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Research article

Development of a strategic framework for sustainable supply chain management

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Appendix 1. Materials of strategy literature review.

No. Procurement strategy

- Purchasing consortia strategy: More than two organizations jointly purchase the same goods to obtain better discount prices. Suppliers can also reduce transaction costs. (2005) DOI: 10.1016/j.ijpe.2004.06.014, (2000) DOI: 10.1016/S0969-7012(99)00031-3, (2011) DOI: 10.1016/j.pursup.2010.09.001, (2007) URL: https://hdl.handle.net/11296/ecw7en,
- ESI (early supplier involvement) strategy: When manufacturers plan to purchase goods from the supply chain upstream, they need to choose the suppliers before the design phase of the product. (2014) URL: http://purl.utwente.nl/essays/66397, (2016) DOI: 10.1016/j.indmarman.2016.05.023, (2014) .[CrossRef]
- Procurement Outsourcing strategy: It can reduce investing expenditure on non-core operational activities, and help business enterprises get timely information and feedback. (2013) DOI: 10.1504/IJLSM.2013.051340, (2017) [CrossRef], (2017) DOI: 10.1016/j.ijindorg.2016.11.001, (2008) [CrossRef], (2007) DOI: 10.1504/IJPM.2007.015362
- 4 CM (contract manufacturing) strategy: It can reduce the investment cost and the cost of self-operating business, and also can increase the production capacity to prepare the manufacturing for the sudden increase of sales. (2019) DOI: 10.1016/j.resconrec.2019.03.007, (2013) ISBN-13: 978-0071813082, (2005) DOI: 10.1108/01443570510619482, (2005) [CrossRef], (2013) [CrossRef]
- Off-shoring strategy: It refers to the transfer of a company's internal operational processes or trading activities to firms in another region or country to reduce capacity constraints and cut operational costs. (2008) DOI: 10.5465/amp.2008.34587994, (2008) URL: https://hdl.handle.net/11296/36zjk9, (2019) DOI: 10.1016/j.ijpe.2019.02.010, (2013) DIO: 10.1016/j.intman.2013.03.015
- 6 Reverse marketing strategy: a company looks for manufacturers or suppliers instead of looking for sales orders in some operating processes. (2007) ISBN-13: 978-0131594203, (2017)order to reduce DOI: 10.1016/j.ijdrr.2017.05.019, 10.1111/j.1745-493X.1995.tb00206.x, (1995)DOI: (2013)URL: https://ajmsjournal.com/index.php/ajms/article/view/3
- Business process outsourcing (BPO) strategy: It is used to reduce non-value-added operational activities to minimize risk costs. It also enhances the supply flexibility to maximize cost-effectiveness. (2018) DOI: 0.1016/j.procs.2018.08.052, (2002) [CrossRef], (2017) [CrossRef], (2011) [CrossRef], (2004) ISBN-13: 978-0-471-65577-0,
- Design for procurement (DFP) strategy: It utilizes industrial standard parts, raw materials, process and technology from the upstream suppliers, reducing support associated with the product design phase. (2012) ISBN-13: 978-9401057622, (2017) DOI: 10.1016/j.pursup.2016.06.003, (2012), ,[CrossRef], (2021) URL: https://www.jjsmanufacturing.com/design-for-procurement
- 9 Centralized procurement strategy: It is utilized to reduce procurement time, transportation costs, procurement risks, and regulatory costs by reducing decentralized procurement options. (2015) ISBN-13: 978-0-324381349, (2001) URL: https://core.ac.uk/display/147283560, (2017) [CrossRef], (2015) [CrossRef], (2021) [CrossRef]
- Global sourcing strategy: It uses the concept of total cost of ownership (TCO) and global resources (the best suppliers, quality, processes, design, and technology) to bring in more cost profits. (2015) ISBN-13: 978-0-324-38134-9, (2008) DOI: 10.1111/j.1745-493X.2008.00043.x, (2007) DOI: 10.1109/IEEM.2007.4419213, (2009) [CrossRef], (2005) [CrossRef]
- Procurement services providers (PSP) strategy: It can be used to improve supplier selection management and help a firm to execute its growth plan, as well as reduce procurement time and cost. (2015) DOI: 10.1287/mnsc.2014.1963, (2017) URL: https://kknews.cc/finance/p5699x8.html, (2013) [CrossRef], (2021) URL: https://kknews.cc/finance/p5699x8.html

- Turn-key strategy: It means something that is immediately available. The project is a ready-made solution rather than a customized solution, and the entire design is provided by the contractor as well. (2010) DOI: 10.1016/j.ijpe.2010.06.017, (2008) DOI: 10.1016/j.ijproman.2007.08.008, (1998) [CrossRef], (2008) DOI: 10.1016/j.ijproman.2007.08.008
- Presales strategy: Since it is difficult to estimate a proper capacity for an uncertain market, the presales strategy could more correctly guarantee the quantity of goods or services. (2004) DOI: 10.1287/mnsc.1040.0202, .(2016) URL: https://www.wikizero.com/en/Presales, (2016) DOI: 10.1016/j.ejor.2015.10.033, (2019) DOI: 10.1155/2019/1287968, (2011) [CrossRef]
- Expediting /follow-Up strategy: It helps a business avoid delays and ensures suppliers fulfilling their contracting obligations during the procurement to improve perfect order fulfillment rates. (2018) DOI: 10.1016/j.ejor.2017.11.012, (2009) [CrossRef], (2004) [CrossRef], (2020) URL: https://sipmm.edu.sg/key-focus-areas-expediting-procurement/
- Electronic procurement/E-procurement strategy: It stems from the advent of the Internet, which uses electronic contracts with no paperwork between the suppliers and the retailers, or even the consumers. (2016) DOI: 10.1016/j.sbspro.2016.07.147, (2009) DOI: 10.4067/S0718-18762009000100004, (2017) [CrossRef], (2007) URL: https://hdl.handle.net/11296/8tdx74, (2019) [CrossRef]

No. Production strategy

- Just-in-time (JIT) strategy: It means using small and frequent deliveries that go directly from trucks to the factory floor to reduce cycle time, manufacturing lead time, and inventory. (1988) ISBN-13: 978-0915299140, (2005) DOI: 10.1016/j.omega.2004.03.012, (1999) DOI: 10.1080/014461999371268, (2018) DOI: 0.1016/j.cie.2018.03.018, (2003) URL: https://hdl.handle.net/11296/6tvk7e
- Lean production strategy: It is used to eliminate the unnecessary wastes in the process of production. It can improve production, increase process efficiency, and optimize the labor productivity. (2018) DOI:10.1108/TQM-12-2017-0178, (2019) DOI: 10.1016/j.autcon.2018.12.017, (2002) URL: https://hdl.handle.net/11296/6qh737, (2017)[CrossRef] (2016) DOI: 10.1016/j.procir.2016.11.105
- Make-to-Stock (MTS) strategy: It can improve equipment utilization and make production processes stable with a lower production cost, and deliver directly to customers. (2008) DOI: 10.1007/978-1-84800-225-8, (2016) DOI: 10.1016/j.procir.2016.11.092, (2010) ISBN-13: 978-0321720696
- Build-to-order (BTO) strategy: It is used to fulfill higher customized products. An actual supply process is launched only upon receiving any specific order to reduce the inventory cost. (2004) DOI: 10.1016/S0925-5273(02)00376-6, (2014) DOI: 10.1155/2014/301309, (2012) URL: https://book.douban.com/review/5331166/,(2020) [CrossRef]
- Postponement strategy: The product is completed as late as possible to lower the risk cost. It is shaped to a type of need and fitted to the specific requirements of the individual consumer who buys it. (2019) DOI: 10.1016/j.omega.2018.02.008, (2006) DOI: 10.1007/0-387-28181-9_8, (2004) DOI: 10.1080/00207540310001631601, (2008) ISBN-13: 978-9861575728
- Mass customization strategy: It is used to design the components that can be commonly used by different customized products for various needs. It has similar efficiency compared to mass production. (2017) ISBN-13: 978-1498520478, (2009) DOI: 10.1504/IJCE.2009.027444, (2018) [CrossRef], (2018) DOI: 10.1016/j.cie.2018.04.025, (2016) [CrossRef]
- Production network strategy: In the process of production activities the relevant participants should be included in a lower cost composition, which improves quality and functionality simultaneously. (2019) DOI: 10.1016/j.socnet.2019.05.002, (2008) DOI: 10.1093/jeg/lbn002, (2008) DOI: 10.1108/sd.2008.05624iae.001, (2011) URL: http://sro.sussex.ac.uk/

- 8 Standardization strategy: Standardized components produced by external suppliers are adopted to save costs of the development and production, and to obtain large-scale economic benefits. (2016) DOI: 10.1016/j.envsci.2016.03.012, (2001) DOI: 10.2307/41166092, (2010) URL: https://hdl.handle.net/11296/q2sr55
- Sales & Operations Planning (SOP) strategy: It is used to improve error demand forecast to gain greater cost-effectiveness of integrating with marketing sales, inventory, and manufacturing. (2021) [CrossRef], (2012) DOI: 10.1016/j.ijpe.2011.11.027, (2019) DOI: 10.1016/j.procir.2019.04.048, (2007) [CrossRef]
- Parallel production processing strategy: It allows certain manufacturing processes to be performed at different locations at the same time to reduce time cost by shortening the manufacturing process time. (2008) DOI 10.1007/s10845-008-0128-y, (2012) ISBN-13: 978-9401057622, (2008) ISBN-13: 978-9861575728, (2007) ISBN-13: 978-0131594203
- Bookshelf strategy: It uses a shelf-like database to collect information on new capable suppliers, technologies, and knowledge to develop world-class and high-tech products in the NDP phase. (2007) ISBN-13: 978-0131594203, (2003) DOI: 10.1111/1540-5885.00028, (2000) ISBN: 978-0873894685, (2000) [CrossRef]
- Specialty retailer of Private Label Apparel (SPA) strategy: It controls the entire development of a product from design and production to marketing without unnecessary distribution processes. (2014) [CrossRef], (2013) [CrossRef], (2015) URI: http://eco-science.net/downloads.html, (2020) .[CrossRef], (2020) URL: https://www.fastretailing.com/eng/group/strategy/uniqlobusiness.html
- Industry 4.0 strategies: It promotes computerization and workplace innovation in manufacturing with the aim to increase efficiency and yields, in order to promote industrial competitiveness. (2017) DOI: 10.1007/978-3-319-56333-6, (2014) [CrossRef], (2020) DOI: 10.1016/j.resconrec.2020.105064, (2015) [CrossRef], (2019) DOI: 10.1016/j.ijpe.2019.01.004

No. Warehouse strategy

- 1 Cross Docking strategy: Unloading the cargo from inbound trucks and directly loading it into outbound trucks, with little or no storage, is used to shorten stopping time in the warehouse. (2010) [CrossRef], (2019) DOI: 10.1016/j.ejor.2018.11.033, (2014) URL: https://hdl.handle.net/11296/e9k4z9, (2018) DOI: 10.1177/0972150918757847
- Contract Warehouse strategy: It is used for a small quantity of large distribution warehousing networks, both to enhance the cost-effectiveness for suppliers and gain a quicker demand response for consumers. (1999) DOI: 10.1016/S0925-5273(98)00114-5, (2018) DOI: 10.1016/j.compchemeng.2017.05.011, (2016) URL: https://www.prnasia.com/story/150363-1.shtml, (2016) [CrossRef]
- Third-Party Logistics (3PL) strategy: It refers to the use of a logistics company that is in charge of warehouse goods, distribution of goods, and fulfillment of services but without ownership. (2016) DOI: 10.1016/j.sbspro.2016.11.018, (2003) DOI: 10.1016/S0019-8501(02)00228-6, (2015) [CrossRef], (2013) [CrossRef], (2008) ISBN-13: 978-9861575728
- Inventory pooling strategy: It is a practice of inventory pooling because inventory offsets the variability of each other to lower inventory volumes. Also, the service level can be maintained as well. (2008) ISBN-13: 978-9861575728, (2015) [CrossRef], (2004) [CrossRef], (2015) DOI: 10.1016/j.omega.2014.06.002
- Pareto ABC product strategy: It uses the 80/20 rule to classify different volumes of products and services into A, B, and C groups to meet the needs of the important customers who account for 20% to maximize sales. (2017) ISBN-13: 978-1351274326, (2011) [CrossRef], (2011) ISBN-13: 978-1857889093, (2016) URL: https://slidesplayer.com/slide/11267502/
- Logistics network strategy: Partnering with 3PL is a good way to effectively accelerate all operational activities and distribute commodities to achieve long-term development of company profit. (2020) ISBN-13: 978-0367364632, (2015) [CrossRef], (2020) URL: http://web.ncyu.edu.tw/~jacky/96log-d6.pdf, (2000) DOI: 10.1016/S0166-3615(99)00059-7

- Self-storage strategy: It is a flexible storage solution, and helps users store, pack and keep their commodities, as well as provides truck rental, regular statements, report communications, etc. (2016) [CrossRef], (2016) DOI: 10.1016/j.ejor.2015.12.044, (2017) DOI: 10.1080/00207543.2016.1211338, (2015) [CrossRef]
- Distribution Center (DC) strategy: It means that logistics is directly responsible for inventories and taking orders, and with it the efficiency of the distribution system can be accelerated. (2020) DOI: 10.1016/j.aei.2019.101014, (2016) DOI: 10.1016/j.trpro.2016.11.030, (2013) [CrossRef], (2002) URL: https://www.rfidjournal.com/wp-content/uploads/2019/07/10.pdf
- Global Logistics strategy: As communication and information technology have opened up new opportunities for world trade, they have greatly increased flexibility and reduced inventory levels. (2014). ISBN-13: 978-0749471330, (2008) ISBN-13: 978-8126516841, (2012) ISBN-13: 978-1461520856 (eBook), (2016) ISBN-13: 978-1506302935, (2017) [CrossRef], (2011) [CrossRef]

No. Inventory strategy

- QR (quick response) strategy: It reduces the error of demand forecasting and improves the inventory turnover rate. It helps retailers monitor goods status in real-time and make the distribution process smooth. (2005) [CrossRef], (2010) ISBN-13: 978-3642043123, (2015) [CrossRef], (2011) DOI: 10.1287/mnsc.1100.1303
- Vendor-managed-inventory (VMI) strategy: It is used by vendors to monitor sales data, control inventory, and respond to demand quickly to enhance customer service levels. (2019) DOI: 10.1016/j.ejor.2018.06.028, (2007) URL: https://ir.nctu.edu.tw/bitstream/11536/40191/1/152101.pdf, (2019) [CrossRef], (2008) ISBN-13: 978-9861575728
- 3 CPR (Continuous Products Replenishment) strategy: Inventory information is shared with partners in conjunction with EDI strategy to jointly forecast demand, in order to reduce inventory-carry costs. (2002) [CrossRef], (2017) DOI: 10.1016/j.ijpe.2017.02.017, (2018) DOI: 10.3311/PPso.9017, (2017) DOI: 10.1016/j.ijpe.2017.02.017
- 4 Efficient Consumer Response (ECR) strategy: It integrates manufacturers, wholesalers, and retailers, along with CAO, POS, VMI, QR, and CR strategies, to be more responsive to consumer demand. (2008) ISBN-13: 978-0749454562, (2008) DOI: 10.1108/09590550810883450, (2004) DOI: 10.1016/S0148-2963(01)00326-5
- RSP (retailer-supplier partnership) strategy: It is usually combined with QR, POS, CR, and VMI strategies to effectively share information, improve forecast accuracy and enhance service levels. (2014) DOI: 10.1080/00207543.2013.879615, (2008) URL: https://archives.pdx.edu/ds/psu/26551, (2005) URL: https://hdl.handle.net/11296/fss659
- Vendor Owned Inventory (VOI) strategy: It refers to the replenishment program, time, or volume decided by the supplier to maintain a certain inventory level in the buyer's warehouse. (2013) DOI: 10.1016/j.cor.2013.05.001, (2007) URL: https://hdl.handle.net/11296/7macyw, (2010) DOI: 10.1016/j.ejor.2009.11.023
- JMI (jointly managed inventory) strategy: It is rebuilt by sharing inventory, sales data, and other related information to consistently maintain demand-supply and design a suitable transportation route. (2010) [CrossRef], (2012) [CrossRef], (2011) DOI: 10.4028/www.scientific.net/AMR.187.492, (2014) [CrossRef], (2018) DOI: 10.2991/saeme-18.2018.42
- Reorder point (ROP) strategy: When the inventory falls below the number of forecast replenishment points, its inventory control procedure can be immediately initiated to avoid supply disruption. (1977) DOI: 10.1080/00207547708943107, (2010) URL: https://digitalcommons.calpoly.edu/imesp/5, (2019) DOI: 10.1016/j.ijpe.2018.02.014,
- Distribution integration (DI) strategy: An integrated enterprise alliance has an understanding of customer demand, product development, and knowledge sharing, to avoid sales in supply disruption. (2015) DOI: 10.1590/1807-7692bar2015150049, (2021) URL: https://www.pinterest.com/pin/507710557971830949/,
- Multi-echelon inventory optimization (MEIO) strategy: The optimal replacement policies need to be integrated to reduce entire supply chain inventories and meet customer demands. (2017) DOI: 10.1016/j.tre.2017.09.008, (1960) DOI: 10.1287/mnsc.6.4.475, (2009) [CrossRef], (2012) [CrossRef], (2016) ISBN-13: 978-0134731889

No. Pricing strategy

- Price-cutting strategy: It increases profitability with promotional activities. The applied strategy must bring out a significant increase in sales volume or a lower cost due to the special SC resources. (2016) ISBN-13: 978-0134731889, (2000) URL: https://hbr.org/2000/03/how-to-fight-a-price-war, (1996) URL: https://ssrn.com/abstract=1851723, (2011) [CrossRef], (2010) [CrossRef]
- Activity-based costing (ABC) strategy: It can enhance mutual trust in the organizational profitability of supply chain coordination by identifying the production process with the actual associated production costs. (1977) [CrossRef], (1988) URL: https://www.jstor.org/stable/247912, (2015) DOI:10.5539/ijef.v7n12p275, (2008) [CrossRef]
- Target costing strategy: It meets the expectations of both buyers and suppliers. The predicted price of a product is acceptable to the customers, while the expected profit margin is acceptable to the suppliers. (2016) DOI: 10.1016/S2212-5671(16)30023-5, (2019) ISBN-13: 978-0824746117, (2006) DOI: 10.1111/j.1745-493X.2006.04201003.x, (2017) ISBN-13: 978-1563271724, (2011) [CrossRef]
- Cost driver strategy: It evaluates all the cost drivers. Each value proposition must be considered before undertaking cost-reduction efforts, because every activity leads to an increment of cost. (1997) DOI: 10.1016/S0377-2217(96)00302-5, (1993) ISBN-13: 978-1439150368, (2016) DOI: 10.1016/j.retrec.2016.07.021, (2016) [CrossRef].
- Total cost of ownership (TCO) strategy: It is defined as a series of measured costs for correct decision making, for example, cheaper products may have shorter lifetimes and higher maintenance costs. (2003) [CrossRef], (2001) DOI: 10.1016/S0925-5273(01)00093-7, (2017) [CrossRef], (2017) DOI: 10.1016/j.bushor.2017.01.008, (2017) [CrossRef]
- Price discrimination strategy: It offers the same product or service with different prices to different groups who are willing to pay as high as possible, in order to increase corporative profitability. (2019) DOI: 10.1016/j.ijindorg.2018.03.013, (1997) URL: https://www.jstor.org/stable/41798782, (2013) [CrossRef], (2006) [CrossRef], (2021)[CrossRef]
- Differential pricing strategy: It can charge different prices for a product to maximize enterprise revenue because the single prices approach fails to reflect different demand changes at different sales periods. (2019) DOI: 10.1016/j.jairtraman.2018.10.003, (2020) ISBN-13:978-0804746984, (2015) [CrossRef], (2017) [CrossRef], (2017) [CrossRef]
- Yield management /Revenue management strategy: It emphasizes the balance between pricing and inventory, predicts consumer behavior through an interactive process of different periods. (2019) DOI: 10.1016/j.jairtraman.2019.04.002, (2011) ISBN-13: 978-0767900331, (2002) DOI: 10.1287/ited.3.1.34, (1994) DOI: 10.1177/001088049403500102, (2021) [CrossRef]
- Dynamic pricing strategy: It uses an exact dynamic programming formulation over complex information systems that provide references for optimal pricing policy based on records. (2019) DOI: 10.1016/j.jmaa.2019.06.012, (2006). [CrossRef], (2012) DOI: 10.1016/j.ijhm.2011.06.003, (2019) URL: https://www.economicshelp.org/blog/148008/economics/dynamic-pricing/
- Two-part tariff (TPT) strategy: The price and quantity should be negotiated between the manufacturer and the retailer. The aim is to reduce product costs through stable manufacturing. For retailers, if the order of quantity is big, the price can be relatively reduced. (1971) DOI: 10.2307/1881841, (2016) DOI: 10.1016/j.tej.2016.03.008, (2017) DOI: 10.1080/00207543.2016.1240383

No. Transportation strategy

Direct-shipment/Drop-shipping strategy: Direct delivery from the factory or supplier to the end customer is used to reduce the storage cost for transportation and intermediaries. (2016) ISBN-13: 978-1292083797, (2012) [CrossRef], (2019) DOI: 10.1016/j.apm.2019.02.039, (2006) [CrossRef], (2008) ISBN-13: 978-9861575728, (2016) ISBN-13: 978-0134731889

- Mixed-distribution strategy: It refers to the shipping by either the distribution system of a business enterprise or by outsourcing. Outsourcing is usually adopted when the destinations are dispersed for delivery. (2020) DOI: 10.1016/j.ijpe.2020.107746, (2018) DOI: 10.1016/j.matpr.2017.12.059, (2001) DOI: 10.1108/09600030110389442, (2007) ISBN-13: 978-0130661845, (2012) [CrossRef]
- Differentiated distribution strategy: Based on the differences in sales or popularity, the demand is subdivided into three categories of A, B, and C, to promptly respond to demand. (2011) ISBN-13: 978-0-684-84147-2, (2020) DOI: 10.1080/01605682.2019.1605469, (2018) DOI: 0.1016/j.ejor.2018.02.032, (2005) http://hdl.handle.net/1721.1/7451, (2017) [CrossRef],
- Economic packaging strategy: It means to package goods economically to help control logistics costs. The important principles include easy to place, transport, track, repackage, etc. (2016) DOI: 10.1016/j.ijpe.2016.08.003, (2006) [CrossRef], (2003) [CrossRef], (2017) [CrossRef], (2015) URL: https://www.slideshare.net/dineshnikam180/packaging-47140585
- Transshipment strategy: Inventory is stored in and transported among retail stores to sustain shelf availability and service reliability so that a central warehouse is unneeded. (2017) DOI: 10.1016/j.eswa.2017.04.044, (2018) DOI: 10.1016/j.ejor.2018.02.025, (2009) [CrossRef], (2009) [CrossRef]
- Shipment Consolidation Logistics (SCL) strategy: It means to combine two or more orders or shipments so that a larger quantity can be dispatched on the same vehicle to the same market region. (1992) [CrossRef], (2009) URI: http://hdl.handle.net/10012/4562, (2012) DOI: 10.1016/j.ejor.2012.03.021, (2009) URL: http://hdl.handle.net/10012/4562
- Shared logistics services strategy: It is to coordinate transportation to deliver different goods to retail stores by leveraging information shared among potential supply chain participants. (1978) DOI: 10.1177/000276427802100411, (2014) ISBN-13: 978-3642317873, (2013) ISBN-13: 978-0131594203, (2008) URL: https://hdl.handle.net/11296/vwqq7a, (2016) https://kknews.cc/news/k4k2mr.html1
- Intermodal transportation strategy: It is to combine at least two forms of transportation, to deliver goods for greater efficiency. The responsibilities of fees and risks are co-shared by entire supply chain members. (2007) DOI: 10.1016/S0927-0507(06)14008-6, (2010) DOI: 10.3141/2191-18, (2016) DOI: 10.1016/j.tre.2016.09.011, (2013) DOI: 10.1016/j.tre.2013.10.003, (2021) URL: https://slideplayer.com/slide/12378060/
- 9 Trade-offs in transportation strategy: It is the use of different transportation networks and nodes based on customer density and distance, or size of customer, to enhance a business enterprise's profitability. (2014) [CrossRef], (2016) DOI: 10.1016/j.gloenvcha.2016.01.003, (1992) [CrossRef], (2016) DOI: 10.1016/j.ijpe.2015.10.018, (2015) DOI: 10.1061/(ASCE)TE.1943-5436.0000747, (2008) DOI: 10.1016/j.eswa.2007.06.036

No. Information strategy

- POS (Electronic Point of Sale) strategy: The data of actual sales information collected from the cashier can be shared between the supplier and the retailer, and the data can be used for the entire supply chain management. (2018) DOI: 10.1016/j.ejor.2017.10.059, (2017) DOI: 10.1016/j.ejor.2016.11.047, (2015) [CrossRef], (2016) URL: https://www.youtube.com/watch?v=0P-lG6Vq0pw.
- EOS/Olo (Electronic ordering system/on-line ordering): EOS is a kind of order type using electronic data exchange, which is usually combined with the POS system to speed up replenishment process. (2010) URL: https://hdl.handle.net/11296/8ab9sk, (2009) DOI: 10.4067/S0718-18762009000100004, (2016) DOI: 10.1504/IJLSM.2016.073968, (2008) ISBN-13: 978-9861575728
- EDI (Electronic Data Interchange) strategy: It is a series of message exchanges between more than two entities that can be either an initiator or receiver via an electronic storage telecommunications network. (2010) ISBN-13: 978-0321720696, (2008) [CrossRef], (2017) URL: www.scu.edu.tw/~distedu/chap8.htm, (2008) DOI: 10.1016/j.chb.2006.11.002

- VAN (Value-Added Network): It can be used to improve this B2B problem of electronic data exchange, so it can be considered as EDI alternative because it acts as an intermediary between two business partners. (2000) DOI: 10.1080/10864415.2000.11518378, (2019) DOI: 10.1016/j.procir.2019.03.291, (2020) DOI: 10.1016/j.cie.2020.106457, (2015)[CrossRef]
- RFID (Radio Frequency Identification) strategy: It is a wireless communication technology used to track objects without mechanical or optical contact, and can improve sales loss because of more information. (2018) DOI: 10.1016/j.ejor.2018.04.038, (2015) DOI: 10.1016/j.jom.2015.07.006, (2011) [CrossRef], (2010) DOI 10.1007/s12063-010-0029-z
- GPS & GSM (Global positioning system & Global System for Mobile Communications): GPS and RFID have been integrated into ERP system of transportation management, to identify and track the vehicle. (2012) DOI: 10.1016/j.proeng.2012.01.920, (2013) DOI: 10.4028/www.scientific.net/AMM.380-384.871, (2019) [CrossRef]
- EAN & UPC (European Article Number & Universal Product Code): They are widely used by retailers selling middle or low end products to improve efficiency of checking out, to enhance supply chain performance. (2014) [CrossRef], (2017) DOI: 10.5220/0006508203210327, (2020) URL: https://www.avasam.com/what-is-a-universal-product-code-upc/
- ERP (Enterprise Resource Planning) strategy: It is integrated process-oriented management, and is widely used to collect, store, manage, and interpret data from many business activities efficiently. (2010) ISBN-13: 978-0321720696 (2015) DOI: 10.5772/59970, (2013) DOI: 10.1080/00207543.2012.761363, (2005) URL: http://hdl.handle.net/11296/vqyer5
- Advanced Planning & Scheduling System (APS) strategy: It has the ability to make better decisions to dynamically allocate the equipment and improve its bottlenecks without adding more equipment, either through system simulation or mathematical planning. (2010) URL: www.emeraldinsight.com/0263-5577.htm, (2014) DOI: 10.15388/Informatica.2014.31, (2016) [CrossRef]
- 10 CPFR (Collaborative Planning, Forecasting, and Replenishment) strategy: It is an integrated strategy of JIT, QR/CR, VMI, and ECR to form a cross-industry force, to improve the replenishment efficiently and forecast demand accurately. (2015) DOI: 10.1108/IJPPM-03-2014-0039, (2004) [CrossRef], (2015) DOI: 10.1108/JEIM-09-2014-0092, (2018) DOI: 10.7166/29-3-1744
- WMS (warehouse management system): WMS is a support system of ERP inventory management. It enables process cycle of the inventory to flow smoothly. WMS implementation is an important capital investment for cutting cost. (2011) DOI: 10.1080/17517575.2010.537784, (2016) DOI: 10.1016/j.procir.2015.12.122, (2012) [CrossRef]
- TMS (transportation management system): TMS is a support system of ERP transportation management. TMS helps track shipments, schedule drivers, and calculate the cost for the optimal routing. (2013) [CrossRef], (2003) URL: https://www.jstor.org/stable/20713541?seq=1, (2009) DOI: 10.1108/17410400910921083, (2021) URL: https://cerasis.com/tms-systems/
- MIS (Management Information System) strategy: It is a computer-based human and machine integration system, which can provide past, present, and predictive information about internal operations to enhance operational capability and efficiency. (2017) ISBN-13: 978-0135191798, (2017) [CressRef], (2013) URL: ttps://research-methodology.net/management-information-system/
- 14 CRM (customer relationship management): CRM is a support system of C-Commerce, which is a prediction module for reducing inventory by interacting with downstream customers to obtain a more accurate demand planning. (2018) URL: http://www.springer.com/series/10099, (2019) ISBN-13: 978-1138498259, (2019)

- SRM (supplier relationship management): In order to have a stable raw materials supply, SRM must be applied in the stage of the procurement process cycle properly and safely. (2010) DOI: 10.1108/02635571011038990, (2011) DOI: 10.1504/IJPM.2011.037382, (2012) DOI: 10.1108/13598541211227153, (2012) DOI: 10.1108/13598541211227153
- BPM (Business Process Management): BPM is a peripheral aspect of enterprise management in a comprehensive B2B (business-to-business) system for managing the cross-industry and cross-sector management. (2015) DOI: 10.1007/978-3-642-00416-2_1, (2019) ISBN-13: 978-3662585856, (2009) DOI: 10.1108/14637150910987937, (2013) DOI:10.1155/2013/507984
- PRM (Partner Relationship Management): PRM is able get access to the network (Web and ASP). It enables members of a supply chain to log-in to obtain information about the products and the prices. (2013) DOI: 10.1016/j.indmarman.2013.05.019, (2009) DOI: 10.1525/cmr.2009.52.1.94, (2014) URL: http://ijbssnet.com/journals/Vol 5 No 8 1 July 2014/15.pdf
- Big Data strategy: It is used to store and analyze massive data. It helps business enterprises correctly find trends and appropriately form an operational process to enhance profit for future development. (2013) URL: https://arxiv.org/pdf/1309.5821.pdf>, (2012) [CrossRef], (2015) DOI: 10.1016/j.ijinfomgt.2014.10.007, (2016) [CrossRef], (2017) [CrossRef], (2016) DOI: 10.1016/j.cie.2016.09.023
- KMS (Knowledge Management System): KMS is an integrated knowledge system using information technology to manage knowledge to be strategic resources, to promote innovation ability and enhance competitiveness. (2007) DOI: 10.1016/j.biotechadv.2006.10.001, (2016) DOI: 10.1016/j.chb.2016.07.055, (2011) DOI: 10.4018/978-1-59904-931-1.ch076, (2001) [CrossRef]
- 20 IOT (Internet of Things) strategy: It is used to transform real-world objects into intelligent virtual objects. The ability to code and track objects has allowed companies to become more efficient. (2015) DOI: 10.4236/jcc.2015.35021, (2010) DOI: 10.1016/j.comnet.2010.05.010, (2018) ISBN-13: 978-1-119-45674-2, (2013) ISBN-13: 978-8792982735, (2013) DOI: 10.1016/j.future.2013.01.010, (2016) DOI: 10.1016/j.chb.2016.04.023
- Omni-Channel strategy: With the advent of digital technologies and social media networks, it provides buyers with countless channels like websites, social media, and mobile devices to meet their needs. (2013) ISBN-13: 978-1-848-21009-7, (2015) [CrossRef], (2014) DOI: 10.2753/JEC1086-4415180400, (2011) [CrossRef], (2019) [CrossRef]

Appendix 2. Integrated and classified performance indicators.

No.	Time	Examples
1	Process time	(i) Pallet transfer time (seconds): is the time from the beginning to the end of a process. (ii) Transportation time (hours): can be either the time from making materials to products or the time for shipping after completion of the products. (iii) Order processing time (days): is the period referring to the lead time, the demand process, and the supply process.
2	Interval time	(i) Customer order interval (days): can be a JIT (just-in-time) strategy, which means the time between two orders. (ii) Cash-to-cash time (days): The time from replenishment to reception of the payment for finished goods, or the time from receiving the order till the completion of goods.(iii) Machine cycle time (seconds): can be the interval time between the production line and the assembly line.
3	Speed (distance/ period)	(I) Conveyor speed (meter/minute): can be the transportation time. (ii) Lane speed (km/hour): can be the speed in which materials are made into products. (iii) Inventory velocity (stay days): the faster the inventory moves, the better it is. This is to reduce the time for storage instead of speeding up the time for transportation.
4	Throughput (units/period)	(i) Pipeline flow (liter/hour): can be the number of items picked up per minute. (ii) Production output (products/day): the speed for making a product. (iii) Order throughput (orders/day): the time for dealing with orders.
5	environmental protection improved speed	(i) Length to time to implement environmental programs (months or years), (ii) Meeting environmental program implementation period (units/period), (iii) Speed of acquiring environmental information (units/period), (iv) Communication speed on environmental issues to supplier's suppliers (units/period)
6	Integrative speed	(i) Infrastructure development (%): The basic organizational structures and facilities (e.g. buildings, roads, power supplies, internet system, mobile device, etc.) needed for the operation of a supply chain organization. (ii) Automation (%): the use of largely automatic equipment in a system among a supply chain, (iii) information system (%): it not only brings benefits to the accuracy, timeliness and availability, but also positively influences the operational, financial, social and environmental performance of the organization. The fundamental issues is to improve the waste time reduction for all stakeholders (consumer, customer, government/regulators, NGO, competitors/media, etc.) to enhance the overall supply chain/industrial/national competitive advantage.
No.	Cost	Examples
1	Direct cost	(i) Cost of materials: such as the costs of raw material, procurement, storage, purchase, packaging, production, and transportation. (ii) Cost of labor: the money paid for workforce.
2	Indirect cost	(i) Facility cost: is the money spent for office maintenance. (ii) Opportunity cost: is the necessary expenditure for operation, transportation, or shipment.
3	Error cost	(i) Returns processing: the cost is usually as twice high as the total cost. (ii) Repair and replacement: can be the expenses caused by defect goods, reworking, or customer complaints.
4	Periodic cost (cost/period)	(i) Interest and rent (\$/month): can be the annual interest rate or the monthly rent (ii) Facility management (\$/year): including the management costs for equipment, manpower, warehouse, and idling raw material and inventory.
5	Incremental cost (cost/ unit of work)	(i) Transportation cost (\$/km): refers to the cost of shipping, usually based on the kilometers transported. (ii) Storage capacity cost (\$/cu. dm.): it is either the storage cost per cubic decimeter or the order processing cost.

6.	Environmental	(i) air pollution (mg or ug/cubic meter): air quality index (AQI), (in particular on CO ₂ , NOx,
	cost	SOx, lead, mercury and volatile organic compound emissions), (ii) water pollution (ton or
		kg/day): river pollution index (RPI), in particular on direct spillages or involuntary streaming in
		surface waters, and on infiltrations in ground water, (iii) land pollution (ton/month): Municipal
		waste clearance/treatment, in particular discharges of heavy metals, hydrocarbons, dioxins and
		phenols, (iv) other pollution (in particular noise (dB), smells, visual pollution, vibrations and
		radiations). Pollution cost (%): Pollution knows no borders, contaminants are spread throughout
		terrestrial and aquatic ecosystems, they are redistributed through the global economy by way of
		food and production chains. Therefore, planning ahead use of funds to conduct environmental
		management, resource use, environmental costs savings, as well as to reduce pollution,
		dangerousness and amount of environmental penalties as few as possible
7	Social cost	(i) Human resources development cost (\$/year): a). education of living, environment, venues,
·	22222	green mark, etc. b). public awareness: Training of personnel, carbon footprint products/labeling,
		and 3P (polluter pays principle), c). cultural activities. (ii) technological development cost: job
		creation (unemployment rate%). Environmental management accounting (EMA): EMA purpose
		is to analyze both financial and non-financial information, to track optimized both the
		environmental and economic performance, and to improve the lack of information exchange and
		poor interaction among various departments within the company. E.g. the social cost of a
		practice, the fundamental issues is to develop social and economic dimensions, in order to make
		more job opportunity and wealth creation.
8	Integrative	(i) societal commitment cost: laws, regulations, standards, (ii) working conditions cost:
Ü	cost	employment of health and safety, (iii) customer/stakeholders issues: mainly focusing on
	Cost	consumer/stakeholder healthcare and security, the protection of customer data and privacy, the
		provision of marketing and information to consumers, etc. According to ISO 14051,
		Environmental Management-Material Flow Cost Accounting-General Framework, an
		environmental management accounting method that provides information about the physical
		quantity and flow of energy, water resources, materials, waste, etc., to perform cost calculations
		and subsequent evaluations for an input-output balance. There are three types of TMR (total
		material requirement), BMFA (bulk material flow analysis), and SFA (substance flow analysis.
No.	Efficiency	Examples
1	Use of	(i) Turnover (unit sales/average inventory): inventory refers to either raw materials, components,
	inventory	or a product. The higher the turnover, the better the performance. (ii) Days on hand
	·	(inventory/daily consumption): low inventory represents a better performance. It indicates a
		rapid replenishment, a quick notification of inventory, and a short holding time. (iii) Reduction
		of the waiting time (%): it is calculated based on the ration of the time wasted for waiting. The
		shorter the waiting time is, the more efficient the process is.
2	Use of	(i) Load (capacity used/available capacity): the higher the storage capacity, the better the
	capacity	efficiency. (ii) Space efficiency (quantity /sq. m. plant space): the more efficient the space, the
	1 ,	better the processes, it includes managing orders, receiving and sending goods, and shipping.
		(iii) Orders per sales representative: more orders a sales representative have, more efficient a
		business is.
3	Use of capital	(i) Return on investment (ROI %): To calculate ROI, the net profit of an investment is divided
	•	by the capital required to produce the profit. (ii) Cash turnover (dollar sales/average cash): is
		used to indicate the stability of cash flow. The more frequent the cash flow, especially close to
		1

full capacity, the more efficient the productivity.

4	Use of social
	efficiency

3NJ1 refers to pursue use of the least social resource consumption and to provide products with the highest added value. (i) naked (% item improved rates): buy products with the least amount of packaging possible; buy products in bulk or in large amounts whenever possible (if this not an option, lobby your merchants'), (ii) near (% item improved rates): buy local products whenever you can (from your community's hunters, fishermen and pickers), (iii) natural (% item improved rates): buy organic products without pesticides or at least non-GMO products (products form the forests and their waters are certainly an excellent choice), and (iv) just (a practical balance among social, economic and environmental performance): e.g. keep the idea of "fair trade" in mind, so that workers will have good working conditions and are well paid. It should be as low resource consumed as possible. (i) energy (joule or kcal): the various energy sources are usually converted into a unified calorific value unit, which include coal (1tce = 7 million kcal), oil (1toe = 10 million kcal), natural gas (1 cubic meter = 90 million kcal, power (1 kWh = 860 kcal): different types of hydropower, nuclear power, wind power, and solar power, etc. (ii) water (per product unit/water volume), (iii) land (square meter), (iv) materials (per product units/material consumed rates) and (v) mining (utilized value of raw materials). Resource consumption rates: due to human intervention direct or indirect using resources or dumping waste in the environment and case of industrial accidents which has a potentially harmful effect on the sustainability of the natural environment, ecosystems and human health consequently. (vi) Health and safety (OHS): the purpose of contributing to well-being is to promote, protect and rehabilitate those of food supply, water, fuel, etc., as well as lower dangerous inputs (like raw materials, packaging, consumables, etc.), outputs (like finished

efficiency,

Use of eco-

5

1

No. Effectiveness

(CSL)

Service level

Examples

(i) Proximity (% customers within 24 hrs.): it refers to the distance between the warehouse and the customers. This helps a company to deliver the goods within in an agreed timeframe in order to maintain the service of high standard. (ii) On-time deliveries (%): top companies usually set targets for on-time deliveries higher than 95% for a better performance. (iii) Item and order fill rates (%): it is advised a company set the delivery rate of 97% and improve the SCC until the goal is achieved. (iv) Perfect orders (%): On time delivery, correct goods/documents, and perfect condition of the goods all make an order perfect. It is also an indicator representing a lower error-rate.

products, packaging, etc.), or wastes (like rubbishes, etc.)

2 Customer satisfaction

(i) Customer complaints (count/month): the number of complaints is usually used to indicate how much the customers are satisfied. Businesses also collect customers' opinions through questionnaires to gain feedback for future improvement. (ii) Percent returns (count/unit sales): businesses need to harness the return rate to reduce the cost of errors. (iii) Customer ratings (scale of 1 to 10): is a cost-effective and active way to get most feedback from the customers. (iv) Customer retention (% repeat buyers): "loyalty" is one of the most important assets for a company. With low loyalty, customers are unwilling to return and the businesses hurt.

3 Environmental friendliness

4Rs (i) reduce (% improved resource consumption), (ii) reuse (% repeat materials used /raw materials), (iii) recycle (% reused for other purposes), and (iv) recovery (% easiness/difficulty). 4Rs (%): Companies inevitably have an impact on the natural environment, wherever they are implemented. To reduce these impacts, companies should adopt some broader implications of 4Rs which include reduce (reduce consumption/over-packaging), reuse (make a good use of it for the other purposes instead of throwing away), recycle (can it easily recycle what I am buying/using/producing), and recovery (will it decompose and return to the earth). In addition, supply chain needs mutual assistance for environmental improvements of percentage recycled

material, to cut down waste generated from products and materials, ISO 14001 (EMS: environmental management system) can be used for the supply chain management in response to environmental friendliness.

4 Social satisfaction

(i) fair-trading (% count/production lines): free to offer goods and to choose their suppliers on the market, (ii) labor health and security (OHS license certificate): it not only focus on protect workers, but also includes the secondary effect which are to protect colleagues, family members, customers, suppliers, neighboring communities, and workplaces environment, etc., (iii) human rights (% count complaints/year): based on human dignity and value, equal rights of men and women, etc., human rights can enhance both reducing child and forced labor, freedom of association or discrimination and promoting social progress and living improvement. (iv) Community relationships (% count complaints/year): a mutually beneficial relationship with the communities to gain benefits by community support, loyalty, and good will. It can be a practice/balance between on urban and rural economic development or unemployment rate improved. SA 8000 (SMS: social management system) and OHSAS 18001 (OHS: occupational health and safety system) can be used for the supply chain management under the promotion of corporate social responsibility and sustainability.

5 Integrative satisfaction

(i) Green product (%): new environmentally sound processes introduced and product development, e.g., develop a product/service- from design to disposal, (ii) Security of products and installations/plants (Community satisfaction survey, scale of 1 to 10): Environmental information accuracy and availability are used in response to product programs and technology levels requests. Life cycle assessment ISO (LCA: 14040/14061), Global reporting initiative (Report) and UN Global Compact can be used to integrate with sustainability audit, benchmarking, and balanced scorecard (BSC) for sustainable supply chain management.

74 detailed indicators of 24 sub-categories are integrated and classified by the following articles

Economic performance indicators for general supply chain

- 1.~(2021). 22~Years of Lean Supply Chain Management: a science mapping-based bibliometric analysis. DOI: 10.1080/00207543.2020.1794076
- 2. (2020). A knowledge network and mobilization framework for lean supply chain decisions in agri-food industry. DOI: 10.4018/978-1-7998-0945-6.ch018
- 3. (2019). Performance indicators for supply chain resilience: review and conceptual framework. DOI: 10.1007/s40092-019-00322-2
- 4. (2018). Topics in lean supply chain management. ISBN 13: 978-9813229921
- 5. (2018). Supply chain coordination and innovativeness: A social contagion and learning perspective. DOI: 10.1016/j.ijpe.2018.07.033
- 6. (2017). The modelling and design process of coordination mechanisms in the supply chain. DOI: 10.1016/j.jal.2016.11.011
- 7. (2016). Supply Chain Management: strategy, planning, and operation 6th. ISBN-13: 978-0134731889
- 8. (2016). A BIM-based construction supply chain framework for monitoring progress and coordination of site activities. DOI: 10.1016/j.proeng.2016.11.656
- 9. (2015). Measuring retail supply chain performance: Theoretical model using key performance indicators (KPIs). DOI: 10.1108/BIJ-05-2012-0034
- 10. (2014). Proactive supply chain performance management with predictive analytics. DOI: 10.1155/2014/528917
- 11. (2013). Overview of coordination contracts within forward and reverse supply chains. DOI: 10.1016/j.jclepro.2013.02.001
- 12. (2012). Triple- A supply chain performance. DOI: 10.1108/01443571211195727
- 13. (2011). The Design of Dynamic Coordination Architecture and Supporting Platform for Agile Supply Chain. DOI:

- 10.1016/j.proeng.2011.08.622
- 14. (2010). Supply chains: A manager's guide. ISBN-13: 978-0321720696
- 15. (2007). Supply chain management: From vision to implementation. ISBN-13: 978-0131594203

Environmental, social and economic performance indicators for sustainable supply chain

- 16. (2021). Analysis of barriers of sustainable supply chain management in electronics industry: An interpretive structural modelling approach. DOI: 10.1016/j.clrc.2021.100026
- 17. (2021). A triple bottom line balanced set of key performance indicators to measure the sustainability performance of industrial supply chains. DOI: 10.1016/j.spc.2020.12.018
- 18. (2020). Supplier sustainability performance evaluation using the analytic network process. DOI: 10.1016/j.jclepro.2019.119439
- 19. (2019). Decision support for collaboration planning in sustainable supply chains. DOI: 10.1016/j.jclepro.2019.04.367
- 20. (2018). A conceptual framework for measuring sustainability performance of supply chains. DOI: 10.1016/j.jclepro.2018.04.073
- 21. (2017) Operations Management: Sustainability and Supply Chain Management ISBN-13: 978-1292148632
- 22. (2017). Green supply chain performance measures: A review and bibliometric analysis. DOI: 10.1016/j.spc.2017.01.003
- 23. (2016). A sustainable performance assessment framework for plastic film supply chain management from a Chinese perspective. DOI: 10.3390/su8101042
- 24. (2015). 20 years of performance measurement in sustainable supply chain management—what has been achieved? DOI: 10.1108/SCM-06-2015-0216
- 25. (2014). Determining and applying sustainable supplier key performance indicators. DOI: 10.1108/SCM-12-2013-0441
- 26. (2014). A framework for sustainable performance assessment of supply chain management practices. DOI: 10.1016/j.cie.2014.07.029
- 27. (2008) Reduce, Reuse, Recycle and Recover Waste: A 4R's Guide for the First Nations Communities of Quebec and Labrador URL: https://fnqlsdi.ca/wp-content/uploads/2015/09/Guide-3RV-ANG-complet-FINAL.pdf



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