setup times and truncated learning function to minimize the makespan. *International Journal of Industrial Engineering Computations*. (2016), 7(2), 309–322.
14. Azizi, V., & Hu, G. A branch and bound algorithm to solve a two-machine no-wait flowshop scheduling problem with truncated learning function. *International Journal of Management Science and Engineering Management.* (2020)., 15(2), 89–95.
15. Azzouz, A., Chaabani, A., Ennigrou, M., & Said, L. B. Handling Sequence-dependent Setup Time Flexible Job Shop Problem with Learning and Deterioration Considerations using Evolutionary Bi-level Optimization. *Applied Artificial Intelligence*. (2020a), 34(6), 433–455.
16. Azzouz, A., Pan, P.-A., Hsu, P.-H., Lin, W.-C., Liu, S., Ben Said, L., & Wu, C.-C.. A two-stage three-machine assembly scheduling problem with a truncation position-based learning effect. *Soft Computing.* (2020), 24(14), 10515–10533.
17. Bachman, A., & Janiak, A. Scheduling jobs with position-dependentprocessing times. *Journal of the Operational Research Society.* (2004)., 55(3), 257–264.
18. Bai, D., Xue, H., Wang, L., Wu, C.-C., Lin, W.-C., & Abdulkadir, D. H. Effective algorithms for single-machine learning-effect scheduling to minimize completion-time-based criteria with release dates. *Expert Systems with Applications.* (2020), 156.
19. Bai, D, Bai, X., Yang, J., Zhang, X., Ren, T., Xie, C., & Liu, B. Minimization of maximum lateness in a

flowshop learning effect scheduling with release dates. *Computers and Industrial Engineering*. (2021), 158, 107309.

20. Bai, D, Tang, M., Zhang, Z. H., & Santibanez-Gonzalez, E. D. Flow shop learning effect scheduling problem with release dates. *Omega (United Kingdom)*. (2018), 78, 21–38.
21. Bai, J., Wang, M.-Z., & Wang, J.-B. Single machine scheduling with a general exponential learning effect. *Applied Mathematical Modelling*. (2012), 36(2), 829–835.
22. Bai, J., Li, Z. R., & Huang, X. Single-machine group scheduling with general deterioration and learning effects. *Applied Mathematical Modelling*. (2012), 36(3), 1267–1274.
23. Bai, M., & Zhao, Y. A fully polynomial-time approximation scheme for total completion time minimization on a single machine with DeJong's learning effect and an availability constraint. *Engineering Optimization*. (2020), 52(8), 1313–1322.
24. Behnamian, J. Scheduling and worker assignment problems on hybrid flowshop with cost-related objective function. *International Journal of Advanced Manufacturing Technology*. (2014), 74(1–4), 267–283.
25. Behnamian, J., & Zandieh, M. Earliness and Tardiness Minimizing on a Realistic Hybrid Flowshop Scheduling with Learning Effect by Advanced Metaheuristic. *Arabian Journal for Science and Engineering*. (2013), 38(5), 1229–1242.
26. Bektur, G. An NSGA-II-Based Memetic Algorithm for an Energy-Efficient Unrelated Parallel Machine Scheduling Problem with Machine-Sequence Dependent Setup Times and Learning Effect. *Arabian Journal for Science and Engineering*. (2021).
27. Biskup, D. Single-machine scheduling with learning functions. *European Journal of Operational Research*. (1999), 115(4), 173–178.
28. Bozorgirad, M.A., & Logendran, R. A comparison of local search algorithms with population-based algorithms in hybrid flow shop scheduling problems with realistic characteristics. *International Journal of Advanced Manufacturing Technology*. (2016)., 83(5–8), 1135–1151.
29. Ceylan, H. Due Date Single Machine Scheduling Problems with Nonlinear Deterioration and Learning Effects and Past Sequence Dependent Setup Times. *Mathematical Problems in Engineering*. (2014), 2014.
30. Chang, P. C., Chen, S. H., & Mani, V. Parametric analysis of bi-criterion single machine scheduling with a learning effect. I*nternational Journal of Innovative Computing, Information and Control*. (2008), 4(8), 2033–2043.
31. Chang, P. C., Chen, S. H., & Mani, V. A note on due-date assignment and single machine scheduling with a learning/aging effect. *International Journal of Production Economics*. (2009), 117(1), 142–149.
32. Chen, K., Yao, D., Cheng, T. C. E., & Ji, M. Production scheduling with autonomous and induced learning. *International Journal of Production Research*. (2020), 0(0), 1–21.
33. Chen, P., Wu, C. C., & Lee, W. C. A bi-criteria two-machine flowshop scheduling problem with a learning effect. *Journal of the Operational Research Society*. (2006)., 57(9), 1113–1125.
34. Chen, X., Chau, V., Xie, P., Sterna, M., & Błażewicz, J. Complexity of late work minimization in flow shop systems and a particle swarm optimization algorithm for learning effect. *Computers and Industrial Engineering*. (2017), 111, 176–182.
35. Cheng, M. Flowshop scheduling problems with a position-dependent exponential learning effect. *Mathematical Problems in Engineering*. (2013). 2013.
36. Cheng, M. B., Sun, S. J., & Yu, Y. A note on flow shop scheduling problems with a learning effect on no-idle dominant machines. *Applied Mathematics and Computation*, 184(2). (2007), 945–949.
37. Cheng, M., Tadikamalla, P. R., Shang, J., & Zhang, B. Single machine scheduling problems with exponentially time-dependent learning effects. *Journal of Manufacturing Systems*. (2015), 34(C), 60–65.
38. Cheng, M., Xiao, S., & Liu, G. Single-machine rescheduling problems with learning effect under disruptions. *Journal of Industrial and Management Optimization*. (2018), 14(3), 967–980.
39. Cheng, S. R. (2012). A single-machine two-agent scheduling problem by GA approach. Asia-Pacific Journal of Operational Research, 29(2).
40. Cheng, T. C.E., Cheng, S. R., Wu, W. H., Hsu, P. H., & Wu, C. C. A two-agent single-machine scheduling problem with truncated sum-of-processing-times-based learning considerations. *Computers and Industrial Engineering*. (2011), 60(4), 534–541.
41. Cheng, T. C.E., Kuo, W. H., & Yang, D. L. Scheduling with a position-weighted learning effect. *Optimization Letters*. (2014), 8(1), 293–306.

42. Cheng, T. C.E., Lee, W. C., & Wu, C. C. Scheduling problems with deteriorating jobs and learning effects including proportional setup times. *Computers and Industrial Engineering*. (2010), 58(2), 326–331.
43. Cheng, T. C. & Wang, G. Single Machine Scheduling with Learning Effect Considerations. *Annals of Operations Research*. (2000), 98(1–4), 273–290.
44. Cheng, T. C.E, Wu, C. C., & Lee, W. C. Some scheduling problems with sum-of-processing-times-based and job-position-based learning effects. *Information Sciences.* (2008), 178(11), 2476–2487.
45. Cheng, T.C.E., Kuo, W.-H., & Yang, D.-L. Scheduling with a position-weighted learning effect based on sum-of-logarithm-processing-times and job position. *Information Sciences.* (2013), 221, 490–500.
46. Cheng, T.C.E., Lai, P.-J., Wu, C.-C., & Lee, W.-C. Single-machine scheduling with sum-of-logarithm-processing-times-based learning considerations. *Information Sciences.* (2009), 179(18), 3127–3135.
47. Cheng, T.C.E., Tseng, S.-C., Lai, P.-J., & Lee, W.-C.. Single-machine scheduling with accelerating learning effects. *Mathematical Problems in Engineering.* (2013).
48. Cheng, T.C.E., Tseng, S.-C., Lai, P.-J., & Lee, W.-C. Single-machine scheduling with accelerating deterioration effects. *Optimization Letters.* (2014), 8(2), 543–554.
49. Cheng, T.C.E., Wu, C.-C., Chen, J.-C., Wu, W.-H., & Cheng, S.-R. Two-machine flowshop scheduling with a truncated learning function to minimize the makespan. *International Journal of Production Economics.* (2013), 141(1), 79–86.
50. Cheng, T.C.E., Wu, W.-H., Cheng, S.-R., & Wu, C.-C. Two-agent scheduling with position-based deteriorating jobs and learning effects. *Applied Mathematics and Computation.* (2011), 217(21), 8804–8824.
51. Chung, T., Gupta, J. N. D., & Qiu, M. Single machine scheduling problem with batch setups involving positional deterioration effects and multiple rate-modifying activities. *Engineering Optimization.* (2019), 51(10), 1743–1760.
52. Chung, Y.-H., & Tong, L.-I. Makespan minimization for m-machine permutation flowshop scheduling problem with learning considerations. *International Journal of Advanced Manufacturing Technology*. (2011), 56(1–4), 355–367.
53. Chung, Y.-H., & Tong, L.-I. Bi-criteria minimization for the permutation flowshop scheduling problem with machine-based learning effects. *Computers and Industrial Engineering.* (2012), 63(1), 302–312.
54. Deliktaş, D. Self-adaptive memetic algorithms for multi-objective single machine learning-effect scheduling problems with release times. *In Flexible Services and Manufacturing Journal (Issue 0123456789). Springer US.* (2021).
55. Eren, T. Minimizing completion time variance in a flowshop scheduling problem with a learning effect. *Gazi University Journal of Science.* (2013), 26(3), 389–397.
56. Eren, T. A bicriteria parallel machine scheduling with a learning effect of setup and removal times. *Applied Mathematical Modelling.* (2009), 33(2), 1141–1150.
57. Eren, T. A note on minimizing maximum lateness in an m-machine scheduling problem with a learning effect. *Applied Mathematics and Computation*. (2009), 209(2), 186–190.
58. Eren, T. Human and machine effects in a just-in-time scheduling problem. *Human Factors and Ergonomics In Manufacturing.* (2009), 19(4), 294–299.
59. Eren, T. Minimizing the total weighted completion time on a single machine scheduling with release dates and a learning effect. *Applied Mathematics and Computation.* (2009), 208(2), 355–358.
60. Eren, T., & Güner, E. A bicriteria scheduling problem with a learning effect: Total completion time and total tardiness. *Infor.* (2007), 45(2), 75–81.
61. Eren, T., & Güner, E. Minimizing total tardiness in a scheduling problem with a learning effect. *Applied Mathematical Modelling.* (2007), 31(7), 1351–1361.
62. Eren, T., & Güner, E. A bicriteria flowshop scheduling with a learning effect. *Applied Mathematical Modelling.* (2008), 32(9), 1719–1733.
63. Eren, T., & Güner, E. A bicriteria parallel machine scheduling with a learning effect. *International Journal of Advanced Manufacturing Technology.* (2009), 40(11–12), 1202–1205.
64. Expósito-Izquierdo, C., Angel-Bello, F., Melián-Batista, B., Alvarez, A., & Báez, S. A metaheuristic algorithm and simulation to study the effect of learning or tiredness on sequence-dependent setup times in a parallel machine scheduling problem. *Expert Systems with Applications.* (2019), 117, 62–74.
65. Fan, W., Pei, J., Liu, X., Pardalos, P. M., & Kong, M. Serial-batching group scheduling with release times and the combined effects of deterioration and truncated job-dependent learning. *Journal of Global*

Optimization. (2018), 71(1), 147–163.

66. Fazlollahtabar, H., Hassanzadeh, R., Mahdavi, I., & Mahdavi-Amiri, N. A genetic optimization algorithm and perceptron learning rules for a bi-criteria parallel machine scheduling. *Journal of the Chinese Institute of Industrial Engineers.* (2012), 29(3), 206–218.
67. Fichera, S., Costa, A., & Cappadonna, F. Scheduling jobs families with learning effect on the setup. *Advances in Operations Research,* (2015).
68. Fichera, S., Costa, A., & Cappadonna, F. A. Heterogeneous workers with learning ability assignment in a cellular manufacturing system. *International Journal of Industrial Engineering Computations. (*2017), 8(4), 427–440.
69. Fu, Y., Ding, J., Wang, H., & Wang, J. Two-objective stochastic flow-shop scheduling with deteriorating and learning effect in Industry 4.0-based manufacturing system. *Applied Soft Computing Journal.* (2018), 68, 847–855.
70. Fu, Y., Zhou, M., Guo, X., & Qi, L. Artificial-Molecule-Based Chemical Reaction Optimization for Flow Shop Scheduling Problem with Deteriorating and Learning Effects. *IEEE Access.* (2019), 7, 53429–53440.
71. Gao, F., Liu, M., Wang, J.-J., & Lu, Y.-Y. No-wait two-machine permutation flow shop scheduling problem with learning effect, common due date and controllable job processing times. *International Journal of Production Research.* (2018), 56(6), 2361–2369.
72. Geng, X.-N., Wang, J.-B., & Bai, D. Common due date assignment scheduling for a no-wait flowshop with convex resource allocation and learning effect. *Engineering Optimization.* (2019), 51(8), 1301–1323.
73. Geyik, F., & Elibal, K. A linguistic approach to non-identical parallel processor scheduling with fuzzy processing times. *Applied Soft Computing Journal.* (2017), 55, 63–71.
74. Ghodratnama, A., Rabbani, M., Tavakkoli-Moghaddam, R., & Baboli, A. Solving a single-machine scheduling problem with maintenance, job deterioration and learning effect by simulated annealing. *Journal of Manufacturing Systems.* (2010), 29(1), 1–9.
75. Gordon, V. S., Potts, C. N., Strusevich, V. A., & Whitehead, J. D. Single machine scheduling models with deterioration and learning: Handling precedence constraints via priority generation. *Journal of Scheduling.* (2008), 11(5), 357–370.
76. Hamta, N., Fatemi Ghomi, S. M. T., Tavakkoli-Moghaddam, R., & Jolai, F. (2014). A hybrid meta-heuristic for balancing and scheduling assembly lines with sequence-independent setup times by considering deterioration tasks and learning effect. Scientia Iranica, 21(3), 963–979.
77. He, H., Hu, Y., & Liu, W.-W. Scheduling with deterioration effects and maintenance activities under parallel processors. *Engineering Optimization.* (2020).
78. He, H., Liu, M., & Wang, J.-B. Resource constrained scheduling with general truncated job-dependent learning effect. *Journal of Combinatorial Optimization.* (2017), 33(2), 626–644.
79. He, H. Minimization of maximum lateness in an m-machine permutation flow shop with a general exponential learning effect. *Computers and Industrial Engineering.* (2016), 97, 73–83.
80. He, Y., & Sun, L. One-machine scheduling problems with deteriorating jobs and position-dependent learning effects under group technology considerations. *International Journal of Systems Science.* (2015), 46(7), 1319–1326.
81. Hidri, L., & Jemmali, M. Near-optimal solutions and tight lower bounds for the parallel machines scheduling problem with learning effect. *RAIRO - Operations Research.* (2020), 54(2), 507–527.
82. Hosseini, N., & Tavakkoli-Moghaddam, R. Two meta-heuristics for solving a new two-machine flowshop scheduling problem with the learning effect and dynamic arrivals. *International Journal of Advanced Manufacturing Technology.* (2013), 65(5–8), 771–786.
83. Hsu, C.-J., & Yang, D.-L. Unrelated parallel-machine scheduling with position-dependent deteriorating jobs and resource-dependent processing time. *Optimization Letters.* (2014), 8(2), 519–531.
84. Hsu, C. J., Kuo, W. H., & Yang, D. L. (2011). Unrelated parallel machine scheduling with past-sequence-dependent setup time and learning effects. Applied Mathematical Modelling, 35(3), 1492–1496.
85. Huang, X., Wang, J.-B., Wang, L.-Y., Gao, W.-J., & Wang, X.-R. Single machine scheduling with time-dependent deterioration and exponential learning effect. *Computers and Industrial Engineering.* (2010), 58(1), 58–63.
86. Huang, X., Wang, M.-Z., & Ji, P. Parallel machines scheduling with deteriorating and learning effects. *Optimization Letters.* (2014), 8(2), 493–500.

87. Huang, X., Yin, N., Liu, W.-W., & Wang, J.-B. Common Due Window Assignment Scheduling with Proportional Linear Deterioration Effects. *Asia-Pacific Journal of Operational Research.* (2020), 37(1).
88. Huang, X. Bicriterion scheduling with group technology and deterioration effect. *Journal of Applied Mathematics and Computing.* (2019), 60(1–2), 455–464.
89. Huang, X., Li, G., Huo, Y., & Ji, P. (2013). Single machine scheduling with general time-dependent deterioration, position-dependent learning and past-sequence-dependent setup times. Optimization Letters, 7(8), 1793–1804.
90. Huang, X., & Wang, M. Z. Single machine group scheduling with time and position dependent processing times. *Optimization Letters.* (2014), 8(4), 1475–1485.
91. Huang, X., Wang, M. Z., & Wang, J. B. Single-machine group scheduling with both learning effects and deteriorating jobs. *Computers and Industrial Engineering*. (2011), 60(4), 750–754.
92. Janiak, A., & Rudek, R. Scheduling jobs under an aging effect. *Journal of the Operational Research Society.* (2010), 61(6), 1041–1048.
93. Janiak, A, Janiak, W. A., Rudek, R., & Wielgus, A. Solution algorithms for the makespan minimization problem with the general learning model. *Computers and Industrial Engineering.* (2009), 56(4), 1301–1308.
94. Janiak, A., & Rudek, R. Experience-based approach to scheduling problems with the learning effect. *IEEE Transactions on Systems, Man, and Cybernetics Part A:Systems and Humans.* (2009), 39(2), 344–357.
95. Jemmali, M., & Hidri, L. Bounding schemes for the parallel machine scheduling problem with DeJong's learning effect. *Journal of Parallel and Distributed Computing.* (2021), 156, 101–118.
96. Ji, M., Hu, S., Zhang, Y., Cheng, T. C. E., & Jiang, Y. Parallel-machine scheduling with identical machine resource capacity limits and DeJong's learning effect. *International Journal of Production Research.* (2021), 1-13.
97. Ji, M., Yao, D., Ge, J., & Cheng, T. C. E. Single-machine slack due-window assignment and scheduling with past-sequence-dependent delivery times and controllable job processing times. *European Journal of Industrial Engineering.* (2015), 9(6), 794–818.
98. Ji, M., Tang, X., Zhang, X., & Cheng, T. C. E. Machine scheduling with deteriorating jobs and DeJong's learning effect. *Computers and Industrial Engineering.* (2016), 91, 42–47.
99. Ji, M., Yao, D., Yang, Q., & Cheng, T. C. E. Machine scheduling with DeJong's learning effect. *Computers and Industrial Engineering.* (2015). 80(1), 195–200.
100. Ji, P., & Li, L. Single-Machine Group Scheduling Problems with Variable Job Processing Times. *Mathematical Problems in Engineering.* (2015). 2015.
101. Jiang, Z., Chen, F., & Kang, H. Single-machine scheduling problems with actual time-dependent and job-dependent learning effect. *European Journal of Operational Research.* (2013). 227(1), 76–80.
102. Jiang, Z., Chen, F., & Zhang, X. Single-machine scheduling with times-based and job-dependent learning effect. *Journal of the Operational Research Society.* (2017), 68(7), 809–815.
103. Jiang, Z., Chen, F., & Wu, C. Minimizing the maximum lateness in a single-machine scheduling problem with the normal time-dependent and job-dependent learning effect. *Applied Mathematics and Computation.* (2012). 218(18), 9438–9441.
104. Jiang, Z., Chen, F., & Zhang, X. Single-machine scheduling problems with general truncated sum-of-actual-processing-time-based learning effect. *Journal of Combinatorial Optimization.* (2021).
105. Jin, J., & Ji, P. Scheduling jobs with resource-dependent ready times and processing times depending on their starting times and positions. *Computer Journal.* (2018), 61(9), 1323–1328.
106. Joo, C. M., & Kim, B. S. Machine scheduling of time-dependent deteriorating jobs with determining the optimal number of rate modifying activities and the position of the activities. *Journal of Advanced Mechanical Design, Systems and Manufacturing.* (2015). 9(1).
107. Kong, M., Liu, X., Pei, J., Cheng, H., & Pardalos, P. M. A BRKGA-DE algorithm for parallel-batching scheduling with deterioration and learning effects on parallel machines under preventive maintenance consideration. *Annals of Mathematics and Artificial Intelligence.* (2020). 88(1–3), 237–267.
108. Koulamas, C., & Kyparisis, G. J. Single-machine scheduling problems with past-sequence-dependent setup times. European Journal of Operational Research. (2008), 187(3), 1045–1049.
109. Kung, J.-Y., & Shu, M.-H. Some scheduling problems on a single machine with general job effects of position-dependent learning and start-time-dependent deterioration. *Asia-Pacific Journal of Operational Research.* (2015), 32(2).

110. Kuo, W.-H. Single-machine group scheduling with time-dependent learning effect and position-based setup time learning effect. *Annals of Operations Research*. (2012), 196(1), 349–359.
111. Kuo, W.-H., Hsu, C.-J., & Yang, D.-L. Worst-case and numerical analysis of heuristic algorithms for flowshop scheduling problems with a time-dependent learning effect. *Information Sciences.* (2012)., 184(1), 282–297.
112. Kuo, W. H., & Yang, D. L. A note on due-date assignment and single-machine scheduling with deteriorating jobs and learning effects. Journal of the Operational Research Society. (2011), 62(1), 206–210.
113. Kuo, W. H., & Yang, D. L. Minimizing the makespan in a single machine scheduling problem with a time-based learning effect. *Information Processing Letters.* (2006). 97(2), 64–67.
114. Kuo, W. H., & Yang, D. L. Minimizing the total completion time in a single-machine scheduling problem with a time-dependent learning effect. *European Journal of Operational Research.* (2006b), 174(2), 1184–1190.
115. Kuo, W. H., & Yang, D. L. Single-machine group scheduling with a time-dependent learning effect. *Computers and Operations Research.* (2006), 33(8), 2099–2112.
116. Kuo, W. H., & Yang, D. L. Single-machine scheduling problems with the time-dependent learning effect. *Computers and Mathematics with Applications.* (2007), 53(11), 1733–1739.
117. Kuo, W. H., & Yang, D. L. Single machine scheduling with past-sequence-dependent setup times and learning effects. *Information Processing Letters.* (2007), 102(1), 22–26.
118. Lai, K., Hsu, P.-H., Ting, P.-H., & Wu, C.-C. A truncated sum of processing-times-based learning model for a two-machine flowshop scheduling problem. *Human Factors and Ergonomics In Manufacturing*. (2014), 24(2), 152–160.
119. Lai, P.-J., & Wu, H.-C. Using heuristic algorithms to solve the scheduling problems with job-dependent and machine-dependent learning effects. *Journal of Intelligent Manufacturing.* (2015), 26(4), 691–701.
120. Lai, P. J., & Lee, W. C. Single-machine scheduling with general sum-of-processing-time-based and position-based learning effects. *Omega.* (2011), 39(5), 467–471.
121. Lai, P. J., & Lee, W. C. Single-machine scheduling with learning and forgetting effects. Applied Mathematical Modelling. (2013), 37(6), 4509–4516.
122. Lee, H.-T., Yang, D.-L., & Yang, S.-J. Multi-machine scheduling with deterioration effects and maintenance activities for minimizing the total earliness and tardiness costs. *International Journal of Advanced Manufacturing Technology.* (2013), 66(1–4), 547–554.
123. Lee, H.-T., & Yang, S.-J. Parallel machines scheduling with deterioration effects and resource allocations. *Journal of the Chinese Institute of Industrial Engineers*. (2012). 29(8), 534–543.
124. Lee, W.-C. A note on single-machine scheduling with general learning effect and past-sequence-dependent setup time. *Computers and Mathematics with Applications.* (2011). 62(4), 2095–2100.
125. Lee, W.-C. Scheduling with general position-based learning curves. *Information Sciences.* (2011), 181(24), 5515–5522.
126. Lee, W.-C., & Chung, Y.-H.. Permutation flowshop scheduling to minimize the total tardiness with learning effects. *International Journal of Production Economics.* (2013), 141(1), 327–334.
127. Lee, W.-C., & Lai, P.-J. Scheduling problems with general effects of deterioration and learning. *Information Sciences.* (2011), 181(6), 1164–1170.
128. Lee, W.-C., Wang, J.-Y., & Su, H.-W. Algorithms for single-machine scheduling to minimize the total tardiness with learning effects and two competing agents. *Concurrent Engineering Research and Applications.* (2015), 23(1), 13–26.
129. Lee, W.-C., & Wu, C.-C. Some single-machine and m-machine flowshop scheduling problems with learning considerations. *Information Sciences*. (2009), 179(22), 3885–3892.
130. Lee, W. C., & Wu, C. C.. A note on single-machine group scheduling problems with position-based learning effect. *Applied Mathematical Modelling.* (2009), 33(4), 2159-2163.
131. Lee, W.-C., Wu, C.-C., & Hsu, P.-H. A single-machine learning effect scheduling problem with release times. *Omega*, (2010), 38(1–2), 3–11.
132. Lee, W.-C., Wu, C.-C., & Liu, M.-F. A single-machine bi-criterion learning scheduling problem with release times. *Expert Systems with Applications.* (2009), 36(7), 10295–10303.
133. Lee, W. C.. Single-machine scheduling with past-sequence-dependent setup times and general effects of

deterioration and learning. *Optimization Letters.* (2014), 8(1), 135–144.
134. Lee, W. C., Chuang, M. C., & Yeh, W. C. Uniform parallel-machine scheduling to minimize makespan with position-based learning curves. *Computers and Industrial Engineering*. (2012), 63(4), 813–818.
135. Lee, W. C., & Wu, C. C. Minimizing total completion time in a two-machine flowshop with a learning effect. *International Journal of Production Economics*. (2004), 88(1), 85–93.
136. Lee, W. C., Wu, C. C., & Sung, H. J. A bi-criterion single-machine scheduling problem with learning considerations. *Acta Informatica.* (2004), 40(4), 303–315.
137. Li, D.-C., & Hsu, P.-H. Solving a two-agent single-machine scheduling problem considering learning effect. *Computers and Operations Research.* (2012), 39(7), 1644–1651.
138. Li, D.-C., & Hsu, P.-H. Competitive two-agent scheduling with learning effect and release times on a single machine. *Mathematical Problems in Engineering*. (2013), 2013.
139. Li, D.-C., Hsu, P.-H., & Chang, C.-C. A genetic algorithm-based approach for single-machine scheduling with learning effect and release time. *Mathematical Problems in Engineering.* (2014), 2014.
140. Li, D.-C., Hsu, P.-H., Wu, C.-C., & Cheng, T. C. E. Two-machine flowshop scheduling with truncated learning to minimize the total completion time. *Computers and Industrial Engineering.* (2011), 61(3), 655–662.
141. Li, G., Luo, M.-L., Zhang, W.-J., & Wang, X.-Y. Single-machine due-window assignment scheduling based on common flow allowance, learning effect and resource allocation. *International Journal of Production Research.* (2015). 53(4), 1228–1241.
142. Li, H. Stochastic Single-Machine Scheduling With Learning Effect. *IEEE Transactions on Engineering Management.* (2017), 64(1), 94-102., 64(1), 94–102.
143. Li, H, Li, Z., & Yin, Y. Some single-machine scheduling problems with learning effects and two competing agents. *Scientific World Journal.* (2014), 2014.
144. Li, K., Chen, J., Fu, H., Jia, Z., & Wu, J. Parallel machine scheduling with position-based deterioration and learning effects in an uncertain manufacturing system. *Computers and Industrial Engineering.* (2020), 149.
145. Li, L., & Wang, J.-J. Scheduling jobs with deterioration effect and controllable processing time. *Neural Computing and Applications.* (2018), 29(11), 1163–1170.
146. Li, L., Yan, P., Ji, P., & Wang, J.-B. Scheduling jobs with simultaneous considerations of controllable processing times and learning effect. *Neural Computing and Applications.* (2018), 29(11), 1155–1162.
147. Li, L., Yang, S.-W., Wu, Y.-B., Huo, Y., & Ji, P. Single machine scheduling jobs with a truncated sum-of-processing-times- based learning effect. *International Journal of Advanced Manufacturing Technology.* (2013), 67(1–4), 261–267.
148. Li, S.-S., Chen, R.-X., Feng, Q., & Jiao, C.-W. Parallel-machine scheduling with job-dependent cumulative deterioration effect and rejection. *Journal of Combinatorial Optimization.* (2019), 38(3), 957–971.
149. Li, X., Jiang, Y., & Ruiz, R. Methods for Scheduling Problems Considering Experience, Learning, and Forgetting Effects. *IEEE Transactions on Systems, Man, and Cybernetics: Systems.* (2018), 48(5), 743–754.
150. Liang, X. X., Zhang, B., Wang, J. B., Yin, N., & Huang, X. Study on flow shop scheduling with sum-of-logarithm-processing-times-based learning effects. *Journal of Applied Mathematics and Computing.* (2019), 61(1–2), 373–388.
151. Liao, B., Wang, X., Zhu, X., Yang, S., & Pardalos, P. M. Less is more approach for competing groups scheduling with different learning effects. *Journal of Combinatorial Optimization.* (2020), 39(1), 33–54.
152. Liao, W., Zhang, X., & Jiang, M. Multi-objective group scheduling optimization integrated with preventive maintenance. *Engineering Optimization*. (2017). 49(11), 1890–1904.
153. Lin, Y. K., & Chuang, W. H.. Uniform parallel machine scheduling problems with a truncation sum-of-logarithm-processing-times-based learning effect. *International Journal of Internet Manufacturing and Services*. (2015), 4(1), 203–218.
154. Lin, S.-S. Due-Window Assignment and Resource Allocation Scheduling with Truncated Learning Effect and Position-Dependent Weights. *Discrete Dynamics in Nature and Society.* (2020), 2020.
155. Lin, W.-C. Minimizing the Makespan for a Two-Stage Three-Machine Assembly Flow Shop Problem with the Sum-of-Processing-Time Based Learning Effect. *Discrete Dynamics in Nature and Society*, (2018).
156. Lin, W. C., Wu, C. C., Yu, K., Zhuang, Y. H., & Liu, S. C. On the Use of Genetic Algorithm for Solving Re-entrant Flowshop Scheduling with Sum-of-processing-times-based Learning Effect to Minimize

Total Tardiness. *Intelligent Automation and Soft Computing*. (2017), 8587(November), 1–11.
157. Lin, Y.-K. Fast LP models and algorithms for identical jobs on uniform parallel machines. *Applied Mathematical Modelling*. (2013), 37(5), 3436–3448.
158. Lin, Y.-K. Scheduling Identical Jobs on Uniform Parallel Machines Under Position-Based Learning Effects. *Arabian Journal for Science and Engineering*. (2014). 39(8), 6567–6574.
159. Liu, C., Wang, C., Zhang, Z.-H., & Zheng, L. Scheduling with job-splitting considering learning and the vital-few law. *Computers and Operations Research*. (2018), 90, 264–274.
160. Liu, F., Yang, J., & Lu, Y.-Y. Solution algorithms for single-machine group scheduling with ready times and deteriorating jobs. *Engineering Optimization*. (2019a), 51(5), 862–874.
161. Liu, L., Wang, J.-J., Liu, F., & Liu, M. Single machine due window assignment and resource allocation scheduling problems with learning and general positional effects. *Journal of Manufacturing Systems*. (2017), 43, 1–14.
162. Liu, L., & Zhou, H. Single-machine rescheduling with deterioration and learning effects against the maximum sequence disruption. *International Journal of Systems Science*. (2015), 46(14), 2640–2658.
163. Liu, L., Shi, Z., & Shi, L. Minimization of total energy consumption in an m-machine flow shop with an exponential time-dependent learning effect. *Frontiers of Engineering Management*. (2018), 5(4), 487.
164. Liu, M. Parallel-machine scheduling with past-sequence-dependent delivery times and learning effect. *Applied Mathematical Modelling*. (2013), 37(23), 9630–9633.
165. Liu, P., Zhou, X., & Tang, L. Two-agent single-machine scheduling with position-dependent processing times. *International Journal of Advanced Manufacturing Technology*. (2010), 48(1–4), 325–331.
166. Liu, S.-C. A Two-Stage Three-Machine Flow Shop Assembly Problem Mixed with a Controllable Number and Sum-of-Processing Times-Based Learning Effect by Simulated Annealing Algorithms. *Discrete Dynamics in Nature and Society*. (2020), 2020.
167. Liu, S.-C., Duan, J., Lin, W.-C., Wu, W.-H., Kung, J.-Y., Chen, H., & Wu, C.-C. A Branch-and-Bound Algorithm for Two-Agent Scheduling with Learning Effect and Late Work Criterion. *Asia-Pacific Journal of Operational Research*. (2018c), 35(5).
168. Liu, S.-C., Hung, W.-L., & Wu, C.-C. Note on a single-machine scheduling problem with sum of processing times based learning and ready times. *Mathematical Problems in Engineering*. (2015), 2015.
169. Liu, S., Liu, X., Pei, J., Pardalos, P. M., & Song, Q. Parallel-batching machines scheduling problem with a truncated time-dependent learning effect via a hybrid CS-JADE algorithm. *Optimization Methods and Software*. (2020), 35(1), 116–141.
170. Liu, W., & Jiang, C. Due-date assignment scheduling involving job-dependent learning effects and convex resource allocation. *Engineering Optimization*. (2020), 52(1), 74–89.
171. Liu, W., Yao, Y., & Jiang, C. Single-machine resource allocation scheduling with due-date assignment, deterioration effect and position-dependent weights. *Engineering Optimization*. (2020), 52(4), 701–714.
172. Liu, Y., & Feng, Z. Two-machine no-wait flowshop scheduling with learning effect and convex resource-dependent processing times. *Computers and Industrial Engineering*. (2014), 75(1), 170–175.
173. Liu, Y., Liao, X., & Zhang, R. An enhanced MOPSO algorithm for energy-efficient single-machine production scheduling. *Sustainability (Switzerland)*. (2019b), 11(19).
174. Liu, Z., Wang, Z., & Lu, Y.-Y. A Bicriteria Approach for Single Machine Scheduling with Resource Allocation, Learning Effect and a Deteriorating Maintenance Activity. *Asia-Pacific Journal of Operational Research*. (2017), 34(4).
175. Liu, C., & Xiong, C. Single machine resource allocation scheduling problems with deterioration effect and general positional effect. *Mathematical Biosciences and Engineering*. (2021). 31(1), 2562–2578.
176. Low, C., & Lin, W.-Y. Minimizing the total completion time in a single-machine scheduling problem with a learning effect. *Applied Mathematical Modelling*. (2011), 35(4), 1946–1951.
177. Low, C., & Lin, W.-Y. Single machine group scheduling with learning effects and past-sequence-dependent setup times. *International Journal of Systems Science*. (2012), 43(1), 1–8.
178. Low, C., & Lin, W.-Y. Some scheduling problems with time-dependent learning effect and deteriorating jobs. *Applied Mathematical Modelling*. (2013), 37(20–21), 8865–8875.
179. Lu, Y.-Y., Teng, F., & Feng, Z.-X. Scheduling jobs with truncated exponential sum-of-logarithm-processing-times based and position-based learning effects. *Asia-Pacific Journal of Operational Research*. (2015), 32(4).

180. Lu, Y.-Y., Wang, J.-J., & Huang, X. Scheduling jobs with position and sum-of-processing-time based processing times. *Applied Mathematical Modelling*. (2015), 39(14), 4013–4021.
181. Lu, Y.-Y., Wei, C.-M., & Wang, J.-B. Several single-machine scheduling problems with general learning effects. *Applied Mathematical Modelling*. (2012), 36(11), 5650–5656.
182. Lu, Y. Y., Jin, J., Ji, P., & Wang, J. B. Resource-dependent scheduling with deteriorating jobs and learning effects on unrelated parallel machine. *Neural Computing and Applications*. (2016), 27(7), 1993–2000.
183. Lu, Y. Y., Li, G., Wu, Y. Bin, & Ji, P. Optimal due-date assignment problem with learning effect and resource-dependent processing times. *Optimization Letters*. (2014), 8(1), 113–127.
184. Lu, Y.-Y., & Wang, J.-B. Some single-machine scheduling with sum-of-processing-time-based and job-position-based processing times. *Applied Mathematical Modelling*. (2013), 37(10–11), 6695–6702.
185. Ma, H., Shao, C., & Wang, X.-R. Single machine scheduling with exponential learning functions. *Optimization Letters*. (2014), 8(4), 1273–1285.
186. Mani, V., Chang, P. C., & Chen, S. H. Bi-criteria single machine scheduling problem with a learning effect: Aneja-Nair method to obtain the set of optimal sequences. *Computers and Mathematics with Applications*. (2009), 58(1), 39–47.
187. Mani, V., Chang, P. C., & Chen, S. H. Single-machine scheduling with past-sequence-dependent setup times and learning effects: A parametric analysis. *International Journal of Systems Science*. (2011), 42(12), 2097–2102.
188. Marichelvam, M. K., Geetha, M., & Tosun, Ö. An improved particle swarm optimization algorithm to solve hybrid flowshop scheduling problems with the effect of human factors – A case study. *Computers and Operations Research*. (2020), 114, 104812.
189. Mazdeh, M. M., Zaerpour, F., Zareei, A., & Hajinezhad, A. Parallel machines scheduling to minimize job tardiness and machine deteriorating cost with deteriorating jobs. *Applied Mathematical Modelling*.(2010), 34(6), 1498–1510.
190. Meghdari, A., Fazlollahtabar, S., & Darband, H. Flexible flow shop scheduling with learning and forgetting effects. *Journal of Mechanical Engineering Research and Developments*. (2015), 38(2), 116–125.
191. Moghadam, S. H. P., Mina, H., Iranmanesh, S. H., & Keyvandarian, A. A new mathematical model for single machine scheduling with learning effect: Continuous approach. *International Journal of Mathematics in Operational Research*. (2015), 7(3), 348–360.
192. Mor, B., Mosheiov, G., & Shapira, D. Flowshop scheduling with learning effect and job rejection. *Journal of Scheduling*. (2020), 23(6), 631–641.
193. Mosheiov, G. Parallel machine scheduling with a learning effect. *Journal of the Operational Research Society*. (2001), 52(10), 1165–1169.
194. Mosheiov, G., & Pruwer, S. On the minmax common-due-date problem: extensions to position-dependent processing times, job rejection, learning effect, uniform machines and flowshops. *Engineering Optimization*. (2021), 53(3), 408–424.
195. Mosheiov, G., & Shabtay, D. Maximizing the weighted number of just-in-time jobs on a single machine with position-dependent processing times. *Journal of Scheduling*. (2013), 16(5), 519–527.
196. Mosheiov, G., & Sidney, J. B. Note on scheduling with general learning curves to minimize the number of tardy jobs. *Journal of the Operational Research Society*. (2005), 56(1), 110–112.
197. Mosheiov, G. Scheduling problems with a learning effect. *European Journal of Operational Research*. (2001b), 132(3), 687–693.
198. Mosheiov, G., & Sidney, J. B. New results on sequencing with rate modification. *Infor*. (2003), 41(2), 155–163.
199. Mousavi, S. M., Mahdavi, I., Rezaeian, J., & Zandieh, M. An efficient bi-objective algorithm to solve re-entrant hybrid flow shop scheduling with learning effect and setup times. *Operational Research*. (2018), 18(1), 123–158.
200. Mousavi, S. M., Mahdavi, I., Rezaeian, J., & Zandieh, M. Bi-objective scheduling for the re-entrant hybrid flow shop with learning effect and setup times. *Scientia Iranica*. (2018), 25(4), 2233–2253.
201. Mousavipour, S., Farughi, H., & Ahmadizar, F. A Job Shop Scheduling Problem with Sequence-Dependent Setup Times Considering Position-Based Learning effects and Availability Constraints. *International Journal of Industrial Engineering and Production Research*. (2019), 30(3), 329–340.
202. Mustu, S., & Eren, T. The single machine scheduling problem with sequence-dependent setup times and

a learning effect on processing times. *Applied Soft Computing Journal*. (2018), 71, 291–306.
203. Muştu, S., & Eren, T. Maximum completion time under a learning effect in the permutation flowshop scheduling problem. *International Journal of Industrial Engineering : Theory Applications and Practice*. (2018), 25(2), 156–174.
204. Muştu, S., & Eren, T. The single machine scheduling problem with setup times under an extension of the general learning and forgetting effects. *Optimization Letters*. (2021).
205. Najari, F., Mohammadi, M., & Nadi, H. A genetic algorithm for scheduling jobs and maintenance activities in a permutation flow shop with learning and aging effects. *International Journal of Industrial and Systems Engineering*. (2016), 24(1), 32–43.
206. Niu, Y. P., Wan, L., & Wang, J. B. A note on scheduling jobs with extended sum-of-processing-times-based and position-based learning effect. *Asia-Pacific Journal of Operational Research*. (2015), 32(2), 1–12.
207. Niu, Y. P., Wang, J., & Yin, N. Scheduling problems with effects of deterioration and truncated job-dependent learning. *Journal of Applied Mathematics and Computing*. (2015), 47(1–2), 315–325.
208. Nouri, F., Samadzad, S., & Ghahremani Nahr, J. Meta-heuristics algorithm for two-machine no-wait flow-shop scheduling problem with the effects of learning. *Uncertain Supply Chain Management*. (2019), 7(4), 599–618.
209. Okołowski, D., & Gawiejnowicz, S. Exact and heuristic algorithms for parallel-machine scheduling with DeJong's learning effect. *Computers and Industrial Engineering*. (2010), 59(2), 272–279.
210. Oron, D. Scheduling controllable processing time jobs in a deteriorating environment. Journal of the *Operational Research Society*. (2014), 65(1), 49–56.
211. Ostermeier, F.F. On the trade-offs between scheduling objectives for unpaced mixed-model assembly lines. *International Journal of Production Research*. (2020).
212. Ouazene, Y., & Yalaoui, F. Identical parallel machine scheduling with time-dependent processing times. *Theoretical Computer Science*. (2018), 721, 70–77.
213. Pakzad-Moghaddam, S. H. A Lévy flight embedded particle swarm optimization for multi-objective parallel-machine scheduling with learning and adapting considerations. *Computers and Industrial Engineering*. (2016), 91, 109–128.
214. Pakzad-Moghaddam, S. H., Mina, H., & Tavakkoli-Moghaddam, R. An approach for modeling a new single machine scheduling problem with deteriorating and learning effects. *Computers and Industrial Engineering*. (2014), 78, 33–43.
215. Pan, E., Wang, G., Xi, L., Chen, L., & Han, X. Single-machine group scheduling problem considering learning, forgetting effects and preventive maintenance. *International Journal of Production Research*. (2014), 52(19), 5690–5704.
216. Pargar, F., & Zandieh, M. Bi-criteria SDST hybrid flow shop scheduling with learning effect of setup times: Water flow-like algorithm approach. *International Journal of Production Research*. (2012), 50(10), 2609–2623.
217. Pargar, F., Zandieh, M., Kauppila, O., & Kujala, J. The Effect of Worker Learning on Scheduling Jobs in a Hybrid Flow Shop: A Bi-Objective Approach. J*ournal of Systems Science and Systems Engineering*. (2018), 27(3), 265–291.
218. Pei, J., Liu, X., Liao, B., Pardalos, P. M., & Kong, M. Single-machine scheduling with learning effect and resource-dependent processing times in the serial-batching production. *Applied Mathematical Modelling*. (2018), 58, 245–253.
219. Pei, J., Liu, X., Pardalos, P. M., Migdalas, A., & Yang, S. Serial-batching scheduling with time-dependent setup time and effects of deterioration and learning on a single-machine. *Journal of Global Optimization*. (2017), 67(1–2), 251–262.
220. Pei, J., Song, Q., Liao, B., Liu, X., & Pardalos, P. M. Parallel-machine serial-batching scheduling with release times under the effects of position-dependent learning and time-dependent deterioration. *Annals of Operations Research*. (2021), 298(1–2), 407–444.
221. Pei, J., Cheng, B., Liu, X., Pardalos, P. M., & Kong, M. Single-machine and parallel-machine serial-batching scheduling problems with position-based learning effect and linear setup time. *Annals of Operations Research*. (2019), 272(1–2), 217–241.
222. Peng, Z., Zhang, H., Tang, H., Feng, Y., & Yin, W. Research on flexible job-shop scheduling problem in green sustainable manufacturing based on learning effect. *Journal of Intelligent Manufacturing*. (2021).

223. Przybylski, B. A new model of parallel-machine scheduling with integral-based learning effect. *Computers and Industrial Engineering*. (2018), 121(December 2017), 189–194.
224. Qian, J., Lin, H., Kong, Y., & Wang, Y. (2020). Tri-criteria single machine scheduling model with release times and learning factor. Applied Mathematics and Computation, 387.
225. Qian, J., & Steiner, G. Fast algorithms for scheduling with learning effects and time-dependent processing times on a single machine. *European Journal of Operational Research*. (2013), 225(3), 547–551.
226. Qian, J., & Steiner, G. Scheduling with learning effects and/or time-dependent processing times to minimize the weighted number of tardy jobs on a single machine. *Mathematical Problems in Engineering*. (2013).
227. Qian, J., & Zhan, Y. The due date assignment scheduling problem with delivery times and truncated sum-of-processing-times-based learning effect. *Mathematics*. (2021), 9(23).
228. Qin, H., Zhang, Z. H., & Bai, D. Permutation flowshop group scheduling with position-based learning effect. *Computers and Industrial Engineering*. (2016), 92, 1–15.
229. Roohnavazfar, M., Manerba, D., Fotio Tiotsop, L., Pasandideh, S. H. R., & Tadei, R. Stochastic single machine scheduling problem as a multi-stage dynamic random decision process. *Computational Management Science*. (2021).
230. Rostami, M., Nikravesh, S., & Shahin, M. Minimizing total weighted completion and batch delivery times with machine deterioration and learning effect: a case study from wax production. Operational Research. (2020), 20(3), 1255–1287.
231. Rostami, M., Pilerood, A. E., & Mazdeh, M. M. (2015). Multi-objective parallel machine scheduling problem with job deterioration and learning effect under fuzzy environment. Computers and Industrial Engineering, 85, 206–215.
232. Rudek, A., & Rudek, R. Makespan minimization flowshop with position dependent job processing times - Computational complexity and solution algorithms. *Computers and Operations Research*. (2013), 40(8), 2071–2082.
233. Rudek, R. Scheduling problems with position dependent job processing times: Computational complexity results. *Annals of Operations Research*. (2012), 196(1), 491–516.
234. Rudek, R. The single processor total weighted completion time scheduling problem with the sum-of-processing-time based learning model. *Information Sciences*. (2012), 199, 216–229.
235. Rudek, R. On single processor scheduling problems with learning dependent on the number of processed jobs. *Applied Mathematical Modelling*. (2013), 37(3), 1523–1536.
236. Rudek, R. The computational complexity analysis of the two-processor flowshop problems with position dependent job processing times. *Applied Mathematics and Computation*. (2013), 221, 819–832.
237. Rudek, R. Computational complexity of the single processor makespan minimization problem with release dates and job-dependent learning. *Journal of the Operational Research Society*. (2014)., 65(8), 1170–1176.
238. Rudek, R. Computational complexity and solution algorithms for flowshop scheduling problems with the learning effect. *Computers and Industrial Engineering*. (2011), 61(1), 20–31.
239. Rudek, R. Parallel machine scheduling with general sum of processing time-based models. *Journal of Global Optimization*. (2017), 68(4), 799–814.
240. Rudek, R. The single machine total weighted completion time scheduling problem with the sum-of-processing time based models: Strongly NP-hard. *Applied Mathematical Modelling*. (2017), 50, 314–332.
241. Rudek, R. A fast neighborhood search scheme for identical parallel machine scheduling problems under general learning curves. *Applied Soft Computing*. (2021), 113, 108023.
242. Rustogi, K., & Strusevich, V. A. Combining time and position dependent effects on a single machine subject to rate-modifying activities. *Omega (United Kingdom)*. (2014), 42(1), 166–178.
243. Rustogi, K., & Strusevich, V. A. Single machine scheduling with time-dependent linear deterioration and rate-modifying maintenance. *Journal of the Operational Research Society*. (2015), 66(3), 500–515.
244. Saidi-Mehrabad, M., & Bairamzadeh, S. Design of a hybrid genetic algorithm for parallel machines scheduling to minimize job tardiness and machine deteriorating costs with deteriorating jobs in a batched delivery system. *Journal of Optimization in Industrial Engineering*. (2018), 11(1), 35–50.
245. Salama, M., & Srinivas, S. Adaptive neighborhood simulated annealing for sustainability-oriented single machine scheduling with deterioration effect. *Applied Soft Computing*. (2021), 110, 107632.

246. Salehi Mir, M. S., Rezaeian, J., & Mohamadian, H. Scheduling parallel machine problem under general effects of deterioration and learning with past-sequence-dependent setup time: heuristic and meta-heuristic approaches. *Soft Computing*. (2020), 24(2), 1335–1355.
247. Santos, V. L. A., & Arroyo, J. E. C. Iterated Greedy with Random Variable Neighborhood Descent for Scheduling Jobs on Parallel Machines with Deterioration Effect. *Electronic Notes in Discrete Mathematics*. (2017), 58, 55–62.
248. Seidgar, H., Abedi, M., & Rad, S. T. A new mathematical model for scheduling flexible flow shop problem with learning and forgetting effects of workers. *International Journal of Industrial and Systems Engineering*. (2015), 21(4), 534–549.
249. Sekkal, N., & Belkaid, F. A multi-objective simulated annealing to solve an identical parallel machine scheduling problem with deterioration effect and resources consumption constraints. *Journal of Combinatorial Optimization*. (2020), 40(3), 660–696.
250. Shahvari, O., & Logendran, R. A comparison of two stage-based hybrid algorithms for a batch scheduling problem in hybrid flow shop with learning effect. *International Journal of Production Economics*. (2018), 195, 227–248.
251. Shen, J. An uncertain parallel machine problem with deterioration and learning effect. *Computational and Applied Mathematics*. (2019), 38(1).
252. Shen, J. Uncertain Single-Machine Scheduling with Deterioration and Learning Effect. *Journal of Mathematics*. (2020), 2020, 26–28.
253. Shen, L., & Wu, Y.-B. Single machine past-sequence-dependent delivery times scheduling with general position-dependent and time-dependent learning effects. *Applied Mathematical Modelling*. (2013), 37(7), 5444–5451.
254. Shen, P., Wei, C.-M., & Huang, X. Single-machine scheduling problems with an actual time-dependent deterioration. *Applied Mathematical Modelling*. (2013), 37(7), 5555–5562.
255. Shi, H.-B., & Wang, J.-B. Research on common due window assignment flowshop scheduling with learning effect and resource allocation. *Engineering Optimization*. (2020), 52(4), 669–686.
256. Shiau, Y.-R., Tsai, M.-S., Lee, W.-C., & Cheng, T. C. E. Two-agent two-machine flowshop scheduling with learning effects to minimize the total completion time. *Computers and Industrial Engineering*. (2015), 87, 580–589.
257. Soleimani, H., Ghaderi, H., Tsai, P.-W., Zarbakhshnia, N., & Maleki, M. Scheduling of unrelated parallel machines considering sequence-related setup time, start time-dependent deterioration, position-dependent learning and power consumption minimization. *Journal of Cleaner Production*. (2020), 249.
258. Soper, A. J., & Strusevich, V. A. Refined conditions for V-shaped optimal sequencing on a single machine to minimize total completion time under combined effects. *Journal of Scheduling*. (2020), 23(6), 665–680.
259. Soroush, H. M. Solving the single machine scheduling problem with general job-dependent past-sequence-dependent setup times and learning effects. *European Journal of Industrial Engineering*. (2012), 6(5), 596–628.
260. Soroush, H. M. On the scheduling with past-sequence-dependent setup times and learning effects on a single machine. *International Journal of Advanced Manufacturing Technology*.(2013)., 68(9–12), 2483–2487.
261. Soroush, H. M. Scheduling in bicriteria single machine systems with past-sequence- dependent setup times and learning effects. *Journal of the Operational Research Society*. (2014), 65(7), 1017–1036.
262. Soroush, H. M. Stochastic bicriteria single machine scheduling with sequence-dependent job attributes and job-dependent learning effects. *European Journal of Industrial Engineering*. (2014), 8(4), 421–456.
263. Soroush, H. M. Scheduling with job-dependent past-sequence-dependent setup times and job-dependent position-based learning effects on a single processor. *European Journal of Industrial Engineering*. (2015), 9(3), 277–307.
264. Soroush, H. M. Multicriteria scheduling with controllable processing times, setup times, and learning, ageing and deterioration effects on a single machine. *European Journal of Industrial Engineering*. (2016), 10(4), 455–478.
265. Soroush, H. M., & Amin, F. O. Scheduling in stochastic bicriteria single machine systems with job-dependent learning effects. *Kuwait Journal of Science*. (2013), 40(11), 131–157.
266. Sun, K., & Li, H. Minimizing total weighted completion time on single machine with past-sequence-dependent setup times and exponential time-dependent and position-dependent learning effects.

Discrete Dynamics in Nature and Society. (2009).

267. Sun, L.-H., Cui, K., Chen, J.-H., & Wang, J. Due date assignment and convex resource allocation scheduling with variable job processing times. *International Journal of Production Research.* (2016), 54(12), 3551–3560.
268. Sun, L.-H., Cui, K., Chen, J.-H., Wang, J., & He, X.-C. Research on permutation flow shop scheduling problems with general position-dependent learning effects. *Annals of Operations Research.* (2013), 211(1), 473–480.
269. Sun, L.-H., Cui, K., Chen, J.-H., Wang, J., & He, X.-C. Some results of the worst-case analysis for flow shop scheduling with a learning effect. *Annals of Operations Research.* (2013), 211(1), 481–490.
270. Sun, L. Single-machine scheduling problems with deteriorating jobs and learning effects. *Computers and Industrial Engineering.* (2009), 57(3), 843–846.
271. Sun, L., Ning, L., & Huo, J.-Z. Group Scheduling Problems with Time-Dependent and Position-Dependent DeJong's Learning Effect. *Mathematical Problems in Engineering.* (2020), 2020.
272. Sun, L., Wu, B., & Ning, L. Parallel-Machine Scheduling with DeJong's Learning Effect, Delivery Times, Rate-Modifying Activity, and Resource Allocation. *Shock and Vibration.* (2021).
273. Sun, Li, Yu, A. J., & Wu, B. Single machine common flow allowance group scheduling with learning effect and resource allocation. *Computers and Industrial Engineering*. (2020), 139(October 2019), 106126.
274. Sun, X., Geng, X.-N., & Liu, F. Flow shop scheduling with general position weighted learning effects to minimize total weighted completion time. *Journal of the Operational Research Society*. (2020).
275. Sun, X., Geng, X.-N., Wang, J.-B., & Liu, F. Convex resource allocation scheduling in the no-wait flowshop with common flow allowance and learning effect. *International Journal of Production Research*. (2019), 57(6), 1873–1891.
276. Shokoufi, K., Rezaeian, J., Shirazi, B., & Mahdavi, I. Preemptive just-in-time scheduling problem on uniform parallel machines with time-dependent learning effect and release dates. *International Journal of Operational Research.* (2019), 34(3), 339-368.
277. Taghavi-Fard, M. T., Javanshir, H., Roueintan, M. A., & Soleimany, E. Multi-objective group scheduling with learning effect in the cellular manufacturing system. *International Journal of Industrial Engineering Computations.* (2011, 2(3), 617–630.
278. Tian, Y., Xu, M., Jiang, C., Wang, J. B., & Wang, X. Y. No-wait resource allocation flowshop scheduling with learning effect under limited cost availability. *Computer Journal*. (2019), 62(1), 90–96.
279. Tigane, M., Dahane, M., & Boudhar, M. Multiobjective approach for deteriorating jobs scheduling for a sustainable manufacturing system. *International Journal of Advanced Manufacturing Technology*. (2019), 101(5–8), 1939–1957.
280. Toksar, M. D. A branch and bound algorithm for minimizing makespan on a single machine with unequal release times under learning effect and deteriorating jobs. *Computers and Operations Research.* (2011), 38(9), 1361–1365.
281. Toksar, M. D., Oron, D., & Güner, E. Some scheduling problems with past sequence dependent setup times under the effects of nonlinear deterioration and time-dependent learning. *RAIRO - Operations Research.* (2010), 44(2), 107–118.
282. Toksari, M. D., & Güner, E. Scheduling problems with the nonlinear effects of learning and deterioration. *International Journal of Advanced Manufacturing Technology*. (2009), 45(7–8), 801–807.
283. Toksari, M. D. A branch and bound algorithm to minimize the single machine maximum tardiness problem under effects of learning and deterioration with setup times. *RAIRO-Operations Research.* (2016), 50(1), 211-219.
284. Toksari, M. D., & Arık, O. A. Single machine scheduling problems under position-dependent fuzzy learning effect with fuzzy processing times. *Journal of Manufacturing Systems.* (2017), 45, 159-179.
285. Toksari, M. D., & Güner, E. Minimizing the earliness/tardiness costs on parallel machine with learning effects and deteriorating jobs: A mixed nonlinear integer programming approach. *International Journal of Advanced Manufacturing Technology*. (2008), 38(7–8), 801–808.
286. Toksari, M. D., & Güner, E. Parallel machine earliness/tardiness scheduling problem under the effects of position based learning and linear/nonlinear deterioration. *Computers and Operations Research*. (2009), 36(8), 2394–2417.
287. Toksari, M. D., Oron, D., & Güner, E. Single machine scheduling problems under the effects of nonlinear

deterioration and time-dependent learning. *Mathematical and Computer Modelling.* (2009), 50(3–4), 401–406.

288. Toksari, M. D., & Güner, E. The common due-date early/tardy scheduling problem on a parallelmachine under the effects of time-dependent learning and linear and nonlinear deterioration. *Expert Systems with Applications.* (2010), 37(1), 92–112.
289. Toksarı, M. D., & Güner, E. Parallel machine scheduling problem to minimize the earliness/tardiness costs with learning effect and deteriorating jobs. *Journal of Intelligent Manufacturing.*(2010), 21(6), 843–851.
290. Vahedi-Nouri, B., Fattahi, P., & Ramezanian, R. Minimizing total flow time for the non-permutation flow shop scheduling problem with learning effects and availability constraints. *Journal of Manufacturing Systems.* (2013), 32(1), 167.
291. Vahedi-Nouri, B., Fattahi, P., Rohaninejad, M., & Tavakkoli-Moghaddam, R. Minimizing the total completion time on a single machine with the learning effect and multiple availability constraints. *Applied Mathematical Modelling.* (2013), 37(5), 3126–3137.
292. Vahedi-Nouri, B., Fattahi, P., Tavakkoli-Moghaddam, R., & Ramezanian, R. A general flow shop scheduling problem with consideration of position-based learning effect and multiple availability constraints. *International Journal of Advanced Manufacturing Technology.* (2014), 73(5–8), 601–611.
293. Vahedi-Nouri, B., Fattahi, P., & Ramezanian, R. Hybrid firefly-simulated annealing algorithm for the flow shop problem with learning effects and flexible maintenance activities. *International Journal of Production Research.* (2013), 51(12), 3501–3515.
294. Wang, C., Liu, C., Zhang, Z.-H., & Zheng, L. Minimizing the total completion time for parallel machine scheduling with job splitting and learning. *Computers and Industrial Engineering.* (2016), 97, 170–182.
295. Wang, D., Huo, Y., & Ji, P. Single-machine group scheduling with deteriorating jobs and allotted resource. *Optimization Letters*. (2014), 8(2), 591–605.
296. Wang, D., Qiu, H., Wu, C.-C., Lin, W.-C., Lai, K., & Cheng, S.-R. Dominance rule and opposition-based particle swarm optimization for two-stage assembly scheduling with time cumulated learning effect. *Soft Computing*. (2019), 23(19), 9617–9628.
297. Wang, D., Wang, M.-Z., & Wang, J.-B. Single-machine scheduling with learning effect and resource-dependent processing times. *Computers and Industrial Engineering.* (2010), 59(3), 458–462.
298. Wang, H., Huang, M., & Wang, J. An effective metaheuristic algorithm for flowshop scheduling with deteriorating jobs. *Journal of Intelligent Manufacturing*. (2019), 30(7), 2733–2742.
299. Wang, J.-B. Single-machine scheduling with a sum-of-actual-processing-time-based learning effect. *Journal of the Operational Research Society.* (2010), 61(1), 172–177.
300. Wang, J.-B., Gao, M., Wang, J.-J., Liu, L., & He, H. Scheduling with a position-weighted learning effect and job release dates. *Engineering Optimization.* (2020), 52(9), 1475–1493.
301. Wang, J.-B., & Guo, Q. A due-date assignment problem with learning effect and deteriorating jobs. *Applied Mathematical Modelling.* (2010), 34(2), 309–313.
302. Wang, J.-B., Hsu, C.-J., & Yang, D.-L. Single-machine scheduling with effects of exponential learning and general deterioration. *Applied Mathematical Modelling.* (2013), 37(4), 2293–2299.
303. Wang, J.-B., Hu, Y., & Zhang, B. Common due-window assignment for single-machine scheduling with generalized earliness/tardiness penalties and a rate-modifying activity. *Engineering Optimization.* (2021), 53(3), 496–512.
304. Wang, J.-B., Huang, X., Wang, X.-Y., Yin, N., & Wang, L.-Y. Learning effect and deteriorating jobs in the single machine scheduling problems. *Applied Mathematical Modelling.* (2009), 33(10), 3848–3853.
305. Wang, J.-B., & Li, J.-X. Single machine past-sequence-dependent setup times scheduling with general position-dependent and time-dependent learning effects. *Applied Mathematical Modelling*. (2011), 35(3), 1388–1395.
306. Wang, J.-B., Liu, F., & Wang, J.-J. Research on m-machine flow shop scheduling with truncated learning effects. *International Transactions in Operational Research.* (2019), 26(3), 1135–1151.
307. Wang, J.-B., Liu, L., & Wang, C. Single machine SLK/DIF due window assignment problem with learning effect and deteriorating jobs. *Applied Mathematical Modelling.* (2013), 37(18–19), 8394–8400.
308. Wang, J.-B., Lv, D.-Y., Xu, J., Ji, P., & Li, F. (2021b). Bicriterion scheduling with truncated learning effects and convex controllable processing times. International Transactions in Operational Research, 28(3),

1573–1593.
309. Wang, J.-B., Sun, L.-H., & Sun, L.-Y. Scheduling jobs with an exponential sum-of-actual-processing-time-based learning effect. *Computers and Mathematics with Applications*. (2010), 60(9), 2673–2678.
310. Wang, J.-B., Sun, L., & Sun, L. Single machine scheduling with exponential sum-of-logarithm-processing-times based learning effect. *Applied Mathematical Modelling*. (2010)., 34(10), 2813–2819.
311. Wang, J.-B., & Wang, C. Single-machine due-window assignment problem with learning effect and deteriorating jobs. *Applied Mathematical Modelling*. (2011), 35(8), 4017–4022.
312. Wang, J.-B., Wang, D., & Zhang, G.-D.. Single-machine scheduling problems with both deteriorating jobs and learning effects. *Applied Mathematical Modelling*. (2010), 34(10), 2831–2839.
313. Wang, J.-B., & Wang, J.-J. Scheduling jobs with a general learning effect model. *Applied Mathematical Modelling*. (2013), 37(4), 2364–2373.
314. Wang, J.-B., & Wang, J.-J. Single machine scheduling with sum-of-logarithm-processing-times based and position based learning effects. *Optimization Letters*. (2014), 8(3), 971–982.
315. Wang, J.-B., & Wang, J.-J. Research on scheduling with job-dependent learning effect and convex resource-dependent processing times. *International Journal of Production Research*. (2015), 53(19), 5826–5836.
316. Wang, J.-B., & Wang, M.-Z. Single machine multiple common due dates scheduling with learning effects. *Computers and Mathematics with Applications*. (2010), 60(11), 2998–3002.
317. Wang, J.-B., & Wang, M.-Z. Single-machine scheduling with nonlinear deterioration. (2012), 6(1), 87–98.
318. Wang, J.-B., & Wang, M.-Z. Single-machine due-window assignment and scheduling with learning effect and resource-dependent processing times. *Asia-Pacific Journal of Operational Research*. (2014), 31(5).
319. Wang, J.-B., Wang, X.-Y., Sun, L.-H., & Sun, L.-Y. Scheduling jobs with truncated exponential learning functions. *Optimization Letters*. (2013), 7(8), 1857–1873.
320. Wang, J. (2005). Flow shop scheduling jobs with position-dependent processing times. Journal of Applied Mathematics and Computing, 18(1), 383–391.
321. Wang, J. B. A note on scheduling problems with learning effect and deteriorating jobs. *International Journal of Systems Science*. (2006), 37(12), 827–833.
322. Wang, J. B. Single machine scheduling with a time-dependent learning effect and deteriorating jobs. J*ournal of the Operational Research Society*. (2009), 60(4), 583–586.
323. Wang, J. B., Ng, C. T., Cheng, T. C. E., & Liu, L. L. (2008a). Single-machine scheduling with a time-dependent learning effect. International Journal of Production Economics, 111(2), 802–811.
324. Wang, J. B., & Wang, M. Z. Worst-case analysis for flow shop scheduling problems with an exponential learning effect. *Journal of the Operational Research Society*. (2012), 63(1), 130–137.
325. Wang, J. B., & Xia, Z. Q. Flow-shop scheduling with a learning effect. *Journal of the Operational Research Society*. (2005), 56(11), 1325–1330.
326. Wang, J. J., & Zhang, B. H. Permutation flowshop problems with bi-criterion makespan and total completion time objective and position-weighted learning effects. *Computers and Operations Research*. (2015), 58, 24–31.
327. Wang, J. Y. Minimizing the total weighted tardiness of overlapping jobs on parallel machines with a learning effect. *Journal of the Operational Research Society*. (2020), 71(6), 910–927.
328. Wang, J. B. Single-machine scheduling problems with the effects of learning and deterioration. *Omega*. (2007), 35(4), 397–402.
329. Wang, J. B. Single-machine scheduling with general learning functions. *Computers and Mathematics with Applications*. (2008), 56(8), 1941–1947.
330. Wang, J. B. Single-machine scheduling with past-sequence-dependent setup times and time-dependent learning effect. *Computers and Industrial Engineering*. (2008), 55(3), 584–591.
331. Wang, J. B. Single-machine scheduling with learning effect and deteriorating jobs. *Computers and Industrial Engineering*. (2009), 57(4), 1452–1456.
332. Wang, J. B., Ji, P., Cheng, T. C. E., & Wang, D.. Minimizing makespan in a two-machine flow shop with effects of deterioration and learning. *Optimization Letters*. (2012), 6(7), 1393–1409.
333. Wang, J. B., Jiang, Y., & Wang, G. Single-machine scheduling with past-sequence-dependent setup times and effects of deterioration and learning. *International Journal of Advanced Manufacturing Technology*. (2009), 41(11–12), 1221–1226.

334. Wang, J. B., Lin, L., & Shan, F. Flow shop scheduling with effects of learning and deterioration. *Journal of Applied Mathematics and Computing*. (2008), 26(1–2), 367–379.
335. Wang, J. B., & Liu, L. L. Two-machine flow shop problem with effects of deterioration and learning. *Computers and Industrial Engineering*. (2009), 57(3), 1114–1121.
336. Wang, Ji Bo, Sun, L., & Sun, L. Single machine scheduling with a learning effect and discounted costs. *International Journal of Advanced Manufacturing Technology*. (2010), 49(9–12), 1141–1149.
337. Wang, J. B, Wang, D., Wang, L. Y., Lin, L., Yin, N., & Wang, W. W. Single machine scheduling with exponential time-dependent learning effect and past-sequence-dependent setup times. *Computers and Mathematics with Applications*. (2009), 57(1), 9–16.
338. Wang, Ji Bo, Wang, D., & Zhang, G. D. Single-machine scheduling with learning functions. *Applied Mathematics and Computation*. (2010), 216(4), 1280–1286.
339. Wang, J. B., & Wang, J. J. Single-machine scheduling jobs with exponential learning functions. *Computers and Industrial Engineering*. (2011), 60(4), 755–759.
340. Wang, J. B., & Wang, J. J.. Flowshop scheduling with a general exponential learning effect. *Computers and Operations Research*. (2014), 43, 292–308.
341. Wang, J. B., Wang, L. Y., Wang, D., Wang, X. Y., Gao, W. J., & Yin, N. Single machine scheduling problems with position-dependent processing times. *Journal of Applied Mathematics and Computing*. (2009), 30(1–2), 293–304.
342. Wang, J. B., & Wang, M. Z. Worst-case behavior of simple sequencing rules in flow shop scheduling with general position-dependent learning effects. *Annals of Operations Research*. (2011), 191(1), 155–169.
343. Wang, J. B., Xu, J. X., Guo, F., & Liu, M. Single-machine scheduling problems with job rejection, deterioration effects and past-sequence-dependent setup times. *Engineering Optimization*. (2021).
344. Wang, J. B., Xu, J., & Yang, J. (2018). Bicriterion optimization for flow shop with a learning effect subject to release dates. Complexity, 2018.
345. Wang, L.-Y., Wang, J.-B., Wang, D., Yin, N., Huang, X., & Feng, E.-M. Single-machine scheduling with a sum-of-processing-time based learning effect and deteriorating jobs. *International Journal of Advanced Manufacturing Technology*. (2009), 45(3–4), 336–340.
346. Wang, L.-Y., Wang, J.-J., Wang, J.-B., & Feng, E.-M. Scheduling jobs with general learning functions. *Journal of Systems Science and Systems Engineering*. (2011), 20(1), 119–125.
347. Wang, L., Jin, J., Wang, J. B., & Ji, P. Research on scheduling problems with general effects of deterioration and learning. *Information Sciences*. (2015), 307, 89–94.
348. Wang, L. Y., Wang, J. B., Gao, W. J., Huang, X., & Feng, E. M. Two single-machine scheduling problems with the effects of deterioration and learning. *International Journal of Advanced Manufacturing Technology*. (2010), 46(5–8), 715–720.
349. Wang, W., Wang, J. J., & Wang, J. B. Solution Algorithms for Single-Machine Group Scheduling with Learning Effect and Convex Resource Allocation. *Complexity*. (2021), 2021.
350. Wang, X.-R., Wang, J.-B., Gao, W.-J., & Huang, X. Scheduling with past-sequence-dependent setup times and learning effects on a single machine. *International Journal of Advanced Manufacturing Technology*. (2010), 48(5–8), 739–746.
351. Wang, X.-R., Wang, J.-B., Jin, J., & Ji, P.. Single machine scheduling with truncated job-dependent learning effect. *Optimization Letters*. (2014), 8(2), 669–677.
352. Wang, X.-Y., & Wang, J.-J. Scheduling problems with past-sequence-dependent setup times and general effects of deterioration and learning. *Applied Mathematical Modelling*. (2013), 37(7), 4905–4914.
353. Wang, X.-Y., & Wang, J.-J. Scheduling deteriorating jobs with a learning effect on unrelated parallel machines. Applied Mathematical Modelling. (2014), 38(21–22), 5231–5238.
354. Wang, X.-Y., Zhou, Z., Zhang, X., Ji, P., & Wang, J.-B. Several flow shop scheduling problems with truncated position-based learning effect. *Computers and Operations Research*. (2013), 40(12), 2906–2929.
355. Wang, X., & Edwin Cheng, T. C. Single-machine scheduling with deteriorating jobs and learning effects to minimize the makespan. *European Journal of Operational Research*. (2007), 178(1), 57–70.
356. Wang, Z., Wei, C.-M., & Sun, L. Solution algorithms for the number of tardy jobs minimisation scheduling with a time-dependent learning effect. *International Journal of Production Research*. (2017), 55(11), 3141–3148.
357. Wei, W. Single machine scheduling with stochastically dependent times. *Journal of Scheduling*. (2019),

22(6), 677–689.

358. Wu, C.-C., Azzouz, A., Chung, I.-H., Lin, W.-C., & Ben Said, L. A two-stage three-machine assembly scheduling problem with deterioration effect. International Journal of Production Research. (2019), 57(21), 6634–6647.
359. Wu, C. C., Bai, D., Azzouz, A., Chung, I. H., Cheng, S. R., Jhwueng, D. C., ... & Said, L. B. (2020a). A branch-and-bound algorithm and four metaheuristics for minimizing total completion time for a two-stage assembly flow-shop scheduling problem with learning consideration. Engineering Optimization, 52(6), 1009-1036.
360. Wu, C.-C., Hsu, P.-H., Chen, J.-C., Wang, N.-S., & Wu, W.-H. Branch-and-bound and simulated annealing algorithms for a total weighted completion time scheduling with ready times and learning effect. *International Journal of Advanced Manufacturing Technology*. (2011), 55(1–4), 341–353.
361. Wu, C.-C., Lee, W.-C., & Liou, M.-J.. Single-machine scheduling with two competing agents and learning consideration. *Information Sciences.* (2013), 251, 136–149.
362. Wu, C.-C., Lin, W.-C., Zhang, X., Chung, I.-H., Yang, T.-H., & Lai, K. Tardiness minimisation for a customer order scheduling problem with sum-of-processing-time-based learning effect. *Journal of the Operational Research Society*. (2019), 70(3), 487–501.
363. Wu, C.-C., Liu, S.-C., Cheng, T. C. E., Cheng, Y., Liu, S.-Y., & Lin, W.-C. Re-entrant flowshop scheduling with learning considerations to minimize the makespan. *Iranian Journal of Science and Technology*. (2018), Transaction A: Science, 42(2), 727–744.
364. Wu, C.-C., Wang, D.-J., Cheng, S.-R., Chung, I.-H., & Lin, W.-C. A two-stage three-machine assembly scheduling problem with a position-based learning effect. *International Journal of Production Research.* (2018), 56(9), 3064–3079.talib
365. Wu, C.-C., Wu, W.-H., Hsu, P.-H., & Lai, K. A two-machine flowshop scheduling problem with a truncated sum of processing-times-based learning function. *Applied Mathematical Modelling*. (2012), 36(10), 5001–5014.
366. Wu, C.-C., Yin, Y., & Cheng, S.-R. Some single-machine scheduling problems with a truncation learning effect. *Computers and Industrial Engineering*. (2011), 60(4), 790–795.
367. Wu, C.-C., Yin, Y., Wu, W.-H., Chen, H.-M., & Cheng, S.-R. Using a branch-and-bound and a genetic algorithm for a single-machine total late work scheduling problem. *Soft Computing*. (2016), 20(4), 1329–1339.
368. Wu, C.-C., Yin, Y., Wu, W.-H., & Cheng, S.-R. Some polynomial solvable single-machine scheduling problems with a truncation sum-of-processing-times based learning effect. *European Journal of Industrial Engineering*. (2012), 6(4), 441–453.
369. Wu, C.-C., Zhang, X., Azzouz, A., Shen, W.-L., Cheng, S.-R., Hsu, P.-H., & Lin, W.-C. Metaheuristics for two-stage flow-shop assembly problem with a truncation learning function. *Engineering Optimization.* (2020).
370. Wu, C.-H., Lai, P.-J., & Lee, W.-C. A note on single-machine scheduling with sum-of-processing-time-based learning and forgetting effects. *Applied Mathematical Modelling*. (2015), 39(2), 415–424.
371. Wu, C.-H., Lee, W.-C., Lai, P.-J., & Wang, J.-Y. Some single-machine scheduling problems with elapsed-time-based and position-based learning and forgetting effects. *Discrete Optimization.* (2016), 19, 1–11.
372. Wu, C. C., Yin, Y., & Cheng, S. R. Single-machine and two-machine flowshop scheduling problems with truncated position-based learning functions. *Journal of the Operational Research Society*. (2013), 64(1), 147–156.
373. Wu, C. C., Hsu, P. H., Chen, J. C., & Wang, N. S. Genetic algorithm for minimizing the total weighted completion time scheduling problem with learning and release times. *Computers and Operations Research*. (2011), 38(7), 1025–1034.
374. Wu, C. C., Hsu, P. H., & Lai, K. (2011d). Simulated-annealing heuristics for the single-machine scheduling problem with learning and unequal job release times. Journal of Manufacturing Systems, 30(1), 54–62.
375. Wu, C. C., Huang, S. K., & Lee, W. C. Two-agent scheduling with learning consideration. *Computers and Industrial Engineering*. (2011), 61(4), 1324–1335.
376. Wu, C. C., & Lee, W. C. A note on single-machine scheduling with learning effect and an availability constraint. *International Journal of Advanced Manufacturing Technology*. (2007), 33(5–6), 540–544.

377. Wu, C. C., & Lee, W. C. Single-machine scheduling problems with a learning effect. *Applied Mathematical Modelling*. (2008), 32(7), 1191–1197.
378. Wu, C. C., & Lee, W. C. Single-machine and flowshop scheduling with a general learning effect model. *Computers and Industrial Engineering*. (2009), 56(4), 1553–1558.
379. Wu, C. C., Lee, W. C., & Chen, T. Heuristic algorithms for solving the maximum lateness scheduling problem with learning considerations. *Computers and Industrial Engineering*. (2007), 52(1), 124–132.
380. Wu, C. C., Lee, W. C., & Wang, W. C. A two-machine flowshop maximum tardiness scheduling problem with a learning effect. *International Journal of Advanced Manufacturing Technology*. (2007), 31(7–8), 743–750.
381. Wu, C. C., & Liu, C. L. Minimizing the makespan on a single machine with learning and unequal release times. *Computers and Industrial Engineering*. (2010), 59(3), 419–424.
382. Wu, R., Li, Y., Guo, S., & Xu, W. Solving the dual-resource constrained flexible job shop scheduling problem with learning effect by a hybrid genetic algorithm. *Advances in Mechanical Engineering*. (2018), 10(10).
383. Wu, W.-H. A two-agent single-machine scheduling problem with learning and deteriorating considerations. *Mathematical Problems in Engineering*. (2013), 2013.
384. Wu, W.-H. Solving a two-agent single-machine learning scheduling problem. *International Journal of Computer Integrated Manufacturing*. (2014), 27(1), 20–35.
385. Wu, W.-H., Wu, W.-H., Chen, J.-C., Lin, W.-C., Wu, J., & Wu, C.-C. A heuristic-based genetic algorithm for the two-machine flowshop scheduling with learning consideration. *Journal of Manufacturing Systems.* (2015), 35, 223–233.
386. Wu, W.-H., Yin, Y., Cheng, S.-R., Hsu, P.-H., & Wu, C.-C. Genetic algorithm for a two-agent scheduling problem with truncated learning consideration. *Asia-Pacific Journal of Operational Research*. (2014), 31(6).
387. Wu, W.-H., Yin, Y., Cheng, T. C. E., Lin, W.-C., Chen, J.-C., Luo, S.-Y., & Wu, C.-C. A combined approach for two-agent scheduling with sum-of-processing-times-based learning effect. *Journal of the Operational Research Society*. (2017), 68(2), 111–120.
388. Wu, X., Shen, X., & Li, C.. The flexible job-shop scheduling problem considering deterioration effect and energy consumption simultaneously. *Computers and Industrial Engineering*. (2019), 135(June), 1004–1024.
389. Wu, Y.-B., & Wang, J.-J. Single-machine scheduling with truncated sum-of-processing-times-based learning effect including proportional delivery times. *Neural Computing and Applications*. (2016), 27(4), 937–943.
390. Wu, Y.-B., Wang, M.-Z., & Wang, J.-B. Some single-machine scheduling with both learning and deterioration effects. *Applied Mathematical Modelling*. (2011), 35(8), 3731–3736.
391. Wua, C. C., Chenb, J. C., Wuc, W. H., Hsua, P. H., & Wud, W. H. Simulated annealing algorithms for the two-machine makespan flowshop scheduling with truncated learning consideration. *International Journal of Industrial Engineering : Theory Applications and Practice*. (2011), 18(8), 432–443.
392. Xingong, Z., & Guangle, Y. Single-machine group scheduling problems with deteriorated and learning effect. *Applied Mathematics and Computation*. (2010), 216(4), 1259–1266.
393. Xingong, Z., & Yong, W. Single-machine scheduling CON/SLK due window assignment problems with sum-of-processed times based learning effect. *Applied Mathematics and Computation*. (2015), 250, 628–635.
394. Xingong, Z., Yong, W., & Shikun, B. Single-machine group scheduling problems with deteriorating and learning effect. *International Journal of Systems Science*. (2016), 47(10), 2402–2410.
395. Xu, J., Lin, W.-C., Wu, J., Cheng, S.-R., Wang, Z.-L., & Wu, C.-C. Heuristic based genetic algorithms for the re-entrant total completion time flowshop scheduling with learning consideration. *International Journal of Computational Intelligence Systems*. (2016), 9(6), 1082–1100.
396. Xu, Y.-T., Zhang, Y., & Huang, X. (2014). Single-machine ready times scheduling with group technology and proportional linear deterioration. Applied Mathematical Modelling, 38(1), 384–391.
397. Xu, Z., Sun, L., & Gong, J. Worst-case analysis for flow shop scheduling with a learning effect. *International Journal of Production Economics*. (2008), 113(2), 748–753.
398. Yan, P., Wang, J. B., & Zhao, L. Q. Single-machine bi-criterion scheduling with release times and exponentially time-dependent learning effects. *Journal of Industrial and Management Optimization.* (2019), 15(3), 1117–1131.
399. Yan, Y., Wang, D.-Z., Wang, D.-W., Ip, W. H., & Wang, H.-F. Single machine group scheduling problems with the effects of deterioration and learning. Zidonghua Xuebao/ *Acta Automatica Sinica.* (2009), 35(10),

1290–1295.
400. Yang, D.-L., Cheng, T. C. E., & Kuo, W.-H. Scheduling with a general learning effect. *International Journal of Advanced Manufacturing Technology*. (2013), 67(1–4), 217–229.
401. Yang, D.-L., & Kuo, W.-H. A single-machine scheduling problem with learning effects in intermittent batch production. *Computers and Industrial Engineering*. (2009), 57(3), 762–765.
402. Yang, D. L., & Kuo, W. H. Some scheduling problems with deteriorating jobs and learning effects. *Computers & Industrial Engineering*. (2010)., 58(1), 25-28.
403. Yang, D.-L., & Kuo, W.-H. Scheduling with deteriorating jobs and learning effects. *Applied Mathematics and Computation*. (2011), 218(5), 2069–2073.
404. Yang, D. L., & Kuo, W. H.. Single-machine scheduling with an actual time-dependent learning effect. *Journal of the Operational Research Society*. (2007), 58(10), 1348–1353.
405. Yang, D. L, & Kuo, W. H. Single-machine scheduling with both deterioration and learning effects. *Annals of Operations Research*. (2009), 172(1), 315–327.
406. Yang, J. Minimizing total completion time in two-stage hybrid flow shop with dedicated machines. *Computers and Operations Research*. (2011), 38(7), 1045–1053.
407. Yang, L., & Lu, X. Two-agent scheduling problems with the general position-dependent processing time. *Theoretical Computer Science*. (2019), 796, 90–98.
408. Yang, L., & Lu, X. Approximation algorithms for some position-dependent scheduling problems. *Discrete Applied Mathematics*. (2021), 289, 22–31.
409. Yang S.-J., Guo J.-Y., Lee H.-T., Y. D.-L. Single-machine scheduling problems with past-sequence-dependent delivery times and deterioration and learning effects simultaneously. *Int J Innov Comput Inf Control* (2013). 9(10), 3981–3989.
410. Yang, S.-J. Single-machine scheduling problems with both start-time dependent learning and position dependent aging effects under deteriorating maintenance consideration. *Applied Mathematics and Computation*. (2010), 217(7), 3321–3329.
411. Yang, S.-J. Group scheduling problems with simultaneous considerations of learning and deterioration effects on a single-machine. *Applied Mathematical Modelling*. (2011), 35(8), 4008–4016.
412. Yang, S.-J. Parallel machines scheduling with simultaneous considerations of position-dependent deterioration effects and maintenance activities. *Journal of the Chinese Institute of Industrial Engineers*. (2011), 28(4), 270–280.
413. Yang, S.-J. Unrelated parallel-machine scheduling with deterioration effects and deteriorating multi-maintenance activities for minimizing the total completion time. *Applied Mathematical Modelling*. (2013), 37(5), 2995–3005.
414. Yang, S.-J., Hsu, C.-J., & Yang, D.-L. Parallel-machine scheduling with setup and removal times under consideration of the learning effect. *Journal of the Chinese Institute of Industrial Engineers*. (2010), 27(5), 372–378.
415. Yang, S.-J., Lee, H.-T., & Guo, J.-Y. Multiple common due dates assignment and scheduling problems with resource allocation and general position-dependent deterioration effect. *International Journal of Advanced Manufacturing Technology*. (2013), 67(1–4), 181–188.
416. Yang, S.-J., & Yang, D.-L. Single-machine scheduling simultaneous with position-based and sum-of-processing-times-based learning considerations under group technology assumption. *Applied Mathematical Modelling*, (2011), 35(5), 2068–2074.
417. Yang, S.-J., Yang, D.-L., & Chang, T.-R.. Single-machine scheduling with joint deterioration and learning effects under group technology and group availability assumptions. *Journal of the Chinese Institute of Industrial Engineers*. (2011), 28(8), 597–605.
418. Yang, S. J., & Yang, D. L. Single-machine group scheduling problems under the effects of deterioration and learning. *Computers and Industrial Engineering*. (2010), 58(4), 754–758.
419. Yang, W. H., & Chand, S. (2008). Learning and forgetting effects on a group scheduling problem. European Journal of Operational Research, 187(3), 1033–1044.
420. Yeh, W.-C., Lai, P.-J., Lee, W.-C., & Chuang, M.-C. Parallel-machine scheduling to minimize makespan with fuzzy processing times and learning effects. *Information Sciences*. (2014), 269, 142–158.
421. Yin, N. Single machine due window assignment resource allocation scheduling with job-dependent learning effect. *Journal of Applied Mathematics and Computing*. (2018), 56(1–2), 715–725.

422. Yin, N., Kang, L., & Wang, X.-Y. Single-machine group scheduling with processing times dependent on position, starting time and allotted resource. *Applied Mathematical Modelling*. (2014), 38(19–20), 4602–4613.
423. Yin, N., Wang, J.-B., Wang, D., Wang, L.-Y., & Wang, X.-Y. Deteriorating jobs and learning effects on a single-machine scheduling with past-sequence-dependent setup times. *International Journal of Advanced Manufacturing Technology*. (2010)., 46(5–8), 707–714.
424. Yin, N., & Wang, X.-Y. Single-machine scheduling with controllable processing times and learning effect. *International Journal of Advanced Manufacturing Technology*. (2011), 54(5–8), 743–748.
425. Yin, Y., Liu, M., Cheng, T. C. E., Wu, C.-C., & Cheng, S.-R. Four single-machine scheduling problems involving due date determination decisions. *Information Sciences*. (2013), 251, 164–181.
426. Yin, Y., Wu, C.-C., Wu, W.-H., & Cheng, S.-R. The single-machine total weighted tardiness scheduling problem with position-based learning effects. *Computers and Operations Research*. (2012), 39(5), 1109–1116.
427. Yin, Y., Wu, W.-H., Wu, W.-H., & Wu, C.-C. A branch-and-bound algorithm for a single machine sequencing to minimize the total tardiness with arbitrary release dates and position-dependent learning effects. *Information Sciences*. (2014), 256, 91–108.
428. Yin, Y., & Xu, D. Some single-machine scheduling problems with general effects of learning and deterioration. *Computers and Mathematics with Applications*. (2011), 61(1), 100–108.
429. Yin, Y., Xu, D., Cheng, S.-R., & Wu, C.-C. A generalisation model of learning and deteriorating effects on a single-machine scheduling with past-sequence-dependent setup times. *International Journal of Computer Integrated Manufacturing*. (2012), 25(9), 804–813.
430. Yin, Y., Xu, D., & Wang, J. Single-machine scheduling with a general sum-of-actual-processing-times-based and job-position-based learning effect. *Applied Mathematical Modelling*. (2010), 34(11), 3623–3630.
431. Yin, Y., Xu, D., & Wang, J. (2010c). Some single-machine scheduling problems with past-sequence-dependent setup times and a general learning effect. International Journal of Advanced Manufacturing Technology, 48(9–12), 1123–1132.
432. Yin, Y., Wu, C. C., Wu, W. H., & Chen, J. C.. Single-machine group scheduling with a general learning effect. *European Journal of Industrial Engineering*. (2013), 7(3), 350–369.
433. Yin, Yunqiang, Xu, D., Sun, K., & Li, H. Some scheduling problems with general position-dependent and time-dependent learning effects. *Information Sciences*. (2009), 179(14), 2416–2425.
434. Ying, K.-C., Lu, C.-C., Lin, S.-W., & Chen, J.-N. Single-Machine Scheduling with Learning Effects and Maintenance: A Methodological Note on Some Polynomial-Time Solvable Cases. *Mathematical Problems in Engineering*. (2017)., 2017.
435. Yu, X., Zhang, Y., & Huang, K. Minimizing the makespan for scheduling problems with general deterioration effects. *Mathematical Problems in Engineering*. (2013), 2013.
436. Yue, L., Guan, Z., Saif, U., Zhang, F., & Wang, H.. Hybrid Pareto artificial bee colony algorithm for multi-objective single machine group scheduling problem with sequence-dependent setup times and learning effects. *SpringerPlus*. (2016), 5(1).
437. Yue, Q., & Wan, G. Single machine SLK/DIF due window assignment problem with job-dependent linear deterioration effects. *Journal of the Operational Research Society*.(2016), 67(6), 872–883.
438. Zhang, X.-G., Yan, G.-L., & Tang, G.-C. Single-machine scheduling problems with release time of jobs depending on resource allocated. *International Journal of Advanced Manufacturing Technology*. (2011), 57(9–12), 1175–1181.
439. Zhang, X. Single machine and flowshop scheduling problems with sum-of-processing time based learning phenomenon. *Journal of Industrial and Management Optimization*. (2020), 16(1), 231–244.
440. Zhang, X., Yan, G., Huang, W., & Tang, G. Single-machine scheduling problems with time and position dependent processing times. *Annals of Operations Research*. (2011), 186(1), 345–356.
441. Zhang, X., Yan, G., Huang, W., & Tang, G. A note on machine scheduling with sum-of-logarithm-processing-time-based and position-based learning effects. *Information Sciences*. (2012), 187(1), 298–304.
442. Zhang, X., Yin, Y., & Wu, C.-C. Scheduling with non-decreasing deterioration jobs and variable maintenance activities on a single machine. *Engineering Optimization*. (2017), 49(1), 84–97.
443. Zhang, X., Sun, L., & Wang, J. Single machine scheduling with autonomous learning and induced learning. *Computers and Industrial Engineering*. (2013), 66(4), 918–924.
444. Zhang, X, Liao, L., Zhang, W., Cheng, T. C. E., Tan, Y., & Ji, M. Single-machine group scheduling with

new models of position-dependent processing times. *Computers and Industrial Engineering*. (2018), 117(February 2017), 1–5.

445. Zhang, X., Liu, S. C., Yin, Y., & Wu, C. C. Single-machine scheduling problems with a learning effect matrix. *Iranian Journal of Science and Technology, Transaction A: Science*. (2018), 42(3), 1327–1335.
446. Zhang, X., & Yan, G. Machine scheduling problems with a general learning effect. *Mathematical and Computer Modelling*. (2010), 51(1–2), 84–90.
447. Zhang, Y., Wu, X., & Zhou, X. Stochastic scheduling problems with general position-based learning effects and stochastic breakdowns. *Journal of Scheduling*. (2013), 16(3), 331–336.
448. Zhao, S. Resource Allocation Flowshop Scheduling with Learning Effect and Slack Due Window Assignment. *Journal of Industrial and Management Optimization*. (2021), 17(5), 2817–2835.
449. Zhao, C., & Tang, H. Single machine scheduling with a learning effect and a rate-modifying activity. *Asia-Pacific Journal of Operational Research*. (2011)., 28(4), 511–521.
450. Zheng, C., Chen, H., & Xu, R. Tabu search algorithms for minimizing total completion time on a single machine with an actual time-dependent learning effect. *Natural Computing*. (2019), 18(2), 287–299.
451. Zhu, Z., Sun, L., Chu, F., & Liu, M. Due-window assignment and scheduling with multiple rate-modifying activities under the effects of deterioration and learning. *Mathematical Problems in Engineering*. (2011), 2011.
452. Zhu, Z., Sun, L., Chu, F., & Liu, M. Single-machine group scheduling with resource allocation and learning effect. *Computers and Industrial Engineering*. (2011), 60(1), 148–157.
453. Zhu, Zhanguo, Chu, F., Yu, Y., & Sun, L. Single-machine past-sequence-dependent setup times scheduling with resource allocation and learning effect. *RAIRO - Operations Research*. (2016), 50(4–5), 733–748.
454. Zou, Y., Wang, D., Lin, W.-C., Chen, J.-Y., Yu, P.-W., Wu, W.-H., Chao, Y.-P., & Wu, C.-C. Two-stage three-machine assembly scheduling problem with sum-of-processing-times-based learning effect. *Soft Computing*. (2020), 24(7), 5445–5462.
455. Tai, L. Optimizing batch-processing operations with batch-position-based learning effects. *RAIRO-Operations Research*. (2021), 55, S253-S269.