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The Routledge Companion to Global Value Chains

Reinterpreting and Reimagining Megatrends
in the World Economy

Edited by Renu Agarwal, Christopher Bajada,
Roy Green and Katrina Skellern

THE ROUTLEDGE COMPANION TO GLOBAL VALUE CHAINS

This Companion provides a review of global value chains (GVCs) and the megatrends that are shaping them and will continue to reshape them in deep-set trajectories of change over the next few decades. Megatrends herald both challenges and opportunities. With the growing interest among business leaders and researchers in GVCs, this is a reference work which fills a gap in current literature by focusing on the new features of GVCs, including the shift of global purchasing power towards developing economies, the significance of emerging technologies and data analytics, the increasing tensions between globalisation and de-globalisation, and the role of micro-multinationals, start-up entrepreneurs, the public sector and middle markets in a fast-changing global economy.

The early chapters are essentially *intradisciplinary* in character, with the first seeking to explore some historical aspects of GVCs. Subsequent chapters cover the theory and practice of operations and supply chain management, emerging supply chain technologies, and the impact of inter-firm collaboration across sectors and economies. The final chapters take a more *interdisciplinary* approach and examine topics at the interface of GVCs with the economy, society, culture and politics.

This comprehensive handbook provides a timely analysis of leading-edge global megatrends and practices in one volume.

Renu Agarwal is Associate Professor, Operations and Supply Chain Management, and the Director of Strategic Supply Chain Management Programs at the University of Technology Sydney. Agarwal has extensive industry experience and now provides leadership in the disciplinary fields of service innovation, service value networks, supply chain management, dynamic capability building, management practices, innovation and productivity. Agarwal has undertaken research for many organisations, in particular federal and state governments, and industry groups and associations. Agarwal has published in several edited books and top-tier refereed management journal articles.

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“The rise of Global Value Chains in the 1990s and 2000s has transformed international trade. Today, about 70% of global trade flows through GVCs. This has a large impact on trade policy and the tools available to policymakers for shaping international trade. This handbook is a great resource for researchers and policymakers to navigate their way through the complexities of GVCs and design better and more accurate solutions to the challenges of today.”

**Xiaozhun Yi, Deputy Director-General, World Trade Organization,
Geneva, Switzerland**

“The Covid-19 pandemic showed us the importance – and fragility – of global value chains and the need to rethink our established paradigms. This handbook assembles the who’s who of researchers, analysts, strategic thinkers and doers in the field of supply chain management in a global context. What interests me most is the role intangible assets such as management practices, collaboration and dynamic capabilities in global value chains. We’ve always known intangible assets are an essential ingredient of a successful supply chain – as it turns out, their importance is amplified during these challenging times. This handbook provides a solid overview of the state of the art in this field and has plenty of inspiration for future GVCs design and management which will inspire future research and practice alike.”

Tim Reed, President, Business Council of Australia, Australia

“Over the past decade, my position at OECD has allowed me to witness how global value chains analysis has profoundly changed policymaking at national and international level. This authoritative book provides an excellent account of where the concept comes from, why it matters, how it is changing and the implications for different policy domains. Perhaps most importantly, the book also offers relevant insights on future trends from the best experts in the field.”

**Andrew Wyckoff, Director, OECD Directorate for Science, Technology and
Innovation, Paris, France**

“Today, global value chains are evolving because of trade wars, technology, demands for more inclusiveness and sustainability, and now COVID. Given the importance of global value chains in trade, and the importance of trade for development, it is key to understand the new dynamics driving them. This book provides an incredible analysis of the new trends, their drivers, and the way forward. It is extremely timely as changes are happening now and it is critical to provide sound advice to policymakers in the developing world based on thorough analysis and evidence. Having been at the World Bank Group for over 20 years providing trade policy advice to countries around the world, this book is a necessary input into the current debate on the role of trade in development and how best to go about recalibrating globalisation, to take new factors into account.”

**Mona Haddad, Practice Manager, East Asia and Pacific, Trade &
Competitiveness, World Bank Group, Washington DC, USA**

“In today’s turbulent and uncertain world, the challenges facing organisations dependent upon global demand and supply networks have never been greater. This timely and scholarly book brings new insights into how global value chains need to be re-shaped to adapt to the changed conditions that they must confront.”

**Professor Martin Christopher, Emeritus Professor of Marketing & Logistics,
Cranfield School of Management, Cranfield University, UK**

“Bringing together the wide and diverse field of global value chains into a single, comprehensive and insightful text is a daunting challenge. Yet, this is exactly what *The Routledge Companion to Global Value Chains* handbook does. With Covid-19, this is a hugely important area and this handbook contains chapters from some of the leading academics and practitioners in the field covering a range of topics such as the historical evolution of global value chains, its theory and practice, future megatrends in GVCs amongst many. Based on my 20 years of teaching and research experience in the area of supply chain management, this handbook is great and compelling to read, which I wholeheartedly recommend.”

**Professor A. Gunasekaran, Dean and Professor, School of Business and Public
Administration, California State University, USA**

“When emphasizing today the need for a digital transformation of organizations and industries, we sometimes overlook that we predominantly live in a material, physical world that is built on a complex global network of supply chains moving physical goods around the world (and, soon, into and from space as well). This handbook provides a solid introduction into the principles, models, and success factors of this field – also illustrating how digital technologies are creating smart supply chains utilizing information and communication technologies in novel ways.”

**Professor Frank Piller, Professor of Management and Co-Director, Institute
for Technology & Innovation Management; Scientific Director, Institute for
Management Cybernetics (IfU e.V.), RWTH Aachen, Germany**

“As we emerge into the new world – either post Covid or living with Covid – the fabric of our economic interactions are forever changed. The success of strong global value chains in a world grappling with technological change, increasing protectionist sentiment and the need to upscale industry are now more important than ever in driving our economic success, building competitiveness and developing our skills base. In these times of challenge and opportunity, this collection is more needed than ever for policymakers, business leaders and decision makers.”

Innes Willox, Chief Executive, Australian Industry Group, Australia

“Global Value Chains make up over two-thirds of global trade. Yet despite centuries of evolution and rapidly developing digital systems, Global Value Chains are inherently unstable – continuously evolving to market and technology drivers and megatrends. Will global megatrends such as offshoring be reversed by new technology such as blockchain and Industry 4.0? As demonstrated in 2020 – unplanned events can throw even the best plans into disarray. This book provides a survival guide.”

**Professor Graham Wren OBE FREng, FIMechE, FIET, FCIM, FIoD, FRSA,
EurIng, CEng, CDir, CMar, Special Advisor to the Principal and Major
Projects Director, University of Strathclyde, UK**

“This volume is comprehensive and deeply steeped in both theory and practice. Readers will quickly come to appreciate that value chains are the heart of wealth creation and that their effective design, management and improvement are core to economic, environmental and societal progress. We learn from the studies and contributions of this book that globalisation has many ongoing challenges and opportunities that manifest in both risks and returns, such as new technologies. The contributions on megatrends in global value chains are particularly insightful, as both practitioners and researchers will be able to use these to project forward from today’s challenges into the future. Congratulations to the authors and editors on integrating this body of knowledge.”

**Professor Danny Samson, Department of Management and Marketing,
University of Melbourne, Australia**

“The opportunity for investment and participation in local and global supply chains – particularly for SMEs – will continue to increase, with a shift to competing on value rather than cost, and through unique and service-based business models. This handbook comes at an important time – supply chain disruptions and uncertainty creates an opportunity for those who can competitively and collaboratively embrace Industry 4.0 technologies to design, manufacture and build service platforms for local and global markets.”

**David Chuter, CEO and Managing Director, Innovative Manufacturing
Cooperative Research Centre, Australia**

“Given the incredible turbulence in trade, understanding global value chains is so topical and even more important than ever as we emerge into the new world – either post Covid-19 or living with Covid-19. The fabric of our global economic interactions are forever changed. This handbook provides an excellent account of various theoretical concepts, why they matter, their enablers which help identify implications for different policy domains. This handbook as a knowledge resource is even more pertinent especially when the new factors of intangible resources such as management practices and dynamic capability are deemed essential in modern days. No matter what, this book provides an ideal map for academics, researchers, practitioners and policymakers on how best they should go about transforming and recalibrating globalization.”

**Professor Nicholas Bloom, William D. Eberle Professor of Economics,
Stanford University, USA**

“Recent events have added new considerations to established trends in supply chains the world over. The days of efficiency above all are now behind us – with resilience and sustainability now crucial elements of a supply chain for a single business, an industry sector or indeed a country. This well-researched book is timely for those wanting to re-evaluate the value delivered through Global Supply Chains in the light of today’s challenges.”

**Andrew Stevens, Chairman, Industry, Innovation and Science Australia,
Australia**

“This is a comprehensive coverage of theory and practice of Global Value Chains providing more or less everything that one needs in a single source – from the historical evolution of GVCs to the current mega trends and how GVCs will transform because of the COVID-19 pandemic. Chapters written by leading academics and practitioners provide up-to-date coverage of topics. As a researcher of GVCs or a practitioner/policymaker involved in GVCs – this handbook is all that you will need!”

**Professor Amrik Sohal, Department of Management, Monash Business
School, Monash University, Australia**



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and Katrina Skellern*

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Jakob Engel is an economist in the World Bank's Macroeconomics, Trade and Investment Global Practice. His research focus is on issues related to the economics and politics of regional integration, the emergence and impact of global value chains and production networks, trade and industrial policy, and financial regulation. He is the author of multiple publications in journals and edited volumes, including the recently published *The Distributional Impacts of Trade: Empirical Innovations, Analytical Tools, and Policy Responses* (with Deeksha Kokas, Maryla Maliszewska and Gladys Lopez-Acevedo, World Bank 2021). He previously worked for the UK Department for International Development, the Overseas Development Institute, and the Smith School for Enterprise and Environment at the University of Oxford.

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Derek Friday is Lecturer of Operations and Supply Chain Management at the University of Newcastle Australia. His PhD research focused on developing a new collaborative risk management framework to improve the resilience of supply chains against disruptions. Friday has over ten years of experience in supply chain management as an academic and practitioner. Friday is passionate about engaging with industry and is a chartered member of the Chartered Institute of Logistics and Transport Australia. He has worked as a consultant and project manager for inland transportation and related services projects with the United Nations missions in Africa. Friday has co-authored several refereed journal articles.

John Gattorna has spent the last four decades working inside numerous multi-national companies, seeking to shape theory from observed practice, and has succeeded. It is through this indepth applied research that he and his co-workers formulated the Dynamic Alignment™ business model, which has been progressively refined through use over time. Those companies that have applied John's concepts have exhibited large improvements in operational and financial performance, and corresponding increases in customer satisfaction.

Janet Godsell joined WMG in October 2013 from her prior position of Senior Lecturer at Cranfield University School of Management. Her career has been split between both industry and academia. She joined the faculty of Cranfield in 2001, following the completion of her Executive MBA there. She also completed her PhD at Cranfield, researching the development of a customer responsive supply chain. Prior to her return to academia, Godsell developed a successful career within industry, beginning at ICI/Zeneca Pharmaceuticals. Following this, she worked up to senior management level at Dyson, in both supply chain and operations management functions. At Dyson, she undertook a number of operational and process improvement roles within research and development, customer logistics, purchasing and manufacturing. Godsell is a chartered engineer and member of the IMechE. She is on the board and scientific committee of the European Operations Management Association (EurOMA), the cabinet of the UK roundtable of the Council of Supply Chain Management Professionals (CSCMP), and the manufacturing steering committee of the IMechE. She is on the editorial board of three journals, including the *International Journal of Operations and Production Management*, and she is an advocate for improving the uptake of STEM subjects by schoolchildren.

Anwara Happy is a PhD candidate of operations and supply chain management at the School of Business in the University of Technology Sydney (UTS), Sydney, Australia. She has completed her master's of philosophy in 2020 from Western Sydney University, Sydney, Australia. She received her master's of business in operations and supply chain management (procurement stream) degree in 2014 from UTS. Happy has professional experience both in government and private sectors in Australia and Bangladesh with specialisation in supply chain-related fields.

As part of the job, she trained fellow employees on various aspects of operational issues. Her ten years of experience as a procurement professional in Technicolor Australia (from 2001 to 2011) provided her with an opportunity to understand profound practical knowledge relating to supply chain management. Along with the industrial experience, Happy has academic experience; she has presented a paper at the international conference of ANZIBA 2020. She has successfully contributed two book chapters. Her current research interests are in emerging technologies such as blockchain, cloud computing in the context of operations and supply chain management, including the adoption of Lean, Agile and Six Sigma philosophies in supply chain management.

Norma Harrison is Professor of Management, Macquarie Business School, and Past Dean at the Macquarie Graduate School of Management (MGSM). She has served as professor of operations management at the China Europe International Business School, and as the foundation head of the Graduate School of Business at the University of Technology, Sydney. Harrison's teaching, research and consulting interests are in the areas of innovation and technology management, sustainable supply chains, the globalisation of operations and performance improvement. She continues to publish in academic journals and to serve on journal editorial review boards. She chaired and conducted the Production and Operations Management Society (POMS) 2017 International Conference in Sydney (<http://pomssydney2017.com>) and she is the co-chair of the 2020 International Conference of Operations and Supply Chain Management (ICOSCM) (<https://www.icoscm-anzam2020.com>). Since May 2020, Harrison has conducted a series of public webinars titled "Response and Resilience in Supply Chains Amid COVID-19" involving panellists from industry, government and academia.

Mile Katic is a multi-disciplinary management scholar with expertise that spans the likes of technology and innovation management, operations management as well as strategic management. He has been involved in facilitating teaching and learning across multiple faculties, disciplines and education levels at both the University of Technology Sydney and other institutions abroad. With professional experience in the Australian manufacturing industry, Mile is particularly interested in boundary-spanning research that helps transfer leading edge management theory into practical know-how. To this end, he has collaborated with various government agencies as well as other universities to deliver practice-centred research concerning Australian management capabilities, the nexus between strategic management and technology convergence and, more recently, the managerial implications of industrial energy efficiency and strategic decision making under uncertainty.

Arshinder Kaur is currently working as Professor in the Department of Management Studies, IIT Madras, Chennai. She worked at Curtin University, Australia, for one year in the Curtin Business School in 2014 as a senior lecturer. She has more than 35 publications in reputed international journals like *Omega*, *Journal of Cleaner Production* and *International Journal of Production Economics*. Her doctoral work on the topic supply chain coordination has been accepted as a Highly Commended Award Winner of the 2008 Emerald/EFMD Outstanding Doctoral Research Award. Her areas of research interests are supply chain coordination and contracts, and sustainable food supply chains. She has coordinated many industry programmes.

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Raymond Markey joined Macquarie University at the end of 2011 as Professor of Employment Relations in the Department of Marketing and Management and Director of the new Centre for Workforce Futures. He had previously spent almost seven years as a professor of employment relations at the Auckland University of Technology Business School (2005–11), and was foundation director of the New Zealand Work and Labour Market Institute (2006–2011) as well as associate dean of research (2006–2009). Prior to that he was convenor of the Industrial Relations Programme at the University of Wollongong from 1979 to 2005, where he also established and led the Centre for Work and Labour Market Studies.

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Mark Matthews is a public policy and innovation strategy specialist who has worked in both academia and consulting. He has a doctorate in science and technology policy studies from the Science Policy Research Unit (SPRU), University of Sussex. Matthews has held senior positions in universities in the UK and Australia, and has also worked on innovation strategy for a number of consulting firms. In addition to innovation strategy and economic development, he has a research interest in the management (and mismanagement) of uncertainty and risk in the public sector. His work on global value chains (GVCs) has a strong focus on empirical analyses of the structure and performance of GVCs using the new global data sets now becoming available. Matthews is currently Director in the Ipsos MORI Social Research Institute based in London, UK.

Steven A. Melnyk (PhD, Western, 1981) is Professor of Supply Chain Management at Michigan State University. He has co-authored 21 books, over 100 refereed journal articles and numerous practitioner articles. His research focus includes supply chain risk and resilience, strategic supply chain management, supply chain cyber security, and certified management standards. Melnyk sits on the editorial review board for numerous journals, including the *Journal of Business Logistics*, the *International Journal of Production Research*, and the *International Journal of Operations and Production Management*. From 2014 to 2016, Melnyk was a member of the APICS Board of Directors. From 2017 to 2019, Melnyk had a joint appointment from the University of Newcastle (Australia) where he was the Newcastle Global Innovation Chair in Supply Chain Management. In 2017, the Academy of Management, the Operations and Supply Chain Division, recognised Melnyk as a Distinguished Scholar in the field. Melnyk is recognised for this ability to bridge the gap between theory and practice. In 2018, Melnyk received the Withrow Teacher-Scholar Award from the Eli Broad School of Business, Michigan State University, in recognition of his work as both a researcher and a teacher. His recent work has included a study for the Department of the Navy addressing the question of how good a customer was the Navy and a study for the National Defense Industry Association regarding supply chain cybersecurity.

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PREFACE

The rise of global value chains

GVCs have become the world economy's backbone and central nervous system.

*O. Cattaneo, G. Gereffi, and C. Staritz, 2010,
Global Value Chains in a Postcrisis World: A
Development Perspective, Washington, DC: The
World Bank, p. 7*

This Companion provides a review of global value chains (GVCs) and the megatrends shaping them. We have seen over the last century the various ways in which the world manages the production and delivery of goods and services, sometimes summarised as “made-here-sold-there goods crossing borders” (Daria and Winkler, 2016). Globalisation has now evolved alongside automation and digitalisation such that finished products are now the result of manufacturing and assembly across multiple countries around the globe. In particular, GVCs have expanded each country's reach into international trade by enabling them to “make things, not just sell things” (Daria and Winkler, 2016). While multinational enterprises account for one-third of world production and half of world trade (OECD, 2018), GVCs now make up more than two-thirds of world trade. They have become an all-pervasive mechanism that facilitates the exchange of raw materials and intermediate parts for the production of goods and services, services for businesses, and capital goods (OECD, 2020).

Significantly, the scale and pervasiveness of the 2008–2009 global financial crisis (GFC) reflected the increased complexity of globalisation, and the COVID-19 pandemic has even more viscerally exposed the vulnerability of GVCs and the loss of “sovereign capability.” Overlaying the impact of the pandemic is the re-emergence of geopolitical conflict and the struggle for technological pre-eminence, particularly between the US and China. As a result, while globalisation is unlikely to go into full-scale retreat, organisations are actively seeking new ways to diversify and shorten their supply chains, so as to become less dependent on any single country's production and assembly. For example, in an attempt to mitigate risk, organisations are changing the locations from which they source their resource requirements (Wu, 2020), while also instigating new collaborative relationships not previously entered into or possibly even considered (see Chapter 4). Consequently, the future growth and sustainability of GVCs will need to accommodate some element of “deglobalisation” as businesses reshore identified strategic

activities and avoid excessive dependence on externally developed and controlled technologies (“The changes Covid-19,” 2020).

Characteristics of GVCs

It is sometimes said that the global economy can be viewed either through the lens of growth and structural change in individual countries, developed and developing, or through GVCs, the complex network structure of flows of goods, services, capital and technology across national borders (World Bank, 2019a). This Companion covers both aspects as they are complementary to one another and demonstrate the underlying technological and broader economic forces at work in shaping the patterns of interconnectedness at both the regional and global levels. Over the last two decades, the world has been transformed and energised by GVCs, which have reduced trade barriers, lowered the costs of logistics and distribution, precipitated a massive structural change, and created many new jobs in developing countries. Combined with technological advances, GVCs are transforming the way international trade operates and have become a major driver of global economic growth, which must also be re-engineered for environmental sustainability (World Bank, 2019a).

A major contribution of GVCs has been to source inputs more efficiently and effectively, as well as access knowledge and capital through innovative collaborations and internationalisation that have facilitated expansion into new markets (OECD, 2013; also see Chapter 4). The evidence suggests that GVCs have had a pivotal role in reducing poverty and have been instrumental in offering opportunities to developing countries to grow and catch up with more affluent nations (World Bank, 2019b). Yet the growth of GVCs has slowed since the GFC. From 2000 to 2007, complex GVCs expanded at a faster rate than world production. During the GFC there was naturally some retrenchment of GVCs followed by recovery during 2010–2011, but subsequently GVC growth was sluggish. It was only recently, since 2017, that complex GVCs again began to grow faster than world production, and until COVID-19 their rise was considered unstoppable due to the fragmentation and dispersion of business activities across the globe. Now we see as a result of technological change and an increasing emphasis in business models on core competences, an increasing tension between on-shoring through the move of production and sourcing closer to the end user (Clarke-Sather and Cobb, 2019) and outsourcing enabling more cost-competitive externalisation of business activities (Kano et al., 2019).

GVCs are both global and regional, and their characteristics have varied over time. Between 2000 and 2017, intra-regional GVC trade increased in “Factory Asia” reflecting, in part, upgrading by China and other Asian economies. In contrast, intra-regional GVC trade in “Factory Europe” and “Factory North America” decreased slightly relative to inter-regional GVC trade reflecting stronger linkages with Factory Asia. Among leading economies, China has emerged as an important hub in traditional trade and “simple GVC networks,” but the US and Germany remain the most important hubs in “complex GVC networks.”

Global collaboration, integration and alignment

According to the Organisation for Economic Co-operation and Development (OECD), there is evidence of a decline in fragmentation of production across the world, and even when the growth of GVCs declined during 2011, firms were not only reducing their use of foreign inputs but became part of shorter GVCs (Miroudot and Nordström, 2019). Essentially there are two GVC megatrends in progress here. The first megatrend involves a shift in the share of global purchasing power towards developing economies with major changes in the characteristics of

GVCs. Regional trade has risen as a share, especially in Asia, resulting in more production being consumed in domestic markets in these developing countries instead of being exported to countries outside the region. This is shifting the trade paradigm from being one based on comparative advantage to one based on differential labour costs and labour arbitrage. Whilst this megatrend is still in transition, these low-income developing countries will continue to depend on access to global demand using traditional, labour-intensive processes in manufacturing.

The second megatrend involves digitalisation of GVCs (Schniederjans, Curado, and Khalajhedayati, 2020) through emergence of blockchain (Chalmers, Matthews, and Hyslop, 2019), Industry 4.0 technologies (Bibby and Dehe, 2018; Fatorachian and Kazemi, 2018) and data analytics (Sivarajah et al., 2017; Yasmin et al., 2020). This will over time transform entire economies and the way in which manufacturing and trade take place. Future GVCs will ultimately be built on digital foundations, and these new technologies and skills will become core across GVCs. In Asia, GVCs have already displaced the labour-intensive technologies, especially in the textile and clothing sector. The future of GVCs not only relies on the traditional growth model but also increasingly on the ability of the “industries of the future” to adopt Supply Chain 4.0 principles. By this is meant the reorganisation of supply chains – design and planning, production, distribution, consumption, and reverse logistics functions – using big data, 3D printing, advanced (autonomous) robotics, smart sensors, augmented reality, artificial intelligence, cloud computing and the internet of things (IoT). With the adoption of these emerging technologies, complex GVC activities will be reshaped and reimaged (World Bank, 2019a).

Small and medium enterprises

Whilst the rise of GVCs is a phenomenon of our time as a result of the fragmentation and dispersion of business activities throughout most of the world, the benefits have so far primarily been accrued by large multinationals, which are best placed to take advantage of the new opportunities. However, with the shift from vertically integrated mass production to smaller, more specialised interdependent units of the production process, small and medium-sized enterprises (SMEs) have also become more globalised. Even during the broader productivity slowdown in the advanced economies over recent years, SMEs have become the “frontier firms” experiencing significantly greater productivity growth than the “laggards,” which still comprise the vast majority of SMEs. The problem is that many SMEs have not taken the step to becoming “micromultinationals,” as there is limited awareness of the benefits they gain from participation in international trade (Gonzalez et al., 2019).

SMEs face a range of challenges, including limited access to resources and finances for new investments, lower skills related to management, limited access information and technology, and lower levels of productivity, thus making it harder for them to grow and scale globally (Gonzalez et al., 2019). GVCs can help SMEs access better and cheaper inputs to increase their global presence and competitiveness, and offer new opportunities through “smart specialisation” in intermediate products rather than attempting to master all the tasks required to produce final goods. New research finds that when a manufacturing SME has a fully functional, interactive website, not surprisingly its participation in GVCs and trade generally significantly increases. In particular, such SMEs are more likely to use foreign inputs for production and export a larger share of their output. Further, digital connectivity is found to be more important for smaller firms than for large ones whether or not the firm participates in trade. As such, with the rise of the digital economy, being able to exploit the potential of digital platforms will allow SMEs to improve their international trade performance and build a competitive advantage in global ecosystems (OECD, 2008).

To maximise the potential gains for SMEs, a holistic approach is crucial, particularly one that combines high-quality management, investment in information and communications technology (ICT) infrastructure and human capital, access to finance and logistics, and trade-based reforms. Additionally, more resilient GVC networks can be achieved by strategies at the firm level that place an emphasis on risk awareness, risk mitigation and greater transparency, integration, and alignment across the network. It has been noted that this can be achieved through programs supporting greater agility and adaptability, as SMEs operate under extremely volatile, uncertain, complex and ambiguous (VUCA) environments (Schoemaker, 2018). Improving the availability of historical data also helps to better understand and integrate SMEs in GVC networks.

Impact of COVID-19: A future megatrend

Change can be so profound and dislocating that it is challenging to distinguish disaster from opportunity.

“The changes covid-19 is forcing on to business,”
2020, The Economist, <https://www.economist.com/briefing/2020/04/11/the-changes-covid-19-is-forcing-on-to-business>

For some time GVCs have been hailed as “the world economy’s backbone and central nervous system” (Cattaneo, Gereffi and Staritz, 2010, p. 7) and they are recognised as the vital governance structures of business value creation. However, according to a new McKinsey report, “supply chain disruptions lasting a month or longer now happen every 3.7 years on average” (Lund et al., 2020). In addition, the operation of GVCs has been challenged by the COVID-19 pandemic, reigniting an old debate about the supply chain risks associated with international production systems. The pandemic has exposed the vulnerabilities of interconnected and interdependent trade relationships that involve multiple actors spanning multiple countries with supply chain activities and resources running both upstream and downstream (Gereffi, Humphrey and Sturgeon, 2005).

The COVID-19 outbreak shook the world and not only restricted the value chain flow of medical supplies needed for patient treatment, protection and control (World Health Organization, 2020), but also brought the movement of people and goods across national boundaries almost to a complete halt. In some countries, particularly the US, the pandemic has been characterised as more a policy failure than a market failure necessitating more resilient supply chains and diversified sourcing patterns (Gereffi, 2020). Whilst in other similar health-related crises, such as SARS, Ebola and swine flu, serious supply chain disruptions were experienced, the devastating long-term economic impact of COVID-19 is on a different, more far-reaching scale. At the same time that it offers new opportunities for inclusive, low emissions growth paths, along with active fiscal and monetary policies, this crisis must be placed into a unique category of global socioeconomic disruptions (Gupta, 2020), where “companies need an understanding of their exposure, vulnerabilities, and potential losses to inform reliance strategies” (Lund et al., 2020).

While businesses, governments and researchers are grappling with the fallout from the pandemic, those engaged in GVCs and the revival and reinvention of manufacturing capability are already identifying the new opportunities created by this disruption (Green, 2020). Certainly, the pandemic has triggered alarm bells about the pitfalls of reliance in any GVC on a single country or market, but it has also accelerated the trend to the shorter, more manageable GVCs associated with digitalisation, artificial intelligence and the rise of Industry 4.0. It has also

refocused attention on the role of GVCs in addressing the major issues of climate change and worker protections. This will signify not a reversal of globalisation but the transition to new forms of global connectivity with production and sourcing closer to the end user and a discontinuous shift in the choices and expectations of consumers, suppliers and organisations (Harari, 2020). While it is not possible to predict exactly how globalisation will evolve from here, we can be sure that COVID-19 will have a major impact in accelerating current observable trends and preparing the way for new ones.

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HANDBOOK STRUCTURE

The Routledge Companion to Global Value Chains: Reinterpreting and Reimagining Megatrends in the World Economy is organised into five parts that draw together key insights into the megatrends driving global value chains:

Part I: History of global value chains

Part II: Global value chains: Theory and practice

Part III: Role of emerging technologies and data analytics in global value chains

Part IV: Megatrends in global value chains

Part V: Implications

These five parts cover a range of topics, both emergent and traditional. The aim of this GVC companion handbook, as with others in the Routledge series, is to provide a state-of-the-art and an up-to-date, enduring and authoritative account of the GVC field.

ABBREVIATIONS

Following is a list of terms used as abbreviations in *The Routledge Companion to Global Value Chains*, along with their extended form. The abbreviations are listed in alphabetical order and by no means are exhaustive.

Abbreviation	Expanded form
3D	three dimensional
3PL	third-party logistics
G20	Group of Twenty
AD	Anno Domini
ADB	Asian Development Bank
ACP	African, Caribbean and Pacific
ADB I	Asian Development Bank Institute
AfCFTA	African Continental Free Trade Area
AFTA	ASEAN Free Trade Area
AHP	analytic hierarchy process
ASCM	agri-food supply chain management
ASEAN	Association of Southeast Asian Nations
Ai	Australian Industry
B2B	business-to-business
B2C	business-to-consumer
BCMA	barcoded medication administration
BERD	business expenditure on R&D
BC	Before Christ
BIT	bilateral investment treaty
BTD	Bilateral Trade Database
CEPT	Common Effective Preferential Tariff
CFA	confirmatory factor analysis
CEO	chief executive officer
CMB	common method bias
CoV	coefficient of variation
COVID-19	2019 novel coronavirus or 2019-nCoV

Abbreviations

CR	consistency ratio
CRM	customer relationship management
DC	dynamic capabilities
DDMRP	Demand Driven Materials Requirements Planning
EEF	(now Make UK)
E2E	end to end
ERP	enterprise resource planning
EU	European Union
FDI	foreign direct investment
FOIK	first of a kind
FTA	free trade agreement
FVA	foreign value added
FVC	food value chain
GATT	General Agreement on Trade and Tariffs
GDP	gross domestic product
GM	General Motors
GPN	Global Production Network
GSP	Generalised System of Preferences
GFVC	global food value chain
GVA	global value architecture
GVC	global value chain
IAS	Innovation Activity Separability
ICIO	inter-country input–output
ICT	information and communications technology
ICTSD	International Centre for Trade and Sustainable Development
IoT	internet of things
IP	intellectual property
IPR	intellectual property rights
ITA	Information Technology Agreement
KPIs	key performance indicators
LDC	least developed country
LBE	learning by exporting
LCD	liquid crystal display
M&A	mergers and acquisitions
MAR	medical administration record
MNC	multinational corporation
MNE	multinational enterprise
MRIO	multi-regional input–output
MRP	materials requirement planning
NAIT	National Animal Identification and Tracing
NGO	non-government organisation
NIC	newly industrialised country
NSW	New South Wales
OEA	original equipment assembling
OECD	Organisation for Economic Co-operation and Development
OBM	original brand manufacturing
OEM	original equipment manufacturing
ODM	original design manufacturing