AGILITY OF SUSTAINABLE PRODUCT DEVELOPMENT PROCESS FRAMEWORK FOR CHINESE SME PRODUCTS

By

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February 2024

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The 4th industrial revolution promoted the development of all countries in the world to get rid of the existing model, and realise the transformation, upgrading of manufacturing, intelligent manufacturing, green manufacturing, and information industry. In a competitive economic environment, SMEs are forced to improve their operational performance and applying efficiency to simplify and speed up the implementation of new product introductions to better control, coordinate, and manage them. However, most of SMEs in China are unable to apply and produce the sustainable products due to lack of knowledge of systematic and appropriate process, especially in the early stage of product development. To fill this gap, a new sustainable design with agility integrated framework is introduced for the sustainability and optimisation development process of China's SME products. The research focuses on existing methods in product development as well as an agile approach that can be used for better product design. Product designers and SMEs are involved as a respondent through survey by questionnaire. The result acknowledged 24 sustainable product design variables and eight (8) agility management variables that are significant for the

sustainability and optimisation product development process. Furthermore, the research also introduced a new framework namely Agility of Sustainable Product Development Process (ASPDP) as a guideline for product developers in the product development process that can effectively be used to produce a sustainable product with possible solutions and resources, systematic and efficient, and quick available in the market as well as can increase product quality, reduce the development cost, and increase profits of the SMEs.

Keywords: Product development process, sustainable product, agility approach and small-medium enterprise, and eco-innovation

SDG: GOAL 9: Industry, Innovation, Infrastructure

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Doktor Falsafah

KETANGKASAN KERANGKA PROSES PEMBANGUNAN PRODUK LESTARI UNTUK PKS CINA

Oleh

ZHAO ZHINING

Februari 2024

Pengerusi : Profesor Madya Ts. Hassan Bin Hj. Alli, PhD
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Revolusi perindustrian ke-4 mempromosikan pembangunan semua negara di dunia untuk menyingkirkan model sedia ada, merealisasikan transformasi dan menaik taraf pembuatan, pembuatan pintar, pembuatan hijau, dan industri maklumat. Dalam persekitaran ekonomi yang kompetitif, PKS terpaksa meningkatkan prestasi operasi mereka dan menggunakan kaedah yang cekap untuk memudahkan dan mempercepatkan pelaksanaan pengenalan produk baharu dalam mengawal, menyelaras dan mengurusnya dengan lebih baik. Bagaimanapun, kebanyakan PKS di China tidak dapat mengaplikasi dan menghasilkan produk lestari kerana kekurangan pengetahuan terhadap proses sistematik dan bersesuaian terutamanya diperingkat awal pembangunan produk. Matlamat penyelidikan ini adalah untuk membangunkan rangka kerja baharu kaedah reka bentuk produk lestari dengan integrasi ketangkasan untuk kemampanan dan proses pembangunan produk pengoptimuman PKS di China. Penyelidikan memfokuskan kepada kaedah sedia ada dalam pembangunan produk serta pendekatan ketangkasan yang boleh digunakan untuk reka bentuk produk yang lebih baik. Pereka produk dan PKS adlah terlibat sebagai responden melalui tinjauan

melalui soal selidik. Hasilnya mengiktiraf 24 pembolehubah reka bentuk produk lestari dan lapan (8) pembolehubah pengurusan ketangkasan yang signifikan untuk pembangunan produk kelestarian dan pengoptimuman proses. Di samping itu, penyelidikan ini juga memperkenalkan rangka kerja baharu iaitu Agility of Sustainable Product Development Process (ASPDP) sebagai garis panduan untuk oleh pereka bentuk produk dalam proses pembangunan produk yang boleh digunakan secara berkesan untuk menghasilkan produk yang mampan dengan penyelesaian dan sumber yang mungkin, sistematik dan cekap, serta cepat tersedia di pasaran serta mampu meningkatkan kualiti produk, mengurangkan kos pembangunan, dan meningkatkan keuntungan PKS.

Kata kunci: Proses pembangunan produk, produk mampan, pendekatan ketangkasan dan perusahaan kecil-sederhana, dan eko-inovasi

SDG: MATLAMAT 9: Industri, Inovasi, Infrastruktur

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LIST OF ABBREVIATIONS

Symbols	Full Name
AMVs	Agility Management Variables
ASPDP	Agility of Sustainable Product Development Process
BTO	Build To Order
CBR	Case-Based Reasoning
CE	Chinese Enterprises
CI	China's Industrial
CM	China’s Manufacturing
CMI	China’s Manufacturing Industry
EMS	Environmental Management System Standards
ETAP	Environmental Technology Action Plan
EU	Europe Union
FAHP	Fuzzy Analytic Hierarchy Process
GDP	Gross Domestic Product
GGA	Group Genetic Algorithm
IT	Information Technology
IoT	Industrial Internet of Things
LCA	Life Cycle Analysis
LCD	Life Cycle Design Method
MCDA	Multi Criteria Decision Analysis
NPD	New Product Development
OBOR	One Belt or One Road
OECD	Organisation for Economic Co-operation and Development
PSS	Product Service System
R&D	Research and Development

RDM	Recoverable Design Method
SMEs	Small and Medium-sized Enterprise
SM	Sustainable Manufacturing
S.PSS	Concept of Sustainable Product-Service System
SPSS	Statistical Software Package for Social Sciences
SPDVs	Sustainable Product Design Variables
TBL	Triple Bottom Line
TRIZ	Theory of Inventive Problem Solving
US	United State
WFAM	Weighted Fuzzy Evaluation Method
3R	Reuse, Recycle, Reduce

CHAPTER 1

INTRODUCTION

1.1 Introduction

The introduction chapter explains and discusses the research background followed by the statement of the issue under investigation, research aims, research questions, research objectives, the scope and area of study, and the significance of the research. Finally, the structure of the thesis is established in the last chapter.

1.2 Research Background

Over the years, several companies have been recognised the role of sustainability in increasing their global competitiveness. Engaging in sustainable manufacturing was contributing for an efficiency process and success of a new product. Sustainable development for manufacturing product has become increasingly important in society and enterprises. In product design, sustainable design has received most discussed topics in the global industrial manufacturing industry, with different countries offering different sustainable development strategies. Sustainable product design is becoming increasingly important due to its potential for positive environmental, social impacts and successful financial performance. The ability to develop products that are both environmentally friendly and economically viable is essential to achieving a sustainable future. Furthermore, an increasingly strict regulations, diverse product demands, and increasing public awareness have driven the development of sustainable product design. Sustainable product design is gradually shifting from a design mindset tool for designers to a solution and development strategy for the business sector. In today's rapidly changing world, it is more important than ever for businesses and

consumers to recognise the importance of sustainable development. In order to make the shift towards sustainability, businesses need to be mindful of the entire their sustainable product and processes.

China has the world's most complete industrial system and industrial support in the manufacturing industry. China is also known as the world's main processing and manufacturing based on the veritable of world factories. In 2018, China's Manufacturing Industry (referred to as CMI) reached over 30 percent of the gross domestic product (referred to as GDP), which has become the pillar industry of China's national economy (Li, 2018). Since 2010, the added value of CMI has jumped to first place in the world and become the world's largest manufacturing country (Jenkins & Barbosa, 2012). Besides that, CMI also has their characteristics and is very large. However, there is not enough strength when compared to another country in the world. From the total of 29 industries in China, only 17 industries are categorised as resource-intensive low-tech industries and there are found difficulties in extending and upgrading to the high-tech industry (Qu et al., 2020).

CMI is slow down compared to other developed countries, especially in terms of industrial structure, innovation ability, overall quality, and competitiveness, and at the low end of the global value chain. There is become a big gap between the developed countries in terms of innovation capacity, resource utilisation rate, degree of information, and other relevant indicators of sustainable technology. Meanwhile, CM (China's Manufacturing) small and medium-sized enterprises (referred to as "SMEs") account for only 99.8 percent of the total size of company legal entities, which has become an important force in promoting China's Industrial Development (Qu et al.,

2020). The SMEs have some inherent disadvantages, such as light assets, poor business stability, narrow financing channels, strong dependence on loans, low degree of business standardisation, and imperfect management (Udell, 2015). The SMEs in China are known to lack capital, talent, technology, and knowledge, weak scientific and technological strength, low product technology content, low added value, and competitiveness (Wang et al., 2019). The ability of specialisation and cooperation of SMEs is low, lacking all-round and deep-seated cooperation from the strategic level to the operational level. It is difficult for SMEs to form industrial advantages due to the lack of effective organisations and performance. They are mainly depending on the technological achievements of universities and scientific research institutions. Likewise, there are also difficulties in the process of applicability transformation of scientific and technological achievements, which makes the results of cooperation difficult to determine, and the interests of all parties involved are difficult to guarantee.

In the process of Research and Development (referred to as "R&D"), production, and marketing of sustainable products, the main problems of SMEs as identified: first, the product designers are unclear about the concept of sustainable products in product design and development process; second, the industry has lack the ability of R&D and innovation, and cannot bear the risk of R&D and lack of financial support; third, they are pursue short-term interests and unwilling to bear of social responsibility; and lastly, they are monotonous categories and services to make sustainable production and difficult the products meet the needs of consumers. In business practice, the key stakeholders involved in the sustainable design process refer to all those parties who need to be directly involved and/or come to play a crucial role when the integration of environmental and/or social concerns into business objectives takes place (Baldassarre

et al., 2020). Pursuing an efficient and easy to promote sustainable product development is the best way to alleviate the shortage of capital, technology, and personnel in the process of sustainable product R&D.

However, it is undeniable that ecological design and the ecological innovation concept behind it are still the main contents in the practice of sustainable design, especially in China, where environmental problems are the focus of work, while ecological innovation is the main body of sustainable design in China. At the same time, after decades of research on sustainable design, many sustainable designs practice patterns have been developed, such as methods for sustainable product and/ or service development in the industry e.g., solution-oriented partnership methodology framework, and framework for sustainable product development in the context of high value engineering. Sustainable design: 'involves using design methods, products and processes that minimise the ecological impact of design and construction upon the earth and all species....' (Pollack & Pillote, 2006). Nevertheless, the existing sustainable design methods not often consider the needs of SMEs. Various models also difficulty learning and choosing by the practice process of SMEs. Based on the management, research and development, production, sales, use, and recycling status of China's manufacturing SMEs, the sustainable product R&D process should be combined with agility factors to attempt to improve the sustainable product development of China's SMEs. In business practice, the strategic objective of sustainable design refers to the scope of the design process when integrating environmental and/or social concerns into the objectives of organizations (Baldassarre et al., 2020).

Furthermore, new requirements for sustainable development in product design also respected the social culture, and social innovation with incorporated services and systems into a new design. The design needs to be more business-oriented and at the same time focus on technical details, for example, when discussing the specifics of product or service elements (Ceschin, 2014). Product design is typically a task of the R&D department, where designers, engineers, and in some cases, scientists collaborate (Baldassarre et al., 2020). Hence, the industrial design profession is required to deliver and contribute more to the market growth. With the continuous upgrading and transformation of the industry and forceful development of the creative industry, the definition and connotation of industrial design are constantly growing and deepening to meet the needs of the development of the times. The innovation industry not only creates material wealth but also extends the representational design of products to the design of the way of existence. There are also gradual transfers from the specific product form to the demand and behaviour mode in the specific social form and more generally extends it to the non-material field. Industrial designers also need sustainable innovation poses new environmental and societal challenges, which are complex and interdisciplinary (George et al., 2016).

1.2.1 Statement of Issue

Sustainable design known as design for sustainability or sustainable product development, aims to transform product development practices to enable all species to flourish for all time (Faludi et al., 2020). The concept of sustainable design is developed from green design, ecological design, and life cycle design. Sustainable design not only emphasises environmental protection and resource conservation but also includes the sustainable development of humans, society, culture, and economy,

which is to establish a balanced and harmonious relationship between humans, the environment, and society. From product design point of view, the concept of sustainable design requires the product designers to consider the environmental, social, economic, and cultural factors during the initial design stage and play a role integrating the life cycle of the product. However, these theoretical speculations on sustainable design will not go to great lengths, unless they are tied to solid business considerations (Dobers & Strannegård, 2005; Baldassarre et al., 2019; Faludi et al., 2020). Indeed, evidence shows that sustainable design ideas can be implemented successfully only when they are grounded in the objectives and operations of organisations (Ceschin, 2014; Baldassarre et al., 2017).

With the development of a sustainable design concept, sustainable design has become a strategy to establish and develop sustainable solutions. Through the systematic planning of products and services throughout the production and consumption cycle, the product designer can realise the design of replacing material products with utility and services. Moreover, the continuously developing the concept of sustainable design not only provides more opportunities for market success but also poses a new challenge for product designers. In addition, the industry continuously exchanges to obtain the latest information that can be completely interpretation of the information, and later translated them into products that have become the basic requirement for product designers.

Nowadays, China's SMEs have become an important force to promote CMI. Chinese SMEs have high failure and low survival rates, which worsen the problems of resource waste, illegal financing, and poor management (Bai et al., 2017). Alvarez and Barney

(2017) indicated that entrepreneurship research is still in the "describing the phenomena" stage and should pay more attention to "the unique characteristics of decision-making from the different cultures, the different stages of entrepreneurial periods, and its legitimacy efforts in SMEs operation. Xiao and North (2018); Chia-Hsin et al., (2021), SMEs should adjust their operating strategies in different economic development of China. Understanding the main success factors of NPD in China will help reveal the innovation dynamics in other emerging markets as well as improve the success of technology transfer as more US production and technology are outsourced to these new markets (Mu et al., 2007).

Design is a central aspect of sustainable business model innovation (Baldassarre et al., 2020; Faludi et al., 2020). However, most product designers in China's SMEs are unable to meet such requirements, especially to interpret and apply the sustainable concept during the product development process. Hence, to support the design activity, most product designer needs a flexible and efficient approach to optimising the development process of China's SMEs. A specific approach needs be designed that can be eased to use as well as quickly and embedded with the concept of product sustainability. Toward the end, it can contribute for product sustainability and success in the market.

1.3 Aim

This research aims to develop a new sustainable design with agility integrated framework for the sustainability and optimisation development process of China's SME products. The framework is an integrated of sustainable design and agility variables as a guideline for product developers in the product development process

that can effectively be used to produce a sustainable product with possible solutions and resources, systematic and efficient, and quickly available in the market as well as can increase product quality, reduce the development cost, and increase the SMEs profits.

1.3.1 Research Questions

To achieve the research objectives, the following research questions are framed: -

RQ1) What are the significance of sustainable design and agility approach in the development process of China's SME products?

RQ2) What are the variables of sustainable design and agility for China's SME product development process?

RQ3) How to develop a new framework that integrates the variables of sustainable design and agility for the sustainability and optimisation development process of China's SME products?

1.3.2 Research Objectives

To achieve the research aim, this research focuses on the following specific objectives:

RO1) To identify the significance of sustainable design and agility approach in the development process of China's SME products.

RO2) To investigate the variables of sustainable design and agility for product China's SME product development process.

RO3) To develop a new sustainable design with agility integrated framework for the sustainability and optimisation development process of China's SME products.

1.4 Scope and Area of Research

China's sustainable products will affect the world's consumption and resource development levels. In order to study the agility and sustainable product development methods of Chinese SMEs, a survey was conducted on Chinese SMEs with both research and production capabilities. After field investigations in multiple provinces and cities in China, it was found that the number of SMEs with both capabilities is very limited. Excluding SMEs that are unwilling to cooperate with the research, this study will use small sample size data to achieve the research objectives. These SMEs come from different industries, such as labour protection products, equipment, furniture, and daily necessities.

This study investigated the perspectives of product designers and business managers, who are the main participants in determining agility and sustainability in the product development process. It explores the product development process and design methodology decisions of product designers and business managers during the product planning phase of the design process. In order to address the agility and sustainability of product development, this study specifically investigates sustainable design methods and agile management methods. Especially, this study aims to improve the flexibility and efficiency of sustainable product research and development for Chinese SMEs. This is because many SMEs still face difficulties in developing products. Through in-depth research on the attitudes, processes, and methods of product development for SMEs, a new approach will emerge to enable product designers and managers to timely grasp information, respond to changes, and collaborate efficiently in the sustainable product development process, thereby reducing the cost of sustainable product development.

1.5 Significance of the Research

The research contribution covered on:

a) Introduce a new framework acknowledged as Agility of Sustainable Product Development Process (ASPDP) Framework for sustainability and optimisation of China's SME products.

b) Produce a new product with high quality, actively seek market opportunity, and quickly respond to customer diversification demand, as well as serve global customers.

c) Create a product with a systematic process accompanied with modern information technology, faster and flexible processes, and well organisational structure to provide products and services that meet the personalised needs of customers at a cost close to mass production.

1.6 Thesis Outline

This thesis consists of six (6) chapters in total. Each chapter is associated with each stage of the research progress. The structure of the thesis is as follows:

Chapter 1 Introduction - The chapter introduces the background of the study followed statement of the issue, research aim, research questions, research objectives, scope and areas of study, and the significance of the research. Finally, the thesis outline is explained.

Chapter 2 Literature Review - This chapter addressed theories and concepts of product innovation and management of SMEs in China. Three main sections included are the theoretical background of the manufacturing industry in China, the sustainable concept in product innovation, and the concept of agility approach in product development. The end of the chapter stated the GAP and future research.

Chapter 3 Research Method - this chapter explained the research approach that was implemented in the research study. It described the importance of research and connected them with the research strategy. The research

plan, source of data, data collection, data, and analysis are also explained.

Chapter 4 Data Analysis and Results - The results in this chapter are presented based on objectives 1 and 2 of this research. All results were analysis and presented as quantitative data. The results will be used as a recommendation and guideline to develop a new framework in Chapter 5.

Chapter 5 Agility of Sustainable Product Development Process (ASPDP) Framework - This chapter focuses on the development of a new framework for sustainable design and optimisation of China SME products. The validation of the new framework was also conducted and explained.

Chapter 6 Conclusion and Recommendation - The chapter concludes and represents the research findings. It also provides a suggestion for future work that may be carried out in connection with the research presented in this research.

REFERENCES

Aboelmaged, M., Administration, B., & Emirates, U. A. (2018). The drivers of sustainable manufacturing practices in Egyptian SMEs and their impact on competitive capabilities: A PLS-SEM model. *Journal of Cleaner Production.* 175, 207-221.

Aheleroff, S., Mostashiri, N., Xu, X., & Zhong, R. Y. (2021). Mass personalisation as a service in industry 4.0: A resilient response case study. *Advanced Engineering Informatics,* 50, 101438.

Aheleroff, S., Philip, R., Zhong, R. Y., & Xu, X. (2019). The degree of mass personalisation under industry 4.0. *Procedia CIRP*. 81, 1394-1399.

Ahmed, S., Wallace, K. M., & Blessing, L. T. (2003). Understanding the differences between how novice and experienced designers approach design tasks. *Research in engineering design*, 14, 1-11.

Ahuja, J., Panda, T. K., Luthra, S., Kumar, A., Choudhary, S., & Garza-Reyes, J. A. (2019). Do human critical success factors matter in adoption of sustainable manufacturing practices? An influential mapping analysis of multi-company perspective. *Journal of Cleaner Production.* 239. 117981.

Al Kilani, M., & Kobziev, V. (2016). An overview of research methodology in information system (IS). *Open Access Library Journal*. 3(11), 1-9.

Akadiri, P. O., Olomolaiye, P. O., & Chinyio, E. A. (2013). Multi-criteria evaluation model for the selection of sustainable materials for building projects. *Automation in Construction.* 30*,* 113-125.

Alli, H. (2015). *A design methodology incorporating user requirements and preference for a successful product.* PhD Thesis: University of Malaya, Kuala Lumpur, Malaysia

Alfaris, A., Siddiqi, A., Rizk, C., de Weck, O., & Svetinovic, D. (2010). Hierarchical decomposition and multidomain formulation for the design of complex sustainable systems. *Journal of Mechanical Design*. 132(9), 8190283.

Aliaga, M., & Gunderson, B. (2002). *Interactive statistics*. Virginia. USA: Pearson Education.

AlQershi, N. A., Saufi, R. B. A., Muhammad, N. M. N., Yusoff, M. N. H., & Thurasamy, R. (2023). Green creativity, TQM and business sustainability of large manufacturing firms in Malaysia. *The TQM Journal*. 35(4), 924-945.

Alvarez, S. A., & Barney, J. B. (2017). Resource-based theory and the entrepreneurial firm. *Strategic Entrepreneurship: Creating a New Mindset.* 89(1), 87-105.

Ambec, S., Cohen, M. A., Elgie, S., & Lanoie, P. (2013). The Porter hypothesis at 20: can environmental regulation enhance innovation and competitiveness? *Review of environmental economics and policy.* 7(1), *2-22.*

Anantasarn, N. of C. and B. E., Suriyapraphadilok, U., & Babi, D. (2017). A computer-aided approach for achieving sustainable process design by process intensification. *Computers and Chemical Engineering.* 105(4), 56-73.

Andersen, M. M. (2008, June). Eco-innovation - towards a taxonomy and a theory. *DRUID Academy Conference.* Cambridge, UK: January 19-12.

Aoyama, R. (2016). "One belt, one road": China's new global strategy. *Journal of Contemporary East Asia Studies.* 5(2), 3-22.

Arranz, N., Arroyabe, M., Li, J., & Fernandez de Arroyabe, J. C. (2020). Innovation as a driver of eco-innovation in the firm: An approach from the dynamic capability's theory. *Business Strategy and the Environment.* 29(3), 1494-1503.

Arranz, N., F. Arroyabe, C., & Fernandez de Arroyabe, J. C. (2019). The effect of regional factors in the development of eco-innovations in the firm. *Business Strategy and the Environment.* 28(7), 1406-1415.

Arroyo, P., Tommelein, I. D., & Ballard, G. (2016). Selecting globally sustainable materials: A case study using choosing by advantages. *Journal of Construction Engineering and Management*. 142(2), 05015015.

Argument, L., Lettice, F., & Bhamra, T. (1998). Environmentally conscious design: Matching industry requirements with academic research. *Design Studies.* 19(1), 63-80.

Arundel, A., & Kemp, R. (2009). *Measuring eco-innovation*. Working Paper Series: Maastricht Economic and Social Research and Training Centre on Innovation and Technology, United Nations University, Maastricht, Netherland.

Aslam, H., Blome, C., Roscoe, S., & Azhar, T. M. (2018). Dynamic supply chain capabilities: How market sensing, supply chain agility and adaptability affect supply chain ambidexterity. *International Journal of Operations & Production Management*. 38(12), 2266-2285.

Ausubel, J. H., & Grübler, A. (1995). Working less and living longer: Long-term trends in working time and time budgets. *Technological Forecasting and Social Change.* 50(3), 195-213.

Ayodele, A. S., & Falokun, G. O. (2003). *The Nigerian economy and pattern of development*. Lagos: JODAD.

Babbie, E. (2010). Research design. *The practice of social research (12 edition).* Wadsworth, Belmont: Cengage Learning.

Badurdeen, F., Aydin, R., & Brown, A. (2018). A multiple lifecycle-based approach to sustainable product configuration design. *Journal of Cleaner Production. 200,* 756-769.

Bag, S., & Pretorius, J. H. C. (2022). Relationships between industry 4.0, sustainable manufacturing and circular economy: proposal of a research framework. *International Journal of Organizational Analysis*, 30(4), 864-898.

Bai, Y., Yuan, J. & Pan J. (2017). Why SMEs in emerging economies are reluctant to provide employee training: Evidence from China. *International Small Business Journal*. 35(6), 751-766.

Bai, C., Sarkis, J., & Dou, Y. (2015). Corporate sustainability development in China: review and analysis. *Industrial Management & Data Systems,* 115(1), 5-40.

Bai, C., Kusi-Sarpong, S., Badri Ahmadi, H., & Sarkis, J. (2019). Social sustainable supplier evaluation and selection: a group decision-support approach. *International Journal of Production Research.* 57(22), 7046-7067.

Baines, T. S., Lightfoot, H. W., Evans, S., Neely, A., Greenough, R., & Peppard, J. (2007). State-of-the-art in product-service systems. *Proceedings of the Institution of Mechanical Engineers Part B Journal of Engineering Manufacture.* 221(10), 1543-1552.

Bakshi, B. R., Ziv, G., & Lepech, M. D. (2015). Techno-ecological synergy: A framework for sustainable engineering. *Environmental Science & Technology.* 49(3), 1752-1760.

Baldassarre, B. R., Calabretta, G., Bocken, N. M. P., & Jaskiewicz, T. J. (2017). Bridging sustainable business model innovation and user-driven innovation: A process for sustainable value proposition design. *Journal of Cleaner Production*. 147, 175-186.

Baldassarre, B. R., Schepers, M., Bocken, N. M. P., Cuppen, E., Korevaar, G., Calabretta, G., (2019). Industrial Symbiosis: Towards a design process for eco-industrial clusters by integrating circular economy and industrial ecology perspectives. *Journal Cleaner Production*. 216, 446-460.

Baldassarre, B. R., Keskin, D., Diehl, J. C., Bocken, N., & Calabretta, G. (2020). Implementing sustainable design theory in business practice: A call to action. *Journal of Cleaner Production*. 273, 123113.

Baldassarre, B., Konietzko, J., Brown, P., Calabretta, G., Bocken, N., Karpen, I. O., & Hultink, E. J. (2020). Addressing the design-implementation gap of sustainable business models by prototype: A tool for planning and executing small-scale pilots. *Journal of Cleaner Production*, 255, 120295.

Barbara, L., de Giorgio, R., Maccarini, M. R., Stanghellini, V., & Corinaldesi, R. (1993). Evaluation of gastrointestinal innervation in humans. *Journal of the Autonomic Nervous System.* 43, 5.

Barbieri, N., Ghisetti, C., Gilli, M., Marin, G., Nicolli, F., 2016. A survey of the literature on environmental innovation based on main path analysis. *Journal Economy Survey.* 30, 596-623.

Bardos, K. S., Ertugrul, M., & Gao, L. S. (2020). Corporate social responsibility, product market perception, and firm value. *Journal of Corporate Finance*, 62, 101588.

Baxter, D., & Turner, N. (2023). Why Scrum works in new product development: the role of social capital in managing complexity. *Production Planning & Control,* 34(13), 1248-1260.

Beuren, F. H., Ferreira, M. G. G., & Miguel, P. A. C. (2013). Product-service systems: A literature review on integrated products and services. *Journal of Cleaner Production.* 47, 222-231.

Beatriz, A., Sousa, L. De, Ndubisi, N. O., Roman, B. M., & Seles, P. (2019). Sustainable development in Asian manufacturing SMEs: Progress and directions. *International Journal of Production Economics.* 225(C).

Bellesi, F., Lehrer, D., & Tal, A. (2005). Comparative advantage: The impact of ISO 14001 environmental certification on exports.

Berg, V., Birkeland, J., Nguyen-Duc, A., Pappas, I. O., & Jaccheri, L. (2020). Achieving agility and quality in product development-an empirical study of hardware startups. *Journal of Systems and Software*, 167, 110599.

Bernard, A., & Fischer, A. (2002). New trends in rapid product development. *CIRP Annals - Manufacturing Technology.* 51(2), 635-652.

Bhanot, N., Rao, P.V., Deshmukh, S., 2017. An integrated approach for analysing the enablers and barriers of sustainable manufacturing. *Journal of Cleaner Production.* 142, 4412-4439.

Birkin, F., Cashman, A., Koh, S. C. L., & Liu, Z. (2009). New sustainable business models in China. *Business Strategy and the Environment.* 18(1), 64-77.

Bitencourt, C. C., de Oliveira Santini, F., Zanandrea, G., Froehlich, C., & Ladeira, W. J. (2020). Empirical generalizations in eco-innovation: A meta-analytic approach. *Journal of Cleaner Production.* 245*,* 118721.

Blizzard, J. E., & Klotz, L. (2012). A framework for sustainable whole systems design. *Design Studies.* 33(5), 456-479.

Blome, C., Paulraj, A., & Schuetz, K. (2014). Supply chain collaboration and sustainability: a profile deviation analysis. *International Journal of Operations & Production Management*. 34(5), 639-663.

Blome, C., Schoenherr, T., & Rexhausen, D. (2013). Antecedents and enablers of supply chain agility and its effect on performance: A dynamic capabilities perspective. *International Journal of Production Research.* 51(4), 1295-1318.

Boons, F., & Lüdeke-Freund, F. (2013). Business models for sustainable innovation: state-of-the-art and steps towards a research agenda. *Journal of Cleaner production.* 45, 9-19.

Borchardt, M., Sellitto, M. A., Wendt, M. H., & Pereira, G. M. (2011). Redesign of a component based on ecodesign practices: Environmental impact and cost reduction achievements. J*ournal of Cleaner Production.* 19(1), 49-57.

Bos-Brouwers H. 2010. Corporate sustainability and innovation in SMEs: Evidence of themes and activities in practice. *Business Strategy and the Environment.* 19(7), 417-435.

Boyd, G., Dutrow, E., & Tunnessen, W. (2008). The evolution of the ENERGY STAR® energy performance indicator for benchmarking industrial plant manufacturing energy use. *Journal of Cleaner Production.* 16(6), 709-715.

Brandstotter, M., Haberl, M., Knoth, R., & Kopacek, B. (2003). *IT on demand - towards an environmental conscious service system for Vienna (AT).* 3rd International Symposium on Environmentally Conscious Design and Inverse Manufacturing. Tokyo, Japan: December 8-11.

Brasil, M. V. D. O., Abreu, M. C. S. D., Silva Filho, J. C. L. D., & Leocádio, A. L. (2016). Relationship between eco-innovations and the impact on business performance: an empirical survey research on the Brazilian textile industry. *Revista de Administração (São Paulo)*. 51, 276-287.

Brezet, H. (1997). Dynamics in eco-design practice. *Industry and Environment-PARIS*. 20, 21-24.

Brown, S., & Eisenhardt, K. (1998). *Competing on the edge: Strategy as structured chaos.* Boston, MA: President and Fellows of Harvard College.

Brunnermeier, S. B., & Cohen, M. A. (2003). Determinants of environmental innovation in US manufacturing industries. *Journal of Environmental Economics and Management.* 45(2), 278-293.

Bruns, B., Herrmann, F., Grünewald, M., & Riese, J. (2021). Dynamic design optimization for flexible process equipment. *Industrial & Engineering Chemistry Research*, 60(20), 7678-7688.

Bryman, A., Becker, S., & Sempik, J. (2008). Quality criteria for quantitative, qualitative, and mixed methods research: A view from social policy. *International Journal of Social Research Methodology.* 11(4), 261-276.

Buchert, T., Halstenberg, F., Bonvoisin, J., & Lindow, K. (2017). Target-driven selection and scheduling of methods for sustainable product development. *Journal of Cleaner Production.* 161, 403-421.

Buchert, T., Kaluza, A., Halstenberg, F. A., Lindow, K., Hayka, H., & Stark, R. (2014). Enabling product development engineers to select and combine methods for sustainable design. *Procedia CIRP.* 15, 413-418.

Bullinger, H. J., Warschat, J., & Fischer, D. (2000). Rapid product development an overview. *Computer in Industry.* 42(2-3), 99-108.

Buttol, P., Buonamici, R., Naldesi, L., Rinaldi, C., Zamagni, A., & Masoni, P. (2012). Integrating services and tools in an ICT platform to support eco-innovation in SMEs. *Clean Technologies and Environmental Policy.* 14(2), 211-221.

Cabral, I., Grilo, A., & Cruz-Machado, V. (2012). A decision-making model for lean, agile, resilient and green supply chain management. *International Journal of Production Research*. 50(17), 4830-4845.

Caldera, H., Desha, C., Dawes, L., 2018. Exploring the characteristics of sustainable business practice in small and medium-sized enterprises: experiences from the Australian manufacturing industry. *Journal of Cleaner Production.* 177, 338-349.

Caldera, S., Desha, C. J. K., & Dawes, L. (2019). Evaluating the enablers and barriers for successful implementation of sustainable business practice in 'lean'SMEs. *Journal of Cleaner Production*. 218(2), 575-590.

Cappa, F., Del Sette, F., Hayes, D., & Rosso, F. (2016). How to deliver open sustainable innovation: An integrated approach for a sustainable marketable product. *Sustainability.* 8(12), 1341.

Carden, A. (2010). The fortune at the bottom of the pyramid: eradicating poverty through profits. *Economic Affairs.* 28(4), 89-91.

Carrillo-Hermosilla, J., Del Río, P., & Könnölä, T. (2010). Diversity of eco-innovations: Reflections from selected case studies. *Journal of Cleaner Production.* 18(10-11), 1073-1083.

Carrión-Flores, C. E., & Innes, R. (2010). Environmental innovation and environmental performance. *Journal of Environmental Economics and Management.* 59(1), 27-42.

Carvalho, A., Matos, H., & Gani, R. (2013). SustainPro-A tool for systematic process analysis, generation and evaluation of sustainable design alternatives. *Computers and Chemical Engineering.* 50(5), 8-27.

Casado-Belmonte, M. D. P., Marín-Carrillo, G. M., Terán-Yépez, E., & Capobianco-Uriarte, M. D. L. M. (2020). What is going on with the research into the internationalization of small and medium-sized enterprises (SMEs)? An

intellectual structure analysis into the state-of-the-art (1990-2018). *Publications*. 8(1), 11.

Chassagnon, V., & Haned, N. (2015). The relevance of innovation leadership for environmental benefits: A firm-level empirical analysis on French firms. *Technological Forecasting and Social Change.* 91*,* 194-207.

Cheaitou, A., Gardoni, M., & Hamdan, S. (2019). A decision-making framework for environmentally sustainable product design. *Concurrent Engineering Research and Applications.* 27(4), 295-304.

Check, J., & Schutt, R. K. (2012). *Research methods in education*. California: SAGE.

Ceschin, F. (2014). *Sustainable product-service systems: Between strategic design and transition studies.* London: Springer International Publishing.

Chang, J. (1969). *Industrial development in pre-communist China*. London: Routledge.

Chia-Hsin, C., Yu-En, L., Xiu-Wen, Y., & Chih-Chun, H. (2021). Factors driving the sustainable development of the Chinese SMEs: The resource-based theory perspective. *Revista Argentina de Clínica Psicológica*. XXX(N°1), 841-852

Clark, W. C., van Kerkhoff, L., Lebel, L., & Gallopin, G. C. (2016). Crafting usable knowledge for sustainable development. *PNAS.* 113(17), 45750-8

Clark, G., Kosoris, J., Hong, L. N., & Crul, M. (2009). Design for sustainability: Current trends in sustainable product design and development. *Sustainability*. 1, 409-424.

Chen, I. J. (2001). Planning for ERP systems: analysis and future trend. *Business Process Management Journal.* 7(5), 374-386.

Chen, J., & Wang, L. (2021). *Entrepreneurship and innovation of small and medium-sized enterprises in China.* Oxford: Oxford University Press.

Chen, L., Zhao, X., Tang, O., Price, L., Zhang, S., & Zhu, W. (2017). Supply chain collaboration for sustainability: A literature review and future research agenda. *International Journal of Production Economics.* 194, 73-87.

Chen, T. (2017). Competitive and sustainable manufacturing in the age of globalization. Sustainability. 9(1), 26.

Chen, X., Liu, Z., & Zhu, Q. (2020). Performance evaluation of China's high-tech innovation process: Analysis based on the innovation value chain". *Technovation.* 74, 42-53.

Chen, Y., Fay, S., & Wang, Q. (2011). The role of marketing in social media: How online consumer reviews evolve. *Journal of Interactive Marketing.* 25(2), 85-94.

Chen, Y. S., Lin, S. H., Lin, C. Y., Hung, S. T., Chang, C. W., & Huang, C. W. (2020). Improving green product development performance from green vision and organizational culture perspectives. *Corporate Social Responsibility and Environmental Management*, 27(1), 222-231.

Chu, C. H., & Hsu, Y. C. (2006). Similarity assessment of 3d mechanical components for design reuse. *Robotics & Computer Integrated Manufacturing.* 22(4), 332-341.

Chu, C. H., Lo, C. H., & Cheng, H. C. (2016). Cognitive shape similarity assessment for 3d part search. *Journal of Intelligent Manufacturing.* 28(7), 1-16.

Ciccullo, F., Pero, M., Caridi, M., Gosling, J., & Purvis, L. (2018). Integrating the environmental and social sustainability pillars into the lean and agile supply chain management paradigms: A literature review and future research directions. *Journal of Cleaner Production*. 172, 2336-2350.

Cloodt, M., Hagedoorn, J., & Van Kranenburg, H. (2006). Mergers and acquisitions: Their effect on the innovative performance of companies in high-tech industries. *Research Policy*. 35(5), 642-654.

Cochran, D. E., & Hendricks, S. (2016). Extension of manufacturing system design decomposition to implement manufacturing systems that are sustainable. *Journal of Manufacturing Science and Engineering.* 138, 101006-1.

Colombo, L. A., Pansera, M., & Owen, R. (2019). The discourse of eco-innovation in the European Union: An analysis of the Eco-Innovation Action Plan and Horizon 2020. *Journal of Cleaner Production*, 214, 653-665.

Copani, G., & Behnam, S. (2020). Remanufacturing with upgrade PSS for new sustainable business models. *CIRP Journal of Manufacturing Science and Technology*, 29, 245-256.

Cordero, O. X., & Polz, M. F. (2014). Explaining microbial genomic diversity in light of evolutionary ecology. *Nature Reviews Microbiology*. 12(4), 263-273.

Cordero, R., Farris, G. F., & Ditomaso, N. (2010). Technical professionals in cross-functional teams: their quality of work life. *Journal of Product Innovation Management.* 15(6), 550-563.

Creswell, J. W. (1994). *Research design: Qualitative and quantitative approaches.* California: SAGE Publication Inc.

Croft McKenzie, E., & Durango-Cohen, P. L. (2010). An input-output approach for the efficient design of sustainable goods and services. *The International Journal of Life Cycle Assessment*. 15, 946-961.

Cuerva, M. C., Triguero-Cano, Á., & Córcoles, D. (2014). Drivers of green and non-green innovation: empirical evidence in Low-Tech SMEs. *Journal of Cleaner Production.* 68*,* 104-113.

Da Silveira, G., Borenstein, D., & Fogliatto, F. S. (2001). Mass customization:

Literature review and research directions. *International Journal of Production Economics.* 72(1), 1-13.

Dattilo, C. A., Zanchi, L., Del Pero, F., & Delogu, M. (2017). Sustainable design: An integrated approach for lightweighting components in the automotive sector. *International conference on sustainable design and manufacturing.* Bologna, Italy: April 26-28.

Davey, C. L. (2005). Design for the surreal world? A new model of socially responsible design. *The Sixth European Academy of Design Conference.* Hochschule fur Kunste Bremen, Bremen: March 29-31.

DeGroote, S. E., & Marx, T. G. (2013). The impact of IT on supply chain agility and firm performance: An empirical investigation. *International Journal of Information Management*. 33(6), 909-916.

Del Giudice, M., Garcia-Perez, A., Scuotto, V., & Orlando, B. (2019). Are social enterprises technological innovative? A quantitative analysis on social entrepreneurs in emerging countries. *Technological Forecasting and Social Change*. 148, 119704.

De Medeiros, J. F., Ribeiro, J. L. D., & Cortimiglia, M. N. (2014). Success factors for environmentally sustainable product innovation: a systematic literature review. *Journal of cleaner production*, 65, 76-86.

Demirel, P., & Kesidou, E. (2011). Stimulating different types of eco-innovation in the UK: Government policies and firm motivations. *Ecological Economics.* 70*(8),* 1546-1557.

Demirel, P., & Kesidou, E. (2019). Sustainability-oriented capabilities for eco-innovation: Meeting the regulatory, technology, and market demands. *Business Strategy and the Environment.* 28(5), 847-857.

de Oliveira Brasil, M. V., de Abreu, M. C. S., da Silva Filho, J. C. L., & Leocádio, A. L. (2016). Relationship between eco-innovations and the impact on business performance: an empirical survey research on the Brazilian textile industry. *Revista de Administração.* 51(3), 276-287.

Díaz-García, C., Gonzalez-Moreno, A., & Saez-Martínez, F. (2015). Eco-innovation: In- sights from a literature review. *Innovation.* 17, 6-23.

Dobers, P., & Strannegård, L. (2005). Design, lifestyle, and sustainability: Aesthetic consumption in a world of abundance. *Business Strategy and the Environment*. 14(5), 324-336.

Dosi, G. (1982). Technological paradigms and technological trajectories: a suggested interpretation of the determinants and directions of technical change. *Research Policy.* 11(3), 147-162.

Dong Y, & Den J. (2010). The connotation of ecological innovation, classification system and research progress. *Acta Ecologica Sinica.* (9), 2465-2474

Dove, R. (2002). Response ability: the language, structure, and culture of the agile organization. *Insight.* 6(2), 389-394.

Dove, R., & Turkington, G. (2014). Graceful Migration of Agile Systems Across Next-Generation Life Cycle Boundaries. *The Flexible Enterprise*. New Delhi: Springer.

Dubey, R., Altay, N., Gunasekaran, A., Blome, C., Papadopoulos, T., & Childe, S. J. (2018). Supply chain agility, adaptability and alignment: empirical evidence from the Indian auto components industry. *International Journal of Operations & Production Management*. 38(1), 129-148.

Dubey, R., Gunasekaran, A., & Childe, S. J. (2015). The design of a responsive sustainable supply chain network under uncertainty. *The International Journal of Advanced Manufacturing Technology.* 80(1), 427-445.

Dubey, R., & Gunasekaran, A. (2016). The sustainable humanitarian supply chain design: agility, adaptability, and alignment. *International Journal of Logistics Research and Applications.* 19(1), 62-82.

Dubey, R., Gunasekaran, A., & Singh, T. (2015). Building theory of sustainable manufacturing using total interpretive structural modelling. *International Journal of Systems Science: Operations & Logistics.* 2(4), 231-247.

Du Plessis, C. (2002). Agenda 21 for sustainable construction in developing countries. *CSIR Report BOU E.* 204, 2-5.

Durmusoglu, Z. D. U. (2018). A TOPSIS-based approach for sustainable layout design: activity relation chart evaluation. *Kybernetes.* 47(10), 2012-2024.

Eaden, J. A., Abrams, K., & Mayberry, J. F. (1999). The Crohn's and Colitis Knowledge Score: a test for measuring patient knowledge in inflammatory bowel disease. *The American Journal of Gastroenterology*. 94(12), 3560-3566.

Eckstein, D., Goellner, M., Blome, C., & Henke, M. (2015). The performance impact of supply chain agility and supply chain adaptability: the moderating effect of product complexity. *International Journal of Production Research*. 53(10), 3028-3046.

Economy, E. C. (2018). *The third revolution: Xi Jinping and the new Chinese state.* Oxford: Oxford University Press.

Economidou, M., Todeschi, V., Bertoldi, P., D'Agostino, D., Zangheri, P., & Castellazzi, L. (2020). Review of 50 years of EU energy efficiency policies for buildings. *Energy and Buildings*. 225, 110322.

Edwards, P., Roberts, I., Sandercock, P., & Frost, C. (2004). Follow-up by mail in clinical trials: does questionnaire length matter? *Controlled Clinical Trials*. 25(1), 31-52.

Egmond, E. L. C. V., & Scheublin, F. J. M. (2005). *Successful Industrialization, innovation, and prefabrication in construction.* Helsinki: Faculty of Technology Management, Eindhoven University of Technology.

Ekins, P. (2010). Eco-innovation for environmental sustainability: Concepts, progress and policies. *International Economics and Economic Policy.* 7(2), 267-290.

Esfahbodi, A., Zhang, Y., Watson, G., & T Zhang. (2017). Governance pressures and performance outcomes of sustainable supply chain management - An empirical analysis of UK manufacturing industry. *Journal of Cleaner Production*. 155, 66-78.

Evans, S., Vladimirova, D., Holgado, M., Van Fossen, K., Yang, M., Silva, E. A., & Barlow, C. Y. (2017). Business Model Innovation for Sustainability: Towards a Unified Perspective for Creation of Sustainable Business Models. *Business Strategy and the Environment.* 26(5), 597-608.

Fallah Shayan, N., Mohabbati-Kalejahi, N., Alavi, S., & Zahed, M. A. (2022). Sustainable development goals (SDGs) as a framework for corporate social responsibility (CSR). *Sustainability*, 14(3), 1222.

Faludi, F., Hoffenson, S., Kwok, S. Y., Saidani, M., Hallstedt, S. I., Telenko, C. & Martinez, V. (2020). A research roadmap for sustainable design methods and tools. *Sustainability.* 12(19), 1-28.

Faludi, J., Baumers, M., Maskery, I., & Hague, R. (2017). Environmental impacts of selective laser melting: do printer, powder, or power dominate? *Journal of Industrial Ecology*. 21(S1), S144-S156.

Faludi, J. (2015). A sustainable design method acting as an innovation tool. In *ICoRD'15 - Research into Design Across Boundaries Volume 2: Creativity, Sustainability, DfX, Enabling Technologies, Management and Applications*. New Delhi: Springer.

Fang, F., Cheng, K., Ding, H., Chen, S., & Zhao, L. (2016). Sustainable design and analysis of CNC machine tools: sustainable design index-based approach and its application perspectives. *International Manufacturing Science and Engineering Conference American Society of Mechanical Engineers*. Blacksbug, Virginia: June 27- July 01.

Farel, R., Thevenet, C., & Yune, J. H. (2017). Sustainable manufacturing through creation and governance of eco-industrial. *Journal of manufacturing Science and Engineering.* 138(10), 101003-1.

Fargnoli, M., Pighini, U., & di Litta, E. (2003). Design for assembly and design for disassembly: Two ways for the development of sustainable products. *The 14th*

International Conference on Engineering Design. Stockholm, Sweden: August 19-21.

Fei, Z. (2002). Rapid product development in agile manufacturing mode. *Economic Management.* (14), 45-50.

Feng, Z. (2004). Fuzzy optimization model of maintenance design for product level reuse. *Chinese Journal of Mechanical Engineering.* 17(2), 197-199.

Ferreira Junior, R., Scur, G., & Nunes, B. (2022). Preparing for smart product-service system (PSS) implementation: an investigation into the Daimler group. *Production Planning & Control*, 33(1), 56-70.

Fisher, O., Watson, N., Porcu, L., Bacon, D., & Rigley, M. (2018). Cloud manufacturing as a sustainable process manufacturing route. *Journal of Manufacturing Systems.* 47, 53-68.

Flyvbjerg, B. (2006). Five misunderstandings about case-study research. *Qualitative Inquiry.* 12(2), 219-245.

Foulon, J., Lanoie, P., & Laplante, B. (2002). Incentives for pollution control: regulation or information? *Journal of Environmental Economics and Management.* 44(1), 169-187.

Foxon, T., & Andersen, M. M. (2009). The greening of innovation systems for eco-innovation - towards an evolutionary climate mitigation policy. *In DRUID Summer Conference-Innovation, Strategy and Knowledge*. Frederiksberg: June 17-19.

Foxon, T., & Pearson, P. (2008). Overcoming barriers to innovation and diffusion of cleaner technologies: some features of a sustainable innovation policy regime. *Journal of Cleaner Production.* 16*,* S148-S161.

Fresner, J. (1998). Cleaner production as a means for effective environmental management. *Journal of Cleaner Production.* 6, 171-179.

Fresner, J., Jantschgi, J., Birkel, S., B€arnthaler, J., Krenn, C. (2010). The theory of in- ventive problem solving (TRIZ) as option generation tool within cleaner pro- duction projects. *Journal of Cleaner Production.* 18(2), 128-136.

Frizziero, L., Francia, D., Donnici, G., Liverani, A., & Caligiana, G. (2018). Sustainable design of open molds with QFD and TRIZ combination. *Journal of Industrial and Production Engineering*. 35(1), 21-31.

Frondel, M., Horbach, J., Rennings, K. (2008). What triggers environmental man-agement and innovation? Empirical evidence for Germany. *Ecological Economic.* 66(1), 153-160.

Fussler, C., & James, P. (1996). *Driving eco-innovation: A breakthrough discipline for innovation and sustainability.* London: Pitman Publishing

Gamman, L., & Thorpe, A. (2009). Less is more: what design against crime can contribute to sustainability. *Built Environment.* 35(3), 403-418.

Gardas, B. B., Raut, R. D., & Narkhede, B. (2018). Modelling the challenges to sustainability in the textile and apparel (T&A) sector: A Delphi-DEMATEL approach. *Sustainable Production and Consumption.* 15*,* 96-108.

George, N. M., & Parida, V., Lahti, T., & Wincemt, J. (2016). A systematic literature review of entrepreneurial opportunity recognition: Insights on influencing factors. *International Entrepreneurship and Management Journal*. 12(2), 309-350.

Geng, D., Lai, K. H., & Zhu, Q. (2021). Eco-innovation and its role for performance improvement among Chinese small and medium-sized manufacturing enterprises. *International Journal of Production Economics*, 231, 107869.

Genc, E., Dayan, M., & Genc, O. F. (2019). The impact of SME internationalization on innovation: The mediating role of market and entrepreneurial orientation. *Industrial Marketing Management*. 82, 253-264.

Geng, Y., & Cote, R., (2004). Applying industrial ecology in Asian rapidly industrializing countries. *International Journal Sustainability Development.* 11(1), *69e85.*

Geng, Y., & Zhao, H. X. (2009). Industrial park management in the Chinese environment. *Journal of Cleaner Production*. 17, 1289e1294.

Geng, X., Chu, X., Xue, D., & Zhang, Z. (2010). An integrated approach for rating engineering characteristics' final importance in product-service system development. *Computers and Industrial Engineering.* 59(4), 585-594.

Geum, Y., & Park, Y., (2011). Designing the sustainable product-service integration: A product-service blueprint approach. *Journal of Cleaner Production.* 19(14), 1601-1614.

Ghadimi, P., Azadnia, A. H., Yusof, N. M., & Saman, M. Z. M. (2012). A weighted fuzzy approach for product sustainability assessment: a case study in automotive industry. *Journal of Cleaner Production*. 33, 10-21.

Ghisellini, P., Cialani, C., & Ulgiati, S. (2016). A review on circular economy: the expected transition to a balanced interplay of environmental and economic systems. *Journal of Cleaner Production.* 114*,* 11-32*.*

Gilbert, S. M., & Cvsa, V. (2003). Strategic commitment to price to stimulate downstream innovation in a supply chain. European *Journal of Operational Research.* 150(3), 617-639.

Girubha, J., Vinodh, S., & Kek, V. (2016). Application of interpretative structural modelling integrated multi criteria decision making methods for sustainable supplier selection. *Journal of Modelling in Management.* 11(2)*,* 358-388.

Gligor, D. M., Holcomb, M. C., & Feizabadi, J. (2016). An exploration of the strategic antecedents of firm supply chain agility: The role of a firm's orientations. *International Journal of Production Economics*. 179, 24-34.

Gmelin, H., & Seuring, S. (2014). Achieving sustainable new product development by integrating product life-cycle management capabilities. *International Journal of Production Economics*, 154, 166-177.

Gmond, E. L. C. V & Scheublin, F. J. M. (2005). Successful industrialization innovation and prefabrication in construction. *The International Conference on Combining Forces-Advancing Facilities Management and Construction through Innovation.* Helsinki: June 13-16.

Goedkoop, M. J., van Halen, C. J. G., te Riele, H. R. M., Rommens, P. J. M. (1999). Product Service Systems, Ecological and Economic Basics. *Technical Report for Dutch Ministries of Environment (VROM) and Economic Affairs (EZ) Netherland.*

Goldman, S. L., Nagel, R. N., & Preiss, K. (1995). *Agile competitors and virtual organizations: Strategies for enriching the customer.* New York: Van Nostrand Reinhold.

Goldman, N., Juzeliūnas, G., Öhberg, P., & Spielman, I. B. (2014). Light-induced gauge fields for ultracold atoms. *Reports on Progress in Physics*. 77(12), 126401.

Gong, L., Zou, B., & Kan, Z. (2019). Modeling and optimization for automobile mixed assembly line in industry 4.0. *Journal of Control Science and Engineering*. 8, 1-10.

González, B., Adenso-Diaz, B., & Gonzalez-Torre, P. (2002). A fuzzy logic approach for the impact assessment in life cycle assessments. *Resources Conservation. Recycling.* 37, 61-79.

González-Díaz, R. R., & Becerra-Perez, L. A. (2021). Stimulating components for business development in Latin American SMEs. In *World Conference on Information Systems and Technologies*. Cham, Switzerland: Springer International Publishing.

Gouda, S. K., & Saranga, H. (2020). Pressure or premium: what works best where? Antecedents and outcomes of sustainable manufacturing practices. *International Journal of Production Research*. 58(23), 7201-7217.

Govindan, K., Paam, P., & Abtahi, A. R. (2016). A fuzzy multi-objective optimization model for sustainable reverse logistics network design. *Ecological Indicators.* 67*,* 753-768.

Gray, W. B., & Shadbegian, R. J. (1998). Environmental regulation, investment timing, and technology choice. *The Journal of Industrial Economics.* 46(2), 235-256.

Gremyr, I. Siva, V., Raharjo, H., & Goh, T. N. (2014). Adapting the Robust Design Methodology to support sustainable product development. *Journal of Cleaner Production.* 79, 231-238.

Grimm, J. H., Hofstetter, J. S., & Sarkis, J. (2014). Critical factors for sub-supplier management: A sustainable food supply chains perspective. *International Journal of Production Economics*. 152, 159-173.

Grubler, A. (1995). *Time for a change: Rates of diffusion of ideas, technologies, and social behaviors*. Laxenburg, Austria: International Institute for Applied Systems Analysis

Guide Jr, V. D. R. (2000). Production planning and control for remanufacturing: Industry practice and research needs. *Journal of Operations Management.* 18(4), 467-483.

Gulati, R. K. (1996). *The coupling of product architecture and organizational structure decisions.* Working Paper: Massachusetts Institute of Technology.

Guo, S., Choi, T. M., Shen, B., & Jung, S. (2018). Inventory management in mass customization operations: A review. *IEEE Transactions on Engineering Management.* 66(3), 412-428.

Gu, P., & Sosale, S. (1999). Product modularization for life cycle engineering. *Robotics and Computer-Integrated Manufacturing.* 15(5), 387-401.

Gunasekaran, A., Yusuf, Y. Y., Adeleye, E. O., Papadopoulos, T., Kovvuri, D., & Geyi, D. G. (2018). Agile manufacturing: an evolutionary review of practices. *International Journal of Production Research.* 57(4),1-21.

Gupta, S., Dangayach, G. S., & Singh, A. K. (2015). Key determinants of sustainable product design and manufacturing. *Procedia CIRP,* 26*,* 99-102*.*

Gupta, S., Sharma, M., & Sunder M, V. (2016). Lean services: A systematic review. *International Journal of Productivity and Performance Management*. 65(8), 1025-1056.

Haaker, T., Ly, P. T. M., Nguyen-Thanh, N., & Nguyen, H. T. H. (2021). Business model innovation through the application of the Internet-of-Things: A comparative analysis. *Journal of Business Research*, 126, 126-136.

Haraguchi, N., Martorano, B., & Sanfilippo, M. (2017). What factors drive successful industrialization? Evidence and implications for developing countries. *Structure Change and Economic Dynamic*. 49, 266-276.

Habakkuk, H. J. (1962). *American and British technology in the nineteenth century: The search for labour saving inventions.* Cambridge: Cambridge University Press.

Hallstedt, S. I., & Isaksson, O. (2017). Material criticality assessment in early phases of sustainable product development. *Journal of Cleaner Production.* 161*,* 40-52.

Hamann, R., Smith, J., Tashman, P., & Marshall, R. S. (2017). Why do SMEs go green? An analysis of wine firms in South Africa. *Business & Society.* 56(1), 23-56.

Haohan, W., & Beinan, G. (2023). Realistic dilemmas and strategies to promote the transformation of SMEs driven by digital economy. *International Conference on Digital Economy and management Science.* Kai Feng, China: April 21-23.

Hao, Y., Deng, Y. X., Lu, Z. N., & Chen, H. (2018). Is environmental regulation effective in China? Evidence from city-level panel data. *Journal of Cleaner Production.* 188, 966-976.

Hao, Y., Xu, L., Guo, Y., & Wu, H. (2022). The inducing factors of environmental emergencies: Do environmental decentralization and regional corruption matter?. *Journal of Environmental Management,* 302, 114098.

Harry, X., **ming, Y. U. E., & Zhang, G. G. (2015). Constructing annual employment and compensation matrices and measuring labor input in China (No. 15005).

Hazarika, N., & Zhang, X. (2019). Evolving theories of eco-innovation: A systematic review. *Sustainable Production and Consumption.* 19*,* 64-78.

He, B., Li, F., Cao, X., & Li, T. (2020). Product sustainable design: a review from the environmental, economic, and social aspects. *Journal of Computing and Information Science in Engineering*, 20(4), 040801.

Heimicke, J., Dühr, K., Krüger, M., Ng, G. L., & Albers, A. (2021). A framework for generating agile methods for product development. *Procedia CIRP*, 100, 786-791.

Helo, P., Hao, Y., Toshev, R., & Boldosova, V. (2021). Cloud manufacturing ecosystem analysis and design. *Robotics and Computer-Integrated Manufacturing*, 67, 102050.

Hemmelskamp, J. (2000). *Environmental taxes and standards: An empirical analysis of the impact on innovation.* In: Hemmelskamp, J., Rennings, K., Leone, F. (eds) Innovation-Oriented Environmental Regulation. ZEW Economic Studies. 10. Physica, Heidelberg.

Herrmann, C., Hauschild, M., Gutowski, T., & Lifset, R. (2014). Life cycle engineering and sustainable manufacturing. *Journal of Industrial Ecology.* 18(4), 471-477.

Hewitt, P. L., Flett, G. L., & Mosher, S. W. (1992). The perceived stress scale: Factor structure and relation to depression symptoms in a psychiatric sample. *Journal of Psychopathology and Behavioral Assessment*. 14(3), 247-257.

Hicks, J. R. (1932). The theory of Wages. London: Macmillan.

Hillary, R (2004) Environment management systems and the smaller enterprise. *Journal of Cleaner Production.* 12(6), 561-9.

Hill, B. S. (1993). Industry's integration of environmental product design. *In Proceedings of the 1993 IEEE International Symposium on Electronics and the Environment.* 64-68.

Hillgren, P-A., Seravalli, A., & Emilsson, E. (2011). Prototyping and infrastructuring in design for social Innovation. *CoCreation.* 7*(*7-3*),* 169-183.

Hofmann, K. H., Theyel, G., & Wood, C. H. (2012). Identifying firm capabilities as drivers of environmental management and sustainability practices–evidence from small and medium-sized manufacturers. *Business Strategy and the Environment.* 21(8), 530-545.

Holland, S., Gaston, K., & Gomes, J. (2010). Critical success factors for cross-functional teamwork in new product development. *International Journal of Management Reviews.* 2(3), 231-259.

Hoolohan, C., & Browne, A. L. (2020). Design thinking for practice-based intervention: Co-producing the change points toolkit to unlock (un) sustainable practices. *Design Studies.* 67, 102-132.

Horbach, J., Rammer, C., & Rennings, K. (2012). Determinants of eco-innovations by type of environmental impact: The role of regulatory push/pull, technology push and market pull. *Ecological economics.* 78, 112-122.

Horne, R. E. (2009). Limits to labels: The role of eco-labels in the assessment of product sustainability and routes to sustainable consumption. *International Journal of Consumer Studies.* 33(2), 175-182.

Hosseinijou, S. A., Mansour, S., & Shirazi, M. A. (2014). Social life cycle assessment for material selection: a case study of building materials. *International Journal of Life Cycle Assessment.* 19(3), 620-645.

Hou, K. & Li, Z. (2017). Green modular product redesign method. *Modern Manufacturing Engineering*. (12), 139-145.

Huang, C. C., Liang, W. Y., Chuang, H. F., & Chang, Z. Y. (2012). A novel approach to product modularity and product disassembly with the consideration of 3r-abilities. *Computers & Industrial Engineering.* 62(1), 96-107.

Huang, F., Hou, L., Wu, H., Wang, X., Shen, H., Cao, W., & Cao, Y. (2004). High-efficiency, environment-friendly electroluminescent polymers with stable high work function metal as a cathode: Green-and yellow-emitting conjugated polyfluorene polyelectrolytes and their neutral precursors. *Journal of the American Chemical Society*. 126(31), 9845-9853.

Huang, G., Zhong, X. Y., Long, Y. M., & Zhang, G. J. (2011). Manufacturing resources cloud locating services platform based on separated data cloud and application cloud. *Computer Integrated Manufacturing Systems.* 17(03), 0-0.

Huang, J.-W., & Li, Y.-H. (2018). How resource alignment moderates the relationship between environmental innovation strategy and green innovation performance. *Journal of Business and Industrial Marketing.* 33 (3), 316-324.

Huang, L., Wu, J., & Yan, L. (2015). Defining and measuring urban sustainability: A review of indicators. *Landscape Ecology*. 30, 1175-1193.

Huang, X., & Hou, G. (2004). Research on the management mode of R & D organization in agile manufacturing environment. *Science and Technology Management.* 25 (2), 20-22.

Hu, D., Wang, Y., Huang, J., & Huang, H. (2017). How do different innovation forms mediate the relationship between environmental regulation and performance? *Journal of Cleaner Production*. 161, 466-476.

Huber, A. S. (2018). *The digital enterprise takes shape*. Heidelberg, Berlin: Springer Vieweg.

Hullova, D., Trott, P., & Simms, C. D. (2016). Uncovering the reciprocal complementarity between product and process innovation. *Research Policy.* 45(5), 929-940.

Huppes, G., Kleijn, R., Huele, R., Ekins, P., Shaw, B., Esders, M., & Schaltegger, S. (2008). Measuring eco-innovation: Framework and typology of indicators based on causal chains. Leiden: ECODRIVE Report to the European Commission.

Hyz, A. (2019). SME finance and the economic crisis: The case of Greece. *Routledge*.

Hwang, B. N., Huang, C. Y., & Wu, C. H. (2016). A TOE approach to establish a green supply chain adoption decision model in the semiconductor industry. *Sustainability.* 8(2), 168.

Iii, M. D. (2000). Investigation of factors contributing to the success of cross-functional teams. *Journal of Product Innovation Management.* 17(3), 221-235.

Ijomah, W. L., Mcmahon, C. A., Hammond, G. P., & Newman, S. T. (2007). Development of design for remanufacturing guidelines to support sustainable manufacturing. *Robotics and Computer Integrated Manufacturing.* 23(6), 712-719.

Inoue, M. of M. E. I., Lindow, K., Stark, R., Tanaka, K., Nahm, Y. E., & Ishikawa, H. (2012). Decision-making support for sustainable product creation. *Advanced Engineering Informatics.* 26(4), 782-792.

Ioannou, K., & Veshagh, A. (2011). Managing sustainability in product design and manufacturing. Proceedings of the 18th CIRP International Conference on Life Cycle Engineering. Braunschweig, Germany: Technische Universität Braunschweig. May 2-4.

Ipsen, K. L., Pizzol, M., Birkved, M., & Amor, B. (2021). How lack of knowledge and tools hinders the Eco-design of buildings—A systematic review. *Urban Science*, 5(1), 20.

Ismail, H. N., Zwolinski, P., Mandil, G., & Brissaud, D. (2017). Decision making system for designing products and production systems for remanufacturing activities. Procedia CIRP. 61, 212-217.

Jaffe, A. B., Newell, R. G., & Stavins, R. N. (2004). Technology policy for energy and the environment. *In Innovation Policy and the Economy.* 4, 35-68.

Jaffe, A. B., & Palmer, K. (1997). Environmental regulation and innovation: a panel data study. *Review of economics and statistics.* 79(4), 610-619.

James, P. (1997). The sustainability cycle: a new tool for product development and design. *The Journal of Sustainable Product Design.* 1(2), 52-57.

Jassawalla, A. R., & Sashittal, H. C. (2000). Cross-functional dynamics in new product development. *Research Technology Management.* 43(1), 46-49.

Jawahir, I. S., Rouch, K. E., Dillon, O. W., Holloway, L., & Hall, A. (2007). Design for sustainability (dfs): new challenges in developing and implementing a curriculum for next generation design and manufacturing engineers. *International Journal of Engineering Education.* 23(6), 1053-1064.

Jayal, A. D., Badurdeen, F., Jr, O. W. D., & Jawahir, I. S. (2010). Sustainable manufacturing: modeling and optimization challenges at the product, process, and system levels. *Cirp Journal of Manufacturing Science & Technology.* 2(3), 144-152.

Jenkins, R., & de Freitas Barbosa, A. (2012). Fear for manufacturing? China and the future of industry in Brazil and Latin America. *The China Quarterly*, 209, 59-81.

Jia, C., Tang, X., & Kan, Z. (2020). Does the Nation Innovation System in China Support the Sustainability of Small and Medium Enterprises (SMEs) Innovation? *Sustainability*. 12(6), 2562.

Ioannou, K., & Veshagh, A. (2011). Managing sustainability in product design and manufacturing. In *Glocalized Solutions for Sustainability in Manufacturing: Proceedings of the 18th CIRP International Conference on Life Cycle Engineering.* Braunschweig, Germany: Technische Universität Braunschweig. May 2-4.

Johansson, G., 2002. Success factors for integration of eco-design in product development: A review of state of the art. *Environmental Management and Health.* 13(1), 98-107.

Jovane, F., Yoshikawa, H., Alting, L., Boër, C. R., Westkamper, E., & Williams, D. (2008). The incoming global technological and industrial revolution towards competitive sustainable manufacturing. *CIRP Annals - Manufacturing Technology.* 57(2), 641-659.

Jung, C., Krutilla, K., & Boyd, R. (1996). Incentives for advanced pollution abatement technology at the industry level: An evaluation of policy alternatives. *Journal of Environmental Economics and Management.* 30(1), 95-111.

Kanet, J. J., Faisst, W., & Mertens, P. (1999). Application of information technology to a virtual enterprise broker: The case of bill epstein. *International Journal of Production Economics.* 62(1-2), 23-32.

Kapoor, K. K., Dwivedi, Y. K., Williams, M. D. (2014). Examining consumer acceptance of green innovations using innovation characteristics: A conceptual approach. *International Journal Technology Management and Sustainable Development.* 13(2), 135-160.

Kasarda, M. E., Terpenny, J. P., Dan, I., Precoda, K. R., Jelesko, J., & Sahin, A. (2007). Design for adaptability (dfad) a new concept for achieving sustainable design. *Robotics & Computer Integrated Manufacturing.* 23(6), 727-734.

Katzy, B. R., & Dissel, M. (2001). A toolset for building the virtual enterprise. *Journal of Intelligent Manufacturing.* 12(2), 121-131.

Ke, Q., Zhang, H. C., Liu, G., & Li, B. (2011). *Remanufacturing engineering literature overview and future research needs. In Glocalized Solutions for Sustainability in Manufacturing.* Berlin Heidelberg: Springer.

Kelly-Hayes, M., Beiser, A., Kase, C. S., Scaramucci, A., D'Agostino, R. B., & Wolf, P. A. (2003). The influence of gender and age on disability following ischemic stroke: the Framingham study. *Journal of Stroke and Cerebrovascular Diseases*. 12(3), 119-126.

Kemp, R., & Foxon, T. (2007). Typology of eco-innovation. *Measuring Eco-Innovation.* 5(1), 10-23.

Kemp, R., & Horbach, J. (2007). Measurement of competitiveness of eco-innovation. *Measuring Eco-innovation Project (MEI).*

Kemp, R., & Pearson, P. (2007). Final report MEI project about measuring eco-innovation. *UM Merit, Maastricht.* 32(3), 121-124

Kemp, R., & Pearson, P. (2008). Measuring eco-innovation, final report of MEI project for DG Research of the European Commission. Pobrane.

Kessler, E. H., Bierly, P. E., & Gopalakrishnan, S. (2000). Internal vs. external learning in new product development: effects on speed, costs and competitive advantage. *R&D Management.* 30(3), 213-224.

Kerr, S., & Newell, R. G. (2003). Policy-induced technology adoption: Evidence from the US lead phasedown. *The Journal of Industrial Economics.* 51(3), 317-343.

Khalid, K., Abdullah, H. H., & Kumar M, D. (2012). Get along with quantitative research process. *International Journal of Research in Management*. *2*(2), 15-29.

Khor, K. S., & Udin, Z. M. (2013). Reverse logistics in Malaysia: Investigating the effect of green product design and resource commitment. *Resources Conservation & Recycling.* 81(6), 71-80.

Kidd, P. T. (1996). *Agile manufacturing: forging new frontiers.* Workingham, England: Addison-Wesley Longman Publishing Co. Inc.

Kinley, R. D., Martinez-Fernandez, G., Matthews, M. K., de Nys, R., Magnusson, M., & Tomkins, N. W. (2020). Mitigating the carbon footprint and improving productivity of ruminant livestock agriculture using a red seaweed. *Journal of Cleaner production*, 259, 120836.

Kijek, T., 2015. Modelling of eco-innovation diffusion: The EU eco-label. *Comparative Economic Research*. 18 (1). 65-79.

Klewitz, J., & Hansen, E. G. (2014). Sustainability-oriented innovation of SMEs: A systematic review. *Journal of Cleaner Production.* 65, 57-75.

Ko, Y. T. (2020). Modeling an innovative green design method for sustainable products. *Sustainability*. 12(8), 3351.

Krammer, S. M. (2017). Science, technology, and innovation for economic competitiveness: The role of smart specialization in less-developed countries. *Technological Forecasting and Social Change*, 123, 95-107.

Kumar, N., Brint, A., Shi, E., Upadhyay, A., Ruan, X., Kumar, N., Brint, A., Shi, E., Upadhyay, A., & Ruan, X. (2019). Integrating sustainable supply chain practices with operational performance: An exploratory study of Chinese SMEs. *Production Planning and Control.* 30(5-6), 464-478.

Kumar, A., Holuszko, M., & Espinosa, D. C. R. (2017). E-waste: An overview on generation, collection, legislation and recycling practices. Resources, *Conservation and Recycling,* 122, 32-42.

Kuo, C.-C., Shyu, J. Z., & Ding, K. (2019). Industrial revitalization via industry 4.0: A comparative policy analysis among China, Germany and the USA. *Global Transitions.* 1, 3-14.

Kuo, T. C., Chen, H. M., Liu, C. Y., Tu, J. C., & Yeh, T. C. (2014). Applying multi-objective planning in low-carbon product design. *International Journal of Precision Engineering & Manufacturing.* 15(2), 241-249.

Kuo, T. C., & Smith, S. (2018). A systematic review of technologies involving eco-innovation for enterprises moving towards sustainability. *Journal of Cleaner Production.* 192, 207-220.

Kreng, V. B., & Lee, T. P. (2004). Modular product design with grouping genetic algorithm a case study. *Computers and Industrial Engineering.* 46(3), 443-460.

Kuhndt, M., Herrndorf, M., & Fernandez, A. (2007). Activating policy instruments for resource efficiency in the Asia - Pacific region encouraging sustainable consumption and production and promoting "green growth". *UNEP and the Wuppertal Institute.*

Laari, S., T€oyli, J., Solakivi, T., & Ojala, L. (2016). Firm performance and customer-driven green supply chain management. *Journal of Cleaner Production.* 112*,* 1960-1970.

Lacasa, E., Santolaya, J. L., & Biedermann, A. (2016). Obtaining sustainable production from the product design analysis. *Journal of Cleaner Production.* 139, 706-716.

Lanoie, P., Laurent-Lucchetti, J., Johnstone, N., & Ambec, S. (2011). Environmental policy, innovation and performance: new insights on the Porter hypothesis. *Journal of Economics & Management Strategy.* 20(3), 803-842.

Laperche, B., & Picard, F. (2013). Environmental constraints, product-service systems development and impacts on innovation management: learning from manufacturing firms in the French context. *Journal of Cleaner Production.* 53, 118e128.

Large, R. O., & Thomsen, C. G. (2011). Drivers of green supply management performance: Evidence from Germany. *Journal of Purchasing and Supply Management*. 17(3), 176-184.

Lee, J., Ni, J., & Wang, A. Z. (2016). *From big data to intelligent manufacturing*. Shanghai: Shanghai Jiao Tong University Press.

Lee, J. Y., Kang, H. S., & Do Noh, S. (2014). MAS2: an integrated modeling and simulation-based life cycle evaluation approach for sustainable manufacturing. *Journal of Cleaner production.* 66, 146-163.

Lee, K. H. (2011). Integrating carbon footprint into supply chain management: the case of Hyundai motor company (hmc) in the automobile industry. *Journal of Cleaner Production.* 19(11), 1216-1223.

Lee, S., & Jung, K. (2018). The role of community-led governance in innovation diffusion: The Case of RFID waste pricing system in the Republic of Korea. *Sustainability.* 10(9), 1-23.

Lefebvre, E., Lefebvre, L., & Talbot, S. (2003). Determinants and impacts of environmental performance in SMEs. *R&D Management.* 33(3), 263-283.

León-de la O, D. I., Thorsteinsdóttir, H., & Calderón-Salinas, J. V. (2018). The rise of health biotechnology research in Latin America: A scientometric analysis of health biotechnology production and impact in Argentina, Brazil, Chile, Colombia, Cuba, and Mexico. *PloS One.* 13(2), 0191267.

Leitner, A., Wehrmeyer, W., & France, C. (2010). The impact of regulation and policy on radical eco-innovation: The need for a new understanding. *Management Research Review.* 33(11), 1022-1041.

Lester, D. H. (1998). Critical success factors for new product development. *Research Technology Management.* 41(1), 36-43.

Li, F., Li, J., Li, J., & Duan, G. (2009). A product selective disassembly model based on hybrid directed graph. *China Mechanical Engineering*, 20(05), 0.

Li, L. (2018). China's manufacturing locus in 2025: With a comparison of "Made-in-China 2025" and "Industry 4.0". *Technological Forecasting and Social Change.* 135, 66-74.

Lim, K. Y. H., Zheng, P., & Chen, C. H. (2020). A state-of-the-art survey of Digital Twin: techniques, engineering product lifecycle management and business innovation perspectives. *Journal of Intelligent Manufacturing*, 31(6), 1313-1337.

Lin, K. P., Tseng, M. L., & Pai, P. F. (2018). Sustainable supply chain management using approximate fuzzy DEMATEL method. *Resources, Conservation and Recycling*. 128, 134-142.

Lin, L., Zhou, D., & Ma, C. (2010). Green food industry in China: development, problems, and policies. *Renewable Agriculture and Food Systems, 25(1), 69-80.*

Liao, Z., (2018). Market orientation and FIRMS' environmental innovation: The moderating role of environmental attitude. *Business Strategy Environment.* 27(1), 117-127.

Lindemann, C. M. R. C., Reiher, T., Jahnke, U., & Koch, R. (2015). Towards a sustainable and economic selection of part candidates for additive manufacturing. *Rapid Prototyping Journal.* 21(2), 216-227.

Li, P., Mai, K., Trushenski, J., & Wu, G. (2009). New developments in fish amino acid nutrition: towards functional and environmentally oriented aquafeeds. *Amino Acids*. 37, 43-53.

Li, T. H., Thomas Ng, S., & Skitmore, M. (2016). Modeling multi-stakeholder multi-objective decisions during public participation in major infrastructure and construction projects: A decision rule approach. *Journal of Construction Engineering and Management*. 142(3), 04015087.

Li, Y., Sun, H., Huang, J., & Huang, Q. (2020). Low-end lock-in of Chinese equipment manufacturing industry and the global value chain. *Sustainability,* 12(7), 2981.

Li, Z., Shao, S., Shi, X., Sun, Y., & Zhang, X. (2019). Structural transformation of manufacturing, natural resource dependence, and carbon emissions reduction: Evidence of a threshold effect from China. *Journal of Cleaner Production*. 206, 920-927.

Liu, G. Z. (2012). Responsible design. Design for a real world. *Beijing: CITIC Publishing House.*

Liu, C., Cai, W., Jia, S., Zhang, M., Guo, H., Hu, L., & Jiang, Z. (2018). Energy-based evaluation and improvement for sustainable manufacturing systems considering resource efficiency and environment performance. *Energy Conversion and Management,* 177, 176-189.

Liu, N., Li, X., & Shen, W. (2014). Multi-granularity resource virtualization and sharing strategies in cloud manufacturing. *Journal of Network and Computer Application.* 46, 72-82.

Liu, Y., Ndubisi, N. O., Liu, Y., & Barrane, F. Z. (2020). New product development and sustainable performance of Chinese SMMEs: The role of dynamic capability and intra-national environmental forces. *International Journal of Production Economics*, 230, 107817.

Liu, W., Yan, X., Li, X., & Wei, W. (2020). The impacts of market size and data-driven marketing on the sales mode selection in an Internet platform-based supply chain. *Transportation Research Part E: Logistics and Transportation Review*, 136, 101914.

Li, Z., Ma, Z., van der Kuijp, T. J., Yuan, Z., & Huang, L. (2014). A review of soil heavy metal pollution from mines in China: pollution and health risk assessment. *Science of the Total Environment.* 468*,* 843-853.

Lodefalk, M. (2014). The role of services for manufacturing firm exports. *Review of World Economics.* 150(1), 59-82.

Lockton, D., Harrison, D., Ergonomics, N. S.-A., & 2010, U. (2010). The Design with Intent Method: A design tool for influencing user behaviour. *Applied Ergonomics.* 41(3), 382-392.

Lopes, C. S. D., & de Azevedo, P. S. (2014). Environmental requirements for furniture industry: the case study of Brazilian Southeast industry. *Environment, Development and Sustainability.* 16(5), 1013-1029.

Lovely, M., & Popp, D. (2011). Trade, technology, and the environment: Does access to technology promote environmental regulation? *Journal of Environmental Economics and Management.* 61(1), *16-35*.

Madge, P. (1997). Ecological design: A new critique. *Design Issues.*13(2), 44-54.

Madsen, H., & Ulhøi, J. P. (2015). Stakeholder pressures, environmental impact and managerial initiatives of SMEs: A longitudinal study. *Journal of Transdisciplinary Environmental Studies*. 14(1), 13-26.

Maheswari, J. U., & Varghese, K. (2005). Project scheduling using dependency structure matrix. *International Journal of Project Management.* 23(3), 223-230.

Mahmoudi, A., Deng, X., Javed, S. A., & Zhang, N. (2020). Sustainable supplier selection in megaprojects: Grey ordinal priority approach. *Business Strategy and the Environment.* 30(1), 318-339.

Malek, J., & Desai, T. (2019). Prioritization of sustainable manufacturing barriers using Best Worst Method. *Journal of Cleaner Production.* 226(2), 589-600.

Ma, J., & Kremer, G. E. O. (2016). A sustainable modular product design approach with key components and uncertain end-of-life strategy consideration. *International Journal of Advanced Manufacturing Technology.* 85(1-4), 741-763.

Mamman, A., Bawole, J., Agbebi, M., & Alhassan, A. R. (2019). SME policy formulation and implementation in Africa: Unpacking assumptions as opportunity for research direction. *Journal of Business Research.* 97, 304-315.

Manzini, E. (2002). Context-based wellbeing and the concept of regenerative solution a conceptual framework for scenario building and sustainable solutions development. *Journal of Sustainable Product Design.* 2(3-4), 141-148.

Manzini, E., & Vezzoli, C. (2003). A strategic design approach to develop sustainable product service systems: examples taken from the 'environmentally friendly innovation' Italian prize. *Journal of Cleaner Production.* 11(8), 851-857.

Marshall, G. (2005). The purpose, design and administration of a questionnaire for data collection. *Radiography*. 11(2), 131-136.

Maskil-Leitan, R., & Reychav, I. (2018). A sustainable sociocultural combination of building information modeling with integrated project delivery in a social network perspective. *Clean Technologies and Environmental Policy.* 20(5), 1017-1032.

Matinaro, V., Liu, Y., Lee, T. J., & Poesche, J. (2018). Extracting key factors for sustainable development of enterprises: Case study of SMEs in Taiwan. *Journal of Cleaner Production.* 209, 1152-1169.

Maxwell, D., (2004). *Development sustainable product and services in industry*. PhD *Thesis: Imperial College London*.

Mazzi, A. (2020). Introduction. Life cycle thinking. In Life cycle sustainability assessment for decision-making (pp. 1-19). *Elsevier*.

Mazzanti, M., & Zoboli, R. (2009). Embedding environmental innovation in local production systems: SME strategies, networking, and industrial relations: evidence on innovation drivers in industrial districts. *International Review of Applied Economic.* 23, 169e195.

McKenzie, E. C., & Durango-Cohen, P. L. (2010). An input-output approach for the efficient design of sustainable goods and services. *The International Journal of Life Cycle Assessment.* 15(9), 946-961.

Mcaloone, T. C., & Bey, N. (2013). *Environmental improvement through product development: A guide.* Denmark: Danish Environmental Protection Agency.

McCallister, E. (2010). *Guide to protecting the confidentiality of personally identifiable information*. Gaithersburg: National Institute of Standards and Technology.

Meehan. J. S., Alex H. B. Duffy, & Whitfield, R. I. (2007). Supporting `design for reuse' with modular design. *Concurrent Engineering Research & Applications.* 15(2), 141-155.

Mentzer, J. T, DeWitt, W, Keebler, J. S & Min, S. (2001). Defining supply chain management. *Journal of Business Logistics.* 22(2), 1-26.

Miemczyk, J., Howard, M., & Johnsen, T. E. (2016). Dynamic development and execution of closed-loop supply chains: a natural resource-based view. *Supply Chain Management: An International Journal.* 21(4), 453-469.

Miceli, A., Hagen, B., Riccardi, M. P., Sotti, F., & Settembre-Blundo, D. (2021). Thriving, not just surviving in changing times: How sustainability, agility and digitalization intertwine with organizational resilience. *Sustainability*. 13(4), 2052.

Min, Y. K., Lee, S. G., & Aoshima, Y. (2019). A comparative study on industrial spillover effects among Korea, China, the USA, Germany, and Japan. *Industrial Management and Data Systems.* 119(3), 454-472.

Miroshnychenko, I., Barontini, R., & Testa, F. (2017). Green practices and financial performance: A global outlook. *Journal of Cleaner Production.* 147, *340-351*.

Mitchell, S., O'Dowd, P., & Dimache, A. (2020). Manufacturing SMEs doing it for themselves: Develop, testing and piloting an online sustainability and eco-innovation toolkit for SMEs. *International Journal of Sustainable Engineering*, 13(3), 159-170.

Moldavska, A. of M. and C. E., & Welo, T. (2019). A Holistic approach to corporate sustainability assessment: Incorporating sustainable development goals into sustainable manufacturing performance evaluation. *Journal of Manufacturing Systems*. 50, 53-68.

Mont, O. K. (2002). Clarifying the concept of product–service system. *Journal of Cleaner Production.* 10(3), 237-245.

Moore, M. L., von der Porten, S., Plummer, R., Brandes, O., & Baird, J. (2014). Water policy reform and innovation: A systematic review. *Environmental Science & Policy.* 38, 263-271.

Moro, S. R., Cauchick-Miguel, P. A., & de Sousa Mendes, G. H. (2022). Literature analysis on product-service systems business model: a promising research field. Brazilian *Journal of Operations & Production Management*, 19(1), 1-18.

Müller, J. M. (2018). Sustainable Industrial Value Creation in SMEs: A Comparison between Industry 4.0 and Made in China 2025. *International Journal of Precision Engineering and manufacturing-Green Technology.* 5(5), 659-670.

Müller, J. M., Buliga, O., & Voigt, K. I. (2018). Fortune favors the prepared: How SMEs approach business model innovations in Industry 4.0. *Technological Forecasting and Social Change*. 132, 2-17.

Mu, J., Peng, G., & Tan, Y. (2007). New product development in Chinese SMEs: Key success factors from a managerial perspective. *International Journal of Emerging Markets*, 2(2), 123-143.

Mukherjee, A. of C., and E. E., & Muga, H. (2010). An integrative framework for studying sustainable practices and its adoption in the AEC industry: A case study. *Journal of Engineering and Technology Management.* 27(3), 197-214.

Mussa, M. (2000). Factors driving global economic integration. Global economic integration: Opportunities and challenges, 9-55.

Muijs, D. (2012). Surveys and sampling. *Research Methods in Educational Leadership and Management*. 3, 140-154.

Muijs, D. (2022). Doing quantitative research in education with SPSS. New Delhi: SAGE Publication Ltd.

Mutingi, M., Dube, P., & Mbohwa, C. (2017). A modular product design approach for sustainable manufacturing in a fuzzy environment. *Procedia Manufacturing.* 8, 471-478.

Ndubisi, N. O., Zhai, X. A., & Lai, K. H. (2021). Small and medium manufacturing enterprises and Asia's sustainable economic development. *International Journal of Production Economics*, 233, 107971.

Nelson, R. R., & Winter, S. G. (1982). An evolutionnary theory of economic change. Belknap Harvard: Harvard University Press.

Newell, R. G., Jaffe, A. B., & Stavins, R. N. (1999). The induced innovation hypothesis and energy-saving technological change. *The Quarterly Journal of Economics.* 114(3), 941-975.

Negny, S., Belaud, J.P., Robles, G. C., Reyes, E. R., Ferrer, J. B. (2012). Toward an eco- innovative method based on a better use of resources: application to chemical process preliminary design. *Journal of Cleaner Production.* 32, 101-113.

Neuman, L. W. (2007). Social research methods, 6/E. *Pearson Education India.*

Neuman, W. R., & Guggenheim, L. (2011). The evolution of media effects theory: A six-stage model of cumulative research. *Communication Theory.* 21(2), 169-196.

Ngai, E. W. T., Chau, D. C. K., Poon, J. K. L., & To, C. K. M. (2013). Energy and utility management maturity model for sustainable manufacturing process. *International Journal of Production Economics.* 146(2), 453-464.

Ni, W., & Sun, H. (2019). The effect of sustainable supply chain management on business performance: Implications for integrating the entire supply chain in the Chinese manufacturing sector. *Journal of Cleaner Production.* 232, 1176-1186.

Noe, R. A., Hollenbeck, J. Gerhart, B., & Wright, P. (2017). *Human resource management: Gaining a competitive advantage (13 editions).* Boston: McGraw-Hill/Irwin.

Norese, M. F., Corazza, L., Bruschi, F., & Cisi, M. (2020). A multiple criteria approach to map ecological-inclusive business models for sustainable development. *International Journal of Sustainable Development and World Ecology.* 28(2), 1-17.

O'Brien, J., Remenyi, D., & Keaney, A. (2003). Historiography: A neglected research method in business and management studies. *Electronic Journal of Business Research Methods*. 2(2), 161-170.

O'Sullivan, A., & Sheffrin, S. (2007). *Economics: Principles in Action.* New Jersey: Prentice Hall.

Oztemel, E., & Gursev, S. (2020). Literature review of Industry 4.0 and related technologies. *Journal of intelligent manufacturing*, 31, 127-182.

Ozturk, I., Alqassimi, O., & Ullah, S. (2024). Digitalization and SMEs development in the context of sustainable development: A China perspective. *Heliyon.*

Pan, Y. (2016). Heading toward artificial intelligence 2.0. *Engineering.* 2(4), 409-413.

Papanek, V. J. (1971). Design for the real world: Human ecology and social change. London: Thames & Hudson.

Patnaik, R. (2018). Impact of industrialization on environment and sustainable solutions - reflections from a south Indian region. *In IOP Conference Series: Earth and Environmental Science.* 120(1), 012016).

Peng, X. I. A. N. G., & Jiang, C. H. U. A. N. H. A. I. (2011). Industrial agglomeration, technological spillovers and regional innovation: evidence from China. *China Economic Quarterly.* 10(3), 913-934.

Peredy, Z., Yaouki, X., & Laki, B. (2022). Challenges of the Innovative Chinese Small and Medium Sized Enterprises (SME's) in the Last Decade. *ACTA PERIODICA (EDUTUS)*. 24, 19-35.

Pereira Pessôa, M. V., & Jauregui Becker, J. M. (2020). Smart design engineering: a literature review of the impact of the 4th industrial revolution on product design and development. *Research in Engineering Design.* 31(2), 175-195.

Perino, G., & Requate, T. (2012). Does more stringent environmental regulation induce or reduce technology adoption? When the rate of technology adoption is inverted U-shaped. *Journal of Environmental Economics and Management.* 64(3), 456-467.

Pesonen, H. (2001). Environmental management of value chains: Promoting life cycle thinking in industrial networks. *Greener Management International.* 33, 45e58.

Pham, D. T., & Thomas, A. J. (2011). Fit manufacturing: a framework for sustainability. *Journal of Manufacturing Technology Management.* 23(1), 103-123.

Phungrassami, H. (2008). Eco-efficiency as a decision tool for cleaner production: Application for SMEs in Thailand. *Environmental Research Journal.* 2(5), 217-221.

Piaw, C. Y. (2012). Replacing paper-based testing with computer-based testing in assessment: Are we doing wrong? *Procedia-Social and Behavioral Sciences.* 64, 655-664.

Pichlak, M., & Szromek, A. R. (2021). Eco-innovation, sustainability and business model innovation by open innovation dynamics. *Journal of Open Innovation: Technology, Market, and Complexity*. 7(2), 149.

Pidorycheva, I., Shevtsova, H., Antonyuk, V., Shvets, N., & Pchelynska, H. (2020). A conceptual framework for developing of regional innovation ecosystems. *European Journal of Sustainable Development.* 9(3), 626-626.

Pigosso, D. C. A., Zanette, E. T., Filho, A. G., Ometto, A. R., & Rozenfeld, H. (2010). Ecodesign methods focused on remanufacturing. *Journal of Cleaner Production.* 18(1), 21-31.

Pigosso, D. D. A., & McAloone, T. C. (2015). Supporting the development of environmentally sustainable PSS by means of the ecodesign maturity model. *Procedia CIRP.* 30, 173-178.

Polit, D. F., & Beck, C. T. (2008). *Nursing research: Generating and assessing evidence for nursing practice (8th editions).* Philadelphia: Wolters Kluwer/ Lippincott Williams & Wilkins.

Polit, D., & Beck, C. (2020). *Essentials of nursing research: Appraising evidence for nursing practice*. Philadelphia: Wolters Kluwer/ Lippincott Williams & Wilkins.

Pollack, S. J., & Pillote, L. (2006). *Preliminary teaching manual for sustainable design education.* Atlanta, Georgia: Interior Designers Educators Council.

Popp, D. (2002). Induced innovation and energy prices. *American Economic Review.* 92(1), 160-180.

Porter, M., & Van der Linde, C. (1995). Green and competitive: ending the stalemate. The dynamics of the eco-efficient economy: environmental regulation and competitive advantage. *Sustainable Business Practices*. 73, 120-134.

Poulikidou, S., Schneider, C., Björklund, A., Kazemahvazi, S., Wennhage, P., & Zenkert, D. (2015). A material selection approach to evaluate material substitution for minimizing the life cycle environmental impact of vehicles. *Materials & Design.* 83, 704-712.

Powell, D., Riezebos, J., & Strandhagen. (2012). Lean production and ERP systems in small and medium-sized enterprise: ERP support for full production. *International Journal of Production Research*. 51(20), 1-15.

Phungrassami, H. (2008). Eco-efficiency as a decision tool for cleaner production: Application for SMEs in Thailand. *Environmental Research Journal*. 2(5), 217-221.

Pujari, D. (2006). Eco-innovation and new product development: understanding the influences on market performance. *Technovation.* 26(1), 76-85.

Qian, X., & Zhang, H. C. (2009). Design for environment: an environmentally conscious analysis model for modular design. *IEEE Transactions on Electronics Packaging Manufacturing.* 32(3), 164-175.

Qiaohua, L. (2020). The dynamic mechanism and realization paths for high-quality development of manufacturing enterprises in the new era. *Contemporary Social Sciences*. 3(4), 59-75.

Qu, C., Shao, J., & Cheng, Z. (2020). Can embedding in global value chain drive green growth in China's manufacturing industry? *Journal of Cleaner Production*. 268(1), 121962.

Qu, Y., Liu, Y., Ravi, R., & Li, M. (2014). Sustainable development of eco-industrial parks in China: effects of managers' environmental awareness on the relationships between practice and performance. *Journal of Cleaner Production*. 87(1), 328-338.

Ramayah, T., Mohamad, O., Omar, A., Marimuthu, M., & Leen, J. Y. A. (2013). Green manufacturing practices and performance among SMEs: Evidence from a developing nation. In *Green Technologies and Business Practices: An it approaches (pp. 208-225).* Hershey, PA: IGI Global.

Raynard, P., & Forstater, M. (2002). Corporate social responsibility: Implications for small and medium enterprises in developing countries. Brighton: United Nation Industrial Development organization.

Reid, A., & Miedzinski, M. (2008). *Eco-innovation. Final report for sectoral innovation watch*. Europe Innova: Technopolis Group.

Reid, A., & Miedzinski, M. (2013). Ajukumar V. Evaluation of green maintenance initiatives in design and development of mechanical systems using an integrated approach/V. Ajukumar, O. Gandhi. *Journal of Cleaner Production*. 51, 34-46.

Reithofer, J. R. W. (1998). Design of consistent enterprise models. *Journal of Cybernetics.* 29(5), 525-552.

Remenyi, D., Williams, B., Money, A., & Swartz, E. (1998). *Doing research in business and management: an introduction to process and method.* London: SAGE.

Ren, L., Zhang, L., Tao, F., Zhao, C., Chai, X., & Zhao, X. (2015). Cloud manufacturing: from concept to practice. *Enterprise Information Systems.* 9(2), 186-209.

Rennings, K. (1998). Towards a theory and policy of eco-innovation-Neoclassical and (Co-) Evolutionary Perspectives (No. 98-24). *ZEW Discussion Papers*.

Rennings, K. (2000). Redefining innovation - Eco-innovation research and the contribution from ecological economics. *Ecological economics.* 32(2), 319-332.

Rennings, K., Ziegler, A., Ankele, K., & Hoffmann, E. (2006). The influence of different characteristics of the EU environmental management and auditing scheme on technical environmental innovations and economic performance. *Ecological Economics*. 57(1), 45-59.

Requate, T., & Unold, W. (2001). On the incentives created by policy instruments to adopt advanced abatement technology if firms are asymmetric. *Journal of Institutional and Theoretical Economics (JITE)*/Zeitschrift für die gesamte Staatswissenschaft. 536-554.

Ribeiro, I., Kaufmann, J., Schmidt, A., Peças, P., Henriques, E., & Götze, U. (2016). Fostering selection of sustainable manufacturing technologies–a case study involving product design, supply chain and life cycle performance. *Journal of Cleaner Production.* 112, 3306-3319.

Riva, F., Magrizos, S., Rubel, M. R. B., & Rizomyliotis, I. (2022). Green consumerism, green perceived value, and restaurant revisit intention: Millennials' sustainable consumption with moderating effect of green perceived quality. *Business Strategy and the Environment*. 31(7), 2807-2819.

Robinson, J. (2004). Squaring the circle? Some thoughts on the idea of sustainable development. *Ecological Economics.* 48(4), *369-384.*

Rostamnezhad, M., Nasirzadeh, F., Khanzadi, M., Jarban, M. J., & Ghayoumian, M. (2020). Modeling social sustainability in construction projects by integrating system dynamics and fuzzy ‐ DEMATEL method: a case study of highway project. Engineering, *construction and architectural management*, 27(7), 1595-1618.

Rovai, A. P., Baker, J. D., & Ponton, M. K. (2014). *Social science research design and statistics: A practitioner's guide to research methods and IBM SPSS analysis.* Chesapeake, VA: Watertree Press LLC.

Roy, J., Das, S., Kar, S., & Pamučar, D. (2019). An extension of the CODAS approach using interval-valued intuitionistic fuzzy set for sustainable material selection in construction projects with incomplete weight information. *Symmetry.* 11(3), 393.

Rubik, F. (2001). Environmental sound product innovation and integrated product policy (ipp). *Journal of Sustainable Product Design.* 1(4), 219-232.

Rudell, F. (2006). Shopping with a social conscience: consumer attitudes toward sweatshop labor. *Clothing & Textiles Research Journal*. 24(4), 282-296.

Rusinko, C. (2007). Green manufacturing: an evaluation of environmentally sustainable manufacturing practices and their impact on competitive outcomes. *IEEE Transactions on Engineering Management.* 54(3), 445-454.

Russo, D., Rizzi, C., & Montelisciani, G. (2014). Inventive guidelines for a TRIZ-based eco-design matrix. *Journal of Cleaner Production.* 76 (4), 95e105.

Russwurm, S. (2013). Industry 4.0 will promote China's industrial restructuring and upgrading. Xinhua net. 25.

Saaty, R. W. (1987). The analytic hierarchy process: What it is and how it is used. *Mathematical Modelling*. 9(3-5), 161-176.

Sahid, A., Maleh, Y., & Belaissaoui, M. (2020). Understanding Agility Concept. In Strategic Information System Agility: From Theory to Practices (pp. 9-27). *Emerald Publishing Limited.*

Sakao, T., Sandström, G. Ö., & Matzen, D. (2009). Framing research for service orientation of manufacturers through PSS approaches. *Journal of Manufacturing Technology Management.* 20(5), 754-778.

Sangwan, K. S. (2011). *Quantitative and qualitative benefits of green manufacturing: an empirical study of Indian small and medium enterprises. In Globalized Solutions for Sustainability in Manufacturing (pp. 371-376).* Heidelberg, Berlin: Springer.

Sarkis, J. (2003). A strategic decision framework for green supply chain management. *Journal of Cleaner Production.* 11(4), 397-409.

Saunders, M., Lewis, P., & Thornhill, A. (2009). *Research methods for business students.* New York: Pearson education.

Saunders, M. N., Lewis, P., Thornhill, A., & Bristow, A. (2015). *Understanding research philosophy and approaches.* Harlow: Pearson Education.

Savita, K. S., Dominic, P. D. D., & Ramayah, T. (2012). Eco-design strategy among ISO 14001 certified manufacturing firms in Malaysia: green drivers and its relationship to performance outcomes. *In 2012 International Conference on Computer & Information Science.* Kuala Lumpur: June 12-14.

Schulte, J., & Hallstedt, S. (2017). Challenges and preconditions to build capabilities for sustainable product design. In *DS 87-1 Proceedings of the 21st International Conference on Engineering Design (ICED 17).* Vancouver, Canada: July: 21-25.

Schwab, K. (2017). *The fourth industrial revolution.* New York: Crown Publishing Group.

Segtnan, V. H., Šašić, Š., Isaksson, T., & Ozaki, Y. (2001). Studies on the structure of water using two-dimensional near-infrared correlation spectroscopy and principal component analysis. *Analytical Chemistry*. 73(13), 3153-3161.

Sendler, U. (2014). Industry 4.0: The challenge coming from the fourth industrial revolution.

Senge, P. M. (2006). The fifth discipline: The art and practice of learning Organization. London: Random House.

Sezen, B., & Cankaya, S. Y. (2013). Effects of green manufacturing and eco-innovation on sustainability performance. *Procedia-Social and Behavioral*

Sciences. 99, 154-163.

Shannon, K. (2012). Design for the other 90% design with the other 90%: Cities. *Journal on Landscape Architecture.* 7(2), 87-87.

Shapira, H., Ketchie, A., & Nehe, M. (2017). The integration of design thinking and strategic sustainable development. *Journal of Cleaner Production*. 140, 277-287.

Sharifi, H., & Zhang, Z. (1999). A methodology for achieving agility in manufacturing organisations: an introduction. *International Journal of Production Economics.* 62(1-2), 7-22.

Sharif, M. N. (2012). Technological innovation governance for winning the future. *Technological Forecasting and Social Change.* 79(3), 595-604.

Sheldrick, L., & Rahimifard, S. (2013). *Evolution in ecodesign and sustainable design methodologies. Re-engineering manufacturing for sustainability*. Singapore: Springer.

Shen, R. F., Wang, D. P., & Yang, J. J. (2014). Evolution model of knowledge network in agile supply chain and simulation of the knowledge diffusion. *Control & Decision.* 29(11), 2094-2100.

Shi, B., Feng, C., Qiu, M., & Ekeland, A. (2018). Innovation suppression and migration effect: The unintentional consequences of environmental regulation. *China Economic Review*. 49, 1-23.

Shi, Guoliang, & Zhang, Qi. (2012). To carry out risk management through a task-based organization: A review of Professor Zhang Kangzhi's "Task-based organization view". *Social Science Research.* 6, 41-48.

Shi, L., Wu, K. J., & Tseng, M. L. (2017). Improving corporate sustainable development by using an interdependent closed-loop hierarchical structure. *Resources, Conservation and Recycling.* 119, 24-35.

Shi, L., & Yu, B. (2014). Eco-industrial parks from strategic niches to development mainstream: The cases of China. *Sustainability*. 6(9), 6325-6331.

Shin, K. L. F., & Colwill, J. (2017). An integrated tool to support sustainable toy design and manufacture. 5(1), *191*-209.

Singh, P. K., & Sarkar, P. (2020). A framework based on fuzzy Delphi and DEMATEL for sustainable product development: A case of Indian automotive industry. *Journal of Cleaner Production*, 246, 118991.

Smith, P. G. (2001). Agile product development for mass customization: how to develop and deliver products for mass customization, niche markets, JIT, build-to-order, and flexible manufacturing: David, M. Anderson (introduction by B. Joseph Pine ii) New York: McGraw-Hill prof. *Journal of Product Innovation Management.* 18(6), 417-418.

Smith, S., & Yen, C. C. (2010). Green product design through product modularization using atomic theory. *Robotics & Computer Integrated Manufacturing.* 26(6), 790-79819.

Soh, K. L., & Wong, W. P. (2021). Circular economy transition: Exploiting innovative eco-design capabilities and customer involvement. *Journal of Cleaner Production*. 320, 128858.

Song, J. S., & Lee, K. M. (2010). Development of a low-carbon product design system based on embedded GHG emissions. *Resources Conservation & Recycling.* 54(9), 547-556.

Song, W. M., & Sakao, T. (2017). A customization-oriented framework for design of sustainable product/service system. *Journal of Cleaner Production.* 140, 1672-1685.

Sonnentag, S. (1998). Expertise in professional software design: A process study. *Journal of applied psychology*, 83(5), 703.

Sousa-Zomer, T. E., & Miguel, P. (2016). A QFD-based approach to support sustainable product-service systems conceptual design. *The International Journal of Advanced Manufacturing Technology.* 88, 701-717.

Sovacool, B. K., & Blyth, P. L. (2015). Energy and environmental attitudes in the green state of Denmark: Implications for energy democracy, low carbon transitions, and energy literacy. *Environmental Science & Policy.* 54*,* 304-315.

Spangenberg, J. H., Fuad-Luke, A., & Blincoe, K. (2010). Design for sustainability (DFS): the interface of sustainable production and consumption. *Journal of Cleaner Production.* 18(15), 1485-1493.

Spengler, L., Jepsen, D., Zimmermann, T., & Wichmann, P. (2020). Product sustainability criteria in ecolabels: a complete analysis of the Blue Angel with focus on longevity and social criteria. *The International Journal of Life Cycle Assessment*, 25, 936-946.

Spinosa, L. M., Klen, A. A. P., & Rabelo, R. J. (1998). High-Level Coordination of Business Processes in a Virtual Enterprise. *Tenth International Ifip Wg5.2/wg5.3 Conference on Globalization of Manufacturing in the Digital Communications Era of the Century: Innovation, Agility, and the Virtual Enterprise (4, 725-736)*. Boston, MA: Springer.

Stake, R. E. (1995). *The art of case study research*. Thousand Oaks, California: SAGE Publication

Staniskis, J., Stasiskiene, Z., 2006. Environmental management accounting in Lithuania: exploratory study of current practices, opportunities, and strategic intents. *Journal of Cleaner Production.* 14, 1252-1261.

Stoffels, P. of E. D., Kaspar, J., Bähre, D., & Vielhaber, M. (2018). Integrated product and production engineering approach - A tool-based method for a holistic sustainable design, process and material selection. *Procedia Manufacturing*. 21, 790-797.

Stratton, D., Behdad, S., Lewis, K., & Krishnamurty, S. (2014, August). A multi-level approach to concept selection in sustainable design. *In International Design Engineering Technical Conferences and Computers and Information in Engineering Conference.* Buffalo, New York: August 17-20.

Straub, D. W. (1989). Validating instruments in MIS research. *MIS Quarterly.* 13(2), 147-169.

Sullivan, K., Thomas, S., & Rosano, M. (2018). Using industrial ecology and strategic management concepts to pursue the sustainable development goals. *Journal of Cleaner Production.* 174, 237-246.

Sundin, E. (2009). Life-cycle perspectives of product/service-systems: In Design Theory. *Introduction to Product/Service-System Design*. London: Springer

Su, J. C. P., & Wang, Y. T. (2012). A decision support system to estimate the carbon emission and cost of product designs. *International Journal of Precision Engineering & Manufacturing.* 13(7), 1037-1045.

Syairudin, B., Trisunarno, L., & Gunarta, I. K. (2015). Strategy for achieving the millennium development goals 7-10 through knowledge-based sustainable design approach. *Procedia - Social and Behavioral Sciences.* 169, 61-68.

Szirmai, A. (2012. Industrialisation as an engine of growth in developing countries, 1950–2005. *Structure Change and Economic Dynamic*. 23(4), 406-420.

Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics (5th editions).* Boston, MA: Pearson Education.

Tang, G., Park, K., Agarwal, A., & Liu, F. (2020). Impact of innovation culture, organization size and technological capability on the performance of SMEs: The case of China. *Sustainability.* 12(4), 1355.

Tang, H., Wang, S., & Li, H. (2021). Flexibility categorization, sources, capabilities and technologies for energy-flexible and grid-responsive buildings: State-of-the-art and future perspective. *Energy*, 219, 119598.

Tang, W., & Zhu, J. (2020). Informality and rural industry: Rethinking the impacts of E-Commerce on rural development in China. *Journal of Rural Studies. 75, 20-29*.

Tang, Y., Yang, S., & Zhao, Y. F. (2016). Sustainable design for additive manufacturing through functionality integration and part consolidation. *Handbook of sustainability in additive manufacturing (pp. 101-144).* Singapore: Springer.

Tan, Z., Sadiq, B., Bashir, T., Mahmood, H., & Rasool, Y. (2022). Investigating the impact of green marketing components on purchase intention: The mediating role of brand image and brand trust. *Sustainability*, 14(10), 5939.

Tatoglu, E., Frynas, J. G., Bayraktar, E., Demirbag, M., Sahadev, S., Doh, J., & Koh, S. L. (2020). Why do emerging market firms engage in voluntary environmental management practices? A strategic choice perspective. *British Journal of Management.* 31(1), 80-100.

Teixeira, T. G. B., de Medeiros, J. F., Kolling, C., Ribeiro, J. L. D., & Morea, D. (2023). Redesign in the textile industry: Proposal of a methodology for the insertion of circular thinking in product development processes. *Journal of Cleaner Production*, 397, 136588.

Tenucci, A., & Supino, E. (2020). Exploring the relationship between product-service system and profitability. *Journal of management and governance*, 24(3), 563-585.

Thabane, L., Ma, J., Chu, R., Cheng, J., Ismaila, A., Rios, L. P., & Goldsmith, C. H. (2010). A tutorial on pilot studies: The what, why and how. *BMC medical research Methodology*. 10(1), 1-10.

Thomke, S., & Reinertsen, D. (1998). Agile product development: managing development flexibility in uncertain environments. *California Management Review.* 41(1), 8-30.

Tirkolaee, E. B. of I. E., Mardani, A., Dashtian, Z., Soltani, M., & Weber, G. W. (2020). A novel hybrid method using fuzzy decision making and multi-objective programming for sustainable-reliable supplier selection in two-echelon supply chain design. *Journal of Cleaner Production.* 250*,* 119517.

Toft, M. B., & Thøgersen, J. (2015). Exploring private consumers' willingness to adopt smart grid technology. *International Journal Consumer Studies.* 39*,* 648-660.

Triguero, A., Moreno-Mondéjar, L., & Davia, M. A. (2013). Drivers of different types of eco-innovation in European SMEs. *Ecological Economics*. 92, 25-33.

Tseng, H. E., Chang, C. C., & Li, J. D. (2008). Modular design to support green life-cycle engineering. *Expert Systems with Applications.* 34(4), 2524-2537.

Tseng, M. L., Lim, M. K., Wong, W. P., Chen, Y. C., & Zhan, Y. (2018). A framework for evaluating the performance of sustainable service supply chain management under uncertainty. *International Journal of Production Economics.* 195*,* 359-372.

Tse, Y. K., Zhang, M., Akhtar, P., & MacBryde, J. (2016). Embracing supply chain agility: an investigation in the electronics industry. *Supply Chain Management: An International Journal*. 21(1), 140-156.

Udell, G. F. (2015, October). SME access to intermediated credit: What do we know and what don't we know. *In Small Business Conditions and Finance Conference Volume (pp. 61-109)*.

United Nations World Commission on Environment and Development (1987). *The World Commission on Environment and Development: Our Common Future.* Oxford: Oxford University Press.

Umeda, Y., Fukushige, S., Tonoike, K., & Kondoh, S. (2008). Product modularity for life cycle design. *CIRP Annals - Manufacturing Technology.* 57(1), 13-16.

Usuga Cadavid, J. P., Lamouri, S., Grabot, B., Pellerin, R., & Fortin, A. (2020). Machine learning applied in production planning and control: a state-of-the-art in the era of industry 4.0. *Journal of Intelligent Manufacturing*, 31, 1531-1558.

Walter, A. T. (2021). Organizational agility: ill-defined and somewhat confusing? A systematic literature review and conceptualization. *Management Review Quarterly*, 71, 343-391.

Wang, L., & Shao, J. (2023). Digital economy, entrepreneurship, and energy efficiency. *Energy*. 269, 126801.

Wagner, M. (2008). Sustainability-related innovation and sustainability management. A Quantitative Analysis. *Working Paper*.

Wang, Q., Feng, Y., Wu, D., Yang, C., Yu, Y., Li, G., ... & Gao, W. (2022). Polyphase uncertainty analysis through virtual modelling technique. *Mechanical Systems and Signal Processing,* 162, 108013.

Wang, Z., Shou, M., Wang, S., Dai, R., & Wang, K. (2019). An empirical study on the key factors of intelligent upgrade of small and medium-sized enterprises in China. *Sustainability*, 11(3), 619.

Wang, Z., Subramanian, N., Gunasekaran, A., Abdulrahman, M. D., & Liu, C. (2015). Composite sustainable manufacturing practice and performance framework: Chinese auto-parts suppliers′ perspective. *International Journal of Production Economics.* 170*,* 219-233.

Wasim, M., Vaz Serra, P., & Ngo, T. D. (2020). Design for manufacturing and assembly for sustainable, quick and cost-effective prefabricated construction - a review. *International Journal of Construction Management.* 15, 3014-3022.

WCED, S. W. S. (1987). World commission on environment and development. *Our Common Future.* 17(1), 1-91.

Wei-jian, D. U., & Meng-jie, L. I. (2015). Relationship between OFDI and quality of export products: a variable weight estimation based on propensity score matching. *Journal of International Trade.* 08.

Wei, Y., Li, Y., Liu, X., & Wu, M. (2020). Sustainable development and green gross domestic product assessments in megacities based on the emergy analysis method - A case study of Wuhan. *Journal of Sustainable Development.* 28(1), *294-307*.

Welford, C., Murphy, K., & Casey, D. (2012). Demystifying nursing research terminology: Part 2. *Nurse Researcher*. 19(2), 29-35.

Wong, & Ngee, M. T. (2004). *Implementation of innovative product service systems in the consumer goods industry.* Cambridge: University of Cambridge.

Wong, S. K. S. (2012). The influence of green product competitiveness on the success of green product innovation: Empirical evidence from the Chinese electrical and electronics industry. *European Journal of Innovation Management. 15(4),* 468-490.

Woo, C., Chung, Y., Chun, D., & Seo, H. (2014). Exploring the impact of complementary assets on the environmental performance in manufacturing SMEs. *Sustainability.* 6(10), 7412-7432.

Worley, C. G., Williams, T., & Lawler, E. E, III. (2014). *The agility factor: Building adaptable organizations for superior performance.* San Francisco, CA: Jossey-Bass.

Wübbeke, J., Meissner, M., Zenglein, M. J., Ives, J., & Conrad, B. (2016). Made in china 2025. *Mercator Institute for China Studies. Papers on China*. 2(74), 4.

Wu, H., Lv, K., Liang, L., & Hu, H. (2017). Measuring performance of sustainable manufacturing with recyclable wastes: A case from China's iron and steel industry. *Omega.* 66, 38-47.

Wutich, A. & Gravlee, C. (2010). Water decision-makers in a desert city: Text analysis and environmental social science. *In I. Vaccaro, Smith, E. A., & Aswani, S. (Eds.), Environmental Social Sciences: Methods and Research Design (pp. 188-211).* Cambridge: Cambridge University Press.

Wu, J., Wang, Y., Shafiee, S., & Zhang, D. (2021). Discovery of associated consumer demands: Construction of a co-demanded product network with community detection. *Expert Systems with Applications*, 178, 115038.

Van Hemel, C., & Brezet, L. (1997) *Ecodesign: A promising approach to sustainable production and consumption.* Paris: United Nations Environment Programme, Industry and Environment, Cleaner Production.

Van Leeuwen, G., & Mohnen, P. (2017). Revisiting the Porter hypothesis: an empirical analysis of green innovation for the Netherlands. *Economics of Innovation and New Technology.* 26(1-2), 63-77.

Varl, M., Duhovnik, J., & Tavčar, J. (2020). Agile product development process transformation to support advanced one-of-a-kind manufacturing. *International Journal of Computer Integrated Manufacturing*, 33(6), 590-608.

Vinodh, S., & Rathod, G. (2010). Integration of ECQFD and LCA for sustainable product design. *Journal of Cleaner Production*. 18(8), 833-842.

Vezzoli, C., Kohtala, C., Srinivasan, A., Diehl, J., Fusakul, S. M., & Xin, L. (2014). Product-Service System design for sustainability. *Product-Service System Design for Sustainability.* Sheffield: Greenleaf Publishing Limited.

Villamil, C., Schulte, J., & Hallstedt, S. (2022). Sustainability risk and portfolio management—A strategic scenario method for sustainable product development. *Business strategy and the environment*, 31(3), 1042-1057.

Xavier, A. F., Naveiro, R. M., Aoussat, A., & Reyes, T. (2017). Systematic literature review of eco-innovation models: Opportunities and recommendations for future research. *Journal of Cleaner Production.* 149, 1278-1302.

Xiang, D., & Bei, J. (2013). The change in technical content of the import in the service trade and in the way of the development of China's industrial growth. *Management World.* 09.

Xiangfeng, L. (2007). SME development in China: A policy perspective on SME industrial clustering. Asian SMEs and Globalization", *ERIA Research Project Report*. 5, 37-68.

Xiao, L. & North, D. (2018). The role of technological business incubators in supporting business innovation in China: A case of regional adaptability? *Entrepreneurship and Regional Development*. 30(1-2), 29-57.

Xiong, B. & Tan, J. (1999). Product development organization mode based on concurrent engineering. *Electrical and Mechanical Engineering.* 16(1), 53-55.

Xu, B. (2010). In-depth implementation of Scientific Outlook on Development's efforts to promote independent innovation to serve the steady and rapid economic development and energy conservation and emission reduction. *China Equipment Engineering.* 1, 2-3.

Xu, G., & Yang, Z. (2022). The mechanism and effects of national smart city pilots in China on environmental pollution: Empirical evidence based on a DID model. *Environmental Science and Pollution Research.* 29(27), 41804-41819.

Xu, J & Cai, Y. (2000). Network environment and agile development mode in mass customization. *Science and Technology Progress and Countermeasures.* 17(12), 119-121.

Xu, M., David, J. M., & Kim, S. H. (2018). The fourth industrial revolution: Opportunities and challenges. *International Journal of Financial Research.* 9(2), 90-95.

Xu, P. (2012). *To the real design world. Design for a real world*. Beijing: CITIC Publishing House.

Yang, B., Swe, T., Chen, Y., Zeng, C., Shu, H., Li, X., & Sun, L. (2021). Energy cooperation between Myanmar and China under One Belt One Road: Current state, challenges and perspectives. *Energy*. 215, 119130.

Yang, C.J., Chen, J.L., 2011. Accelerating preliminary eco-innovation design for products that integrates case-based reasoning and TRIZ method. *Journal of Cleaner Production.*19(9-10), 998-1006.

Yang, M., Vladimirova, D., Rana, P., & Evans, S. (2014). Sustainable value analysis tool for value creation. *Asian Journal of Management Science and Applications.* 1(4), 312-332.

Yan, X., & Su, X. (2009). *Linear regression analysis: theory and computing*. New Jersey: World scientific.

Yicai. (2017). The prospects for sustainable development of The Belt and Road. *Retrieved from*

Yin, R. K. (2003). Designing case studies. *Qualitative Research Methods.* 5, 359-386.

Yin, R. K. (2013). Validity and generalization in future case study evaluations. *Evaluation*. 19(3), 321-332.

Yuan, B., & Xiang, Q. (2018). Environmental regulation, industrial innovation and green development of Chinese manufacturing: Based on an extended CDM model. *Journal of Cleaner Production.* 176, 895-908.

Yu, C., Shao, Y., Wang, K., & Zhang, L. (2019). A group decision making sustainable supplier selection approach using extended TOPSIS under interval-valued Pythagorean fuzzy environment. *Expert Systems with Applications.* 121, 1-17.

Yu, N., Genevet, P., Kats, M. A., Aieta, F., Tetienne, J. P., Capasso, F., & Gaburro, Z. (2011). Light propagation with phase discontinuities: generalized laws of reflection and refraction. *Science*. 334(6054), 333-337.

Yu, S. L., & Mao, Y. M. (2016). Analysis of the dilemma in the process of sustainable product design.

Yusuf, Y., Menhat, M. S., Abubakar, T., & Ogbuke, N. J. (2020). Agile capabilities as necessary conditions for maximising sustainable supply chain performance: An empirical investigation. *International Journal of Production Economics*. *222*, 107501.

Yusuf, Y. Y., Sarhadi, M., & Gunasekaran, A. (1999). Agile manufacturing: The drivers, concepts and attributes. *International Journal of Production Economics.* 62(1-2), 33-43.

Yusuf, Y. Y., Gunasekaranm A., Musa, A., Dauda, M., El-Berishy., & Cang, S. (2014). A relational study of supply chain agility, competitiveness and business

performance in the oil and gas industry. *International Journal of Production Economics.* 147, 531-543.

Yu, S., Yang, Q., Tao, J., Tian, X., & Yin, F. (2011). Product modular design incorporating life cycle issues - group genetic algorithm (GGA) based method. *Journal of Cleaner Production.* 19(9), 1016-1032.

Zafeirakopoulos, I. B., & Genevois, M. E. (2015). An analytic network process approach for the environmental aspect selection problem—a case study for a hand blender. *Environmental Impact Assessment Review.* 54, 101-109.

Zafar, A., & Mustafa, S. (2017). SMEs and its role in economic and socio-economic development of Pakistan. *International Journal of Academic Research in Accounting, Finance and Management Sciences*, 6(4).

Zamanloo, K., & Mansour, S. (2023). A multi-objective mathematical model for three-dimensional concurrent engineering with a sustainable approach: a case study in Iran. Environment, *Development and Sustainability*, 1-49.

Zare, H., Gaskin, D. J., & Anderson, G. (2015). Variations in life expectancy in organization for economic co-operation and development countries 1985-2010. *Scandinavian Journal of Public Health.* 43(8), 786-795.

Zenglein, M. J., & Holzmann, A. (2019). Evolving made in China 2025. *MERICS papers on China*, 8, 78.

Zhang, C. Y., & Lv, Y. (2018). Green production regulation and enterprise R&D innovation: Impact and mechanism research. *Business Management Journal.* 1, 71-89.

Zhang, F., & Gallagher, K. S. (2016). Innovation and technology transfer through global value chains: Evidence from China's PV industry. *Energy policy*, 94, 191-203.

Zhang, G., Qiang, C., Shao, X., & Peigen, L. I. (2008). Accuracy analysis for planar linkage with multiple clear-ances at turning pairs. Chinese *Journal of Mechanical Engineering.* 21(2), 36-41.

Zhang, G., & Yan, R. (2015). Typical process capability analysis of small-batch production based on fuzzy matter-element. *Journal of Mechanical Engineering.* 51(23), 116.

Zhang, H., Calvo-Amodio, J., & Haapala, K. R. (2013). A conceptual model for assisting sustainable manufacturing through system dynamics. *Journal of Manufacturing Systems.* 32(4), 543-549.

Zhang, S., Li, J. F., Deng, J. X., & Li, Y. S. (2009). Investigation on diffusion wear during high-speed machining ti-6al-4v alloy with straight tungsten carbide tools. *International Journal of Advanced Manufacturing Technology.* 44(1-2),

17-25.

Zhang, Y., Mirza, S. S., Safdar, R., Huang, C., & Zhang, C. (2023). Business strategy and sustainability of Chinese SMEs: determining the moderating role of environmental uncertainty. *Economic Research-Ekonomska Istraživanja*. 36(3), 2218468.

Zhang, Z., & Awasthi, A. (2014). Modelling customer and technical requirements for sustainable supply chain planning. *International Journal of Production Research.* 52(17), 5131–5154.

Zhang, Z., & Sharifi, H. (2007). Towards theory building in agile manufacturing strategy: A taxonomical approach. IEEE Transactions on Engineer Management. 54, 351-370.

Zhao-hui, L., Wei-min, Z., Zhong-yue, X., Jia-bin, S., & Dongdong, L. (2020). Research on extended carbon emissions accounting method and its application in sustainable manufacturing. *Procedia Manufacturing*. *43*, 175-182.

Zhao, X., & Sun, B. (2016). The influence of Chinese environmental regulation on corporation innovation and competitiveness. *Journal of Cleaner Production.* 112, 1528-1536.

Zheng, S. (2012). Design criticism based on national strategy of sustainable development. *Decoration.* 12(3), 225.

Zhong, L. (2017). Innovation of process and materials under the requirements of vehicle lightweight. *Automotive technologist.* 10, 35-37.

Zhou, L., & Zhang, H. (2016). Research on organization form of enterprise agile R&D. 3rd International Conference on Social Science (ICSS 2016). South Sulawesi, Indonesia: Universitas Negeri Makassar. October 16-17.

Zhou, J., Li, P., Zhou, Y., Wang, B., Zang, J., & Meng, L. (2018). Toward new-generation intelligent manufacturing. *Engineering.* 4(1), 11-20.

Zhou, J., Zhou, Y., Wang, B., & Zang, J. (2019). Human–cyber–physical systems (HCPSs) in the context of new-generation intelligent manufacturing. *Engineering.* 5(4), 624-636.

Zhou, M., Govindan, K., & Xie, X. (2020). How fairness perceptions, embeddedness, and knowledge sharing drive green innovation in sustainable supply chains: An equity theory and network perspective to achieve sustainable development goals. *Journal of Cleaner Production*. 260, 120950.

Zhou, Y., Xu, G., Minshall, T., & Liu, P. (2015). How do public demonstration projects promote green-manufacturing technologies? A case study from China. *Sustainable Development.* 23(4), 217-231.

Zhu, Q., & Geng, Y. (2013). Drivers and barriers of extended supply chain practices for energy saving and emission reduction among Chinese manufacturers.

Journal of Cleaner Production. 40, 6-12.

Zhu, Q., & Sarkis, J. (2007). The moderating effects of institutional pressures on emergent green supply chain practices and performance. *International Journal of Production Research*. 45(18-19), 4333-4355.

Zikmund, W. G., Babin, B. J., Carr, J. C., Griffin, M. (2013). *Business research methods.* New York: Cengage Learning.

Zubeltzu-Jaka, E., Erauskin-Tolosa, A., & Heras-Saizarbitoria, I. (2018). Shedding light on the determinants of eco-innovation: A meta-analytic study. *Business Strategy and the Environment.* 27(7), 1093-1103.

Zuo, Y., Chen, J. U., & Yang, J. I. (2003). Study on new product exploiting organizations of dynamic projects. *Value Engineering.*