Curriculum Vitae

HIMANSHU PRAJAPATI

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CAREER OBJECTIVE

Seeking a challenging and rewarding opportunity with an organization of repute, that recognizes and utilizes my true potential while nurturing my analytical and technical skills.

WORK EXPERIENCE

1. Worked as a Research Scholar at Sardar Vallabhbhai National Institute of Technology, Surat from July 2017 to January 2021.
2. Worked as *Assistant Professor* at Mahavir Swami College of Engineering and Technology, Surat, from January 2017 to July 2017.
3. Worked as *Graduate Engineer Trainee (Mechanical)* with Gannon Dunkerley & Co. Ltd. at its site at Adani Mining Pvt. Ltd., Parsa, Chhattisgarh and Visa Bao Ltd., Jajpur K. Road, Odisha from October 2012 to May 2013.

PUBLICATIONS

International Journals

1. Prajapati, H., Kant, R., & Shankar, R. (2021). Exploring the Reverse Logistics Frameworks: a systematic literature review. *International Journal of Logistics Systems and Management*. (Accepted for publication). (**SCOPUS** indexed journal)
2. Prajapati, H., Kant, R., & Shankar, R. (2021). Devising the performance indicators due to the adoption of reverse logistics enablers. *Journal of Remanufacturing*, https://doi.org/10.1007/s13243-020-00098-4 (**SCOPUS** indexed journal)
3. Prajapati, H., Kant, R., & Tripathi, S. M. (2020). An integrated framework for prioritizing the outsourcing performance outcomes. *Journal of Global Operations and Strategic Sourcing, 13*(4), 301-325. (**ESCI** and **SCOPUS** indexed journal)
4. Prajapati, H., Kant, R., & Shankar, R. (2019). Prioritizing the solutions of reverse logistics implementation to mitigate its barriers: A hybrid modified SWARA and WASPAS approach. *Journal of Cleaner Production*, *240*, 118219. (**SCIE** and **SCOPUS** indexed journal)
5. Prajapati, H., Kant, R., & Shankar, R. (2019). Bequeath life to death: State-of-art review on reverse logistics. *Journal of cleaner production*, *211*, 503-520. (**SCIE** and **SCOPUS** indexed journal)
6. Prajapati, H., Kant, R., & Gorane, S. (2018). Impact study of supply chain practices on organisational performance for Indian chemical industries. *International Journal of Logistics Systems and Management*, *31*(1), 20-38. (**SCOPUS** indexed journal)
7. Lahane, S., Prajapati, H., & Kant, R. (2021). Emergence of circular economy research: A systematic literature review. *Management of Environmental Quality: An International Journal*. https://doi.org/10.1108/MEQ-05-2020-0087. (**SCOPUS** indexed journal)
8. Prajapati, H., Kant, R., & Shankar, R. (xxxx). Selection of Strategy for Reverse Logistics implementation, *Submitted to Journal of Cleaner Production* (under review). (**SCIE** and **SCOPUS** indexed journal)
9. Prajapati, H., Kant, R., & Dable, S. (xxxx). Analyzing the CSFs of Industry 4.0 enabled Sustainable Supply Chain: A hybrid CRITIC and Grey DEMATEL approach, *Submitted to Journal of Cleaner Production* (under review). (**SCIE** and **SCOPUS** indexed journal)

10. Prajapati, H., Kant, R., & Shankar, R. (xxxx). A modelling and management approach of risks in reverse logistics implementation: An Indian electrical manufacturing industry perspective, *Submitted to Journal of Modelling in Management* (under review). (**ESCI** and **SCOPUS** indexed journal)

International Conferences

1. Prajapati, H., & Kant, R. (2021). 'Prioritizing the Reverse Logistics Risk Management Strategies: A Pythagorean Fuzzy AHP approach' in the proceedings of *International Conference on Innovations in Product, Process and System Design (ICIPPSD – 2021)*, Indore, India, pp. 492-498. ISBN: 978-93-87997-52-3
2. Prajapati, H., & Kant, R. (2019). 'Reverse Logistics Risk Management Strategies' in the proceedings of *61st National Convention of Indian Institution of Industrial Engineering and 5th International Conference on Industrial Engineering (ICIE-2019)*, Surat, India, pp. 95-97. ISBN: 978-93-86238-81-8
3. Prajapati, H., & Kant, R. (2018). 'Prioritization of Reverse Logistics Enablers' in the *International Conference on Role of Industrial Engineering in Industry 4.0 Paradigm (ICIEIND 2018)* and published in the book *Advances in Mechanical Engineering in the Era of New Technologies*, Siksha 'O' Anusandhan, Bhubaneswar, India, pp. 236-242. ISBN 978-81-930417-3-4
4. Prajapati, H., & Kant, R. (2017). 'Postponement: A Theoretical View' in the proceedings of *4th International Conference on Industrial Engineering (ICIE 2017)*, Surat, India, pp. 184-189. ISBN: 978-93-86238-39-9
5. Prajapati, H., & Kant, R. (2016). 'Penetration of Supply Chain Practices in Indian Chemical Industries' in the *58th National Convention of Indian Institution of Industrial Engineering and International Conference on Smart Strategies for Digital World*, Nagpur, India, pp. ICP002. ISBN: 978-93-83164-52-3
6. Shridhar, Prajapati, H., Kant, R., & Gorane, S. (2019). 'Prioritizing the Critical Success Factors of Sustainable Manufacturing Implementation' in the proceedings of *61st National Convention of Indian Institution of Industrial Engineering and 5th International Conference on Industrial Engineering (ICIE-2019)*, Surat, India, pp. 446-453. ISBN: 978-93-86238-81-8
7. Dable, S., Prajapati, H., Kant, R., & Gorane, S. (2019). 'Finding the Critical Success Factors for Industry 4.0 enabled Sustainable Supply Chain' in the proceedings of *61st National Convention of Indian Institution of Industrial Engineering and 5th International Conference on Industrial Engineering (ICIE-2019)*, Surat, India, pp. 636-639. ISBN: 978-93-86238-81-8

EDITORIAL DUTIES

Reviewer of

- International Journal of Production Research (SCI and SCIE indexed journal)
- Journal of Cleaner Production (SCIE indexed journal)
- Engineering, Construction and Architectural Management

ACADEMIC QUALIFICATION

1. Pursuing Doctor of Philosophy in Mechanical Engineering with 8.67 CGPA from Sardar Vallabhbhai National Institute of Technology, Surat. (Thesis Submitted in January 2021).
2. Did Master of Technology in Manufacturing Engineering with 9.03 CGPA from Sardar Vallabhbhai National Institute of Technology, Surat in 2016.
3. Did Bachelor of Technology in Mechanical Engineering with 70.30% from Uttar Pradesh Technical University in 2012.
4. Passed Intermediate from Central Board of Secondary Education with 1st class in 2007.
5. Passed High School from Central Board of Secondary Education with 1st class in 2005.

PROFESSSIONAL MEMBERSHIP

1. Has been awarded Life Member by esteemed Indian Institution of Industrial Engineering, Navi Mumbai bearing membership number MIIE/ LM-11176 (53).

PROJECT / DISSERTATION

1. Ph. D. thesis on *Select Study of Reverse Logistics Implementation Issues for Indian Manufacturing Industries*. This study develops a theoretical and empirical analysis to find the reverse logistics implementation issues in Indian manufacturing organizations. The work is carried out in five stages: In the first stage, a systematic literature is performed to critically analyze the available reverse logistics literature along with a critical examination of available reverse logistics framework in literature The second stage is to identify and model the reverse logistics risk factors for the assessment of associated risks during its implementation. The third stage is to identify and prioritize the Reverse Logistics Performance Indicators (RLPI) according to their capability of measuring the success of reverse logistics implementation. The fourth stage is to identify and prioritize the solutions for mitigating the impact of barriers to reverse logistics implementation. The fifth stage is to evaluate the criteria for selecting reverse logistics strategy and help to choose the best strategy for its implementation.
2. M.Tech dissertation on Impact Study of Supply Chain Practices on Organizational Performance for Indian Chemical Industries. A total of 14 Supply Chain Practices (SCPs) are selected for research. A research survey has being prepared and responses of 144 organizations have been collected. Upon testing of the survey results with the software namely SPSS and AMOS, the practices are classified into 3 groups according to implementation in the industries and the effect of these practices upon organizational performance namely operational performance, financial performance and customer satisfaction is examined.

AREA OF INTEREST

1. Manufacturing Science
2. Supply Chain Management
3. Industrial Management
4. Quality Engineering
5. Production Technology
6. Maintenance Engineering

WORKSHOP / TRAINING

1. Attended TEQIP-III sponsored one week short term training program (online) on Research Methodology: Tools and Techniques organized by Mechanical Engineering Department, S.V.N.I.T. Surat during November 30-December 4, 2020.
2. Attended TEQIP-III sponsored one week short term training program (online) on Multiple Attribute Decision Making and its Industrial Applications organized by Mechanical Engineering Department, S.V.N.I.T. Surat during November 02-06, 2020.
3. Attended three days webinar series on Multi-Criteria Decision Making in Manufacturing organized by Department of Production Engineering, K. K. Wagh Institute of Engineering Education and Research, Nashik in association with Indian Institution of Production Engineers (IIPE), Nashik local chapter during May 26-28, 2020.
4. Attended two days National level workshop on Multi-Criteria Decision Making Methods and Optimization Techniques organized by Department of Mechanical Engineering, TSSM's Bhivarabai Sawant College of Engineering and Research, Pune during December 28-29, 2018.
5. Attended TEQIP-II sponsored one week short term training program on New Trends in Industrial Engineering (NTIE 2016) organized by Mechanical Engineering Department, S.V.N.I.T. Surat during July 1-5, 2016.
6. Attended 6^{th} one day seminar on Recent Trend in Industrial Engineering (RTIE-2016) organized by Mechanical Engineering Department, S.V.N.I.T. Surat on April 9^{th}, 2016.

7. Attended TEQIP-II sponsored one day seminar on New Product Development (NPD 2016) organized by Mechanical Engineering Department, S.V.N.I.T. Surat on April 2nd, 2016.
8. Attended TEQIP-II sponsored one week short term training program on Advanced Quality Engineering Techniques (AQET 2015) organized by Mechanical Engineering Department, S.V.N.I.T. Surat during September 21-25, 2015.
9. Attended TEQIP-II sponsored one week short term training program on Research Methodology: Tools and Techniques organized by Mechanical Engineering Department, S.V.N.I.T. Surat during June 15-19, 2015.
10. Attended 5th one day seminar on Recent Trend in Industrial Engineering (RTIE-2015) organized by Mechanical Engineering Department, S.V.N.I.T. Surat on April 18th, 2015.
11. Attended a day industrial visit at TATA MOTORS, Pantnagar and had learned the assembly of the car - Magic Iris in September 2011.
12. Attended 4 week summer training at Indian Farmer Fertilizer Cooperative Limited, Phulpur unit and submitted a report on POWER PLANT in June-July 2011.
13. Attended Ariel Vehicle Workshop held at Nirma Institute of Technology, Ahmedabad organized by Institute of Technology Banaras Hindu University, Varanasi and built a RC powered Glider in March 2010.

ACHIEVEMENTS

1. Successfully coordinated 61st National Convention of Indian Institution of Industrial Engineering and 5th International Conference on Industrial Engineering (ICIE 2019) hosted by Indian Institution of Industrial Engineering (IIIE), Surat chapter and organized by S. V. National Institute of Technology, Surat, India in December, 2019.
2. Successfully coordinated 4th International Conference on Industrial Engineering (ICIE 2017) organized by S. V. National Institute of Technology, Surat, India in December, 2017.
3. Successfully assisted 57th National Convention of Indian Institution of Industrial Engineering and 3rd International Conference on Industrial Engineering (ICIE 2015) hosted by Indian Institution of Industrial Engineering (IIIE), Surat chapter and organized by S. V. National Institute of Technology, Surat, India in November 2015.
4. Qualified Graduate Aptitude Test in Engineering (GATE) 2014 with AIR 4462.
5. Qualified Graduate Aptitude Test in Engineering (GATE) 2012.
6. June 2010 – Completed 15 day's certificate course in AutoCAD organized by HPES India Ltd.
7. June 2009 – Completed 15 day's certificate course in C, C++ and data structure by HPES India Ltd.
8. March 2008 – 1 year certificate course in web page designing from Software Technology Group International Ltd.

ADDITIONAL ACTIVITIES

1. Student representative for Mess (Mess Secretary) at boy's hostel at S. V. National Institute of Technology, Surat, during 2018- 2019
2. Involved in various annual cultural activities organized by hostels at S. V. National Institute of Technology, Surat, during 2014- 2018.
3. Runner up in College Football Championship organized under abhivyakti-2k12 (Annual function) in 2012 and has been awarded with the Silver Medal.
4. Runner up in College tech-fest (bridge the gap) organized under abhivyakti-2k10 (Annual function) in 2010 and has been awarded with the runner up trophy.

PERSONAL DETAILS

Father's Name	:	Mr. Jagdish Prasad Prajapati
Date of Birth	:	March 14th, 1990
Gender	:	Male
Nationality	:	Indian
Marital Status	:	Married
Languages Known	:	Hindi, English.
Permanent Address	:	10-C, Beli Road, New Katra Prayagraj (Allahabad) State- Uttar Pradesh. Pin- 211002

REFERENCES

Dr. Ravi Kant	Dean, Student Welfare and Associate Professor, Mechanical Engineering Department, S. V. National Institute of Technology, Surat. ravi.kant@med.svnit.ac.in, Mobile no.: +91- 9714827744; +91- 8320658222
Dr. Tushar N. Desai	Professor, Mechanical Engineering Department, S. V. National Institute of Technology, Surat. tnd@med.svnit.ac.in, Mobile No.: +91-9924680088
Dr. Ravi Shankar	Amar S. Gupta Chair Professor of Decision Science, Department of Management Studies, Indian Institute of Technology Delhi, New Delhi. ravi1@dms.iitd.ac.in, r.s.research@gmail.com, Mobile.: +91-9811033937
Dr. Shailendra Kumar	Professor and Head, Mechanical Engineering Department, S. V. National Institute of Technology, Surat skbudhwar@med.svnit.ac.in, Mobile No.: +91-9824590088
Dr. Dinesh Singh	Assistant Professor, Mechanical Engineering Department, S. V. National Institute of Technology, Surat. dsingh@med.svnit.ac.in, Mobile No.: +91-9924333996
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Dr. Manojkumar Dalvi	Professor and Head, Mechanical Engineering Department, TSSM's Bhivarabai Sawant College of Engineering and Research, Pune. dalvimanojkumar@rediffmail.com, Mobile.: 9623580975
Dr. Shrikant Gorane	Lecturer, Mechanical Engineering Department, Government Polytechnic, Nashik. shrikantgorane@gmail.com, Mobile.: 9423476500
Dr. Rakesh Kumar Malviya	Assistant Professor, Mechanical Engineering Department, Shri Vaishnav Vidyapeeth Viswavidyalaya, Indore. rakeshmalviya@svvv.edu.in, Mobile.: 9926880622

I hereby declare that the information given above are true and correct to the best of my knowledge and belief.

Date:

Place: (Himanshu Prajapati)

Impact study of supply chain practices on organisational performance for Indian chemical industries

Himanshu Prajapati and Ravi Kant*

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Shrikant Gorane

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Abstract: Supply chain practices (SCPs) are no longer merely an option but rather an essential requirement for almost every organisation if they have to compete successfully. The research aims to gain an insight into the SCPs being practiced and to find the practices which are essential to withstand the pressure of the competitive environment for a chemical industry. This research focused on finding different SCPs being practiced in context to Indian industries. The different SCPs are being found by the extensive literature review. The framework was developed and relationship amongst these SCPs and organisational performance measures, namely, operational performance, customer satisfaction and financial performance are established for the Indian chemical industries. The developed framework was then tested empirically using data collected from respondents to a survey questionnaire. Structural equation modelling (SEM) was used to test the hypothesised relationships. The finding suggests that a successful SCPs implementation not only improves the operational performance, but also enhances customer satisfaction and financial performance. In addition, higher financial performance is also attributable to better customer value resulting from the achievement of better customer satisfaction.

Keywords: supply chain management; SCM; supply chain practices; SCPs; framework; structural equation modelling; India.

Reference to this paper should be made as follows: Prajapati, H., Kant, R. and Gorane, S. (2018) 'Impact study of supply chain practices on organisational performance for Indian chemical industries', *Int. J. Logistics Systems and Management*, Vol. 31, No. 1, pp.20–38.

Biographical notes: Himanshu Prajapati is a Post-graduate Research Scholar at the Department of Mechanical Engineering, Sardar Vallabhbhai National Institute of Technology, Surat, India. His areas of interest include supply chain management and operations management.

Exploring the reverse logistics frameworks: a systematic literature review

Himanshu Prajapati* and Ravi Kant

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Ravi Shankar

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Indian Institute of Technology Delhi,
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Abstract: Reverse logistics deals with item flow in the opposite direction of conventional supply chain flow in order to recapture values or to ensure proper disposal. A framework is required for outlining reverse logistics to impart another vision of institution and addresses key issues of management. The study aims for critical examination of available reverse logistics framework in literature based on several distinct classifications. This is a novel approach making an effort to critically examine reverse logistics frameworks. This research focuses on the contribution of academicians/specialists/practitioners in developing frameworks, level of framework verification, mode of framework verification, novelty of frameworks and comparative analysis on reverse logistics literature. This research provides guidelines to get an idea about state-of-art development of reverse logistics frameworks and to build up a unified framework for reverse logistics using a systematic arrangement of reverse logistics constructs/elements.

Keywords: reverse logistics; framework; review; systematic literature review; statistical analysis; reverse logistics framework.

Reference to this paper should be made as follows: Prajapati, H., Kant, R. and Shankar, R. (xxxx) 'Exploring the reverse logistics frameworks: a systematic literature review', *Int. J. Logistics Systems and Management*, Vol. X, No. Y, pp.xxx-xxx.

Biographical notes: Himanshu Prajapati is a PhD Research Scholar in the Department of Mechanical Engineering, Sardar Vallabhbhai National Institute of Technology, Surat, India. He is doing his PhD in the field of reverse logistics.

Ravi Kant is an Associate Professor at the Department of Mechanical Engineering, Sardar Vallabhbhai National Institute of Technology, Surat, India. His areas of research interest include knowledge management, operations and

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Review

Bequeath life to death: State-of-art review on reverse logistics

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ABSTRACT

Reverse logistics is gaining attention of the industrialist and academicians due to enormous waste generation leading to increased environmental unease. The objective of this study is to perform a systematic review of the available reverse logistics literature, highlighting the research gap and setting future research directions. Content Analysis methodology is used in this literature review with Abductive research approach. 449 relevant articles are selected containing the word "reverse logistics" in their title, abstract and keywords, which were published in a well-known database. These articles are meticulously evaluated and categorized in 11 different categories according to their structural dimensions and contents. This work identifies: (i) various research design and methodology used in reverse logistics literature, (ii) most explored areas of reverse logistics, and discusses the sector where the exploration can be redirected, (iii) most explored industries, (iv) most used algorithms, Operation Research (OR)/ Mathematical tool, data analysis technique and Multi Criteria Decision Making (MCDM) methods, and (v) enablers and barriers to reverse logistics. This study will help researchers to get opportunities in identifying the new dimensions of research in the field of reverse logistics.

Contents

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Prioritizing the solutions of reverse logistics implementation to mitigate its barriers: A hybrid modified SWARA and WASPAS approach

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Weighted aggregated sum product assessment
India

ABSTRACT

Reverse logistics has achieved recognition due to environmental disturbance, government policies, sustainability, globalization, warranty returns, end-of-life components, etc. However, business associations face numerous complexities and difficulties in executing reverse logistics activities due to the presence of several barriers. This research aims to identify and prioritize the solutions for mitigating the impact of barriers to reverse logistics implementation. This study proposes a hybrid framework using Modified Step-Wise Weight Assessment Ratio Analysis (SWARA) and Weighted Aggregated Sum Product Assessment (WASPAS) to achieve the objective of this research. The relative effect of barriers is evaluated using Modified SWARA, while WASPAS is used to prioritize the solutions of barriers to reverse logistics implementation. The empirical case investigation of an Indian electrical manufacturing industry is conducted to demonstrate the applicability of the proposed framework. The solution 'Formulate and enforce strict yet supportive laws, policies for returns and end of life components' is most prominent for mitigating barriers. This research presents a structured and systematic approach for organizations to mitigate reverse logistics implementation barriers through the proposed solutions. Also, this research lists out few novel barriers and its solutions from the case company prospective. The proposed solutions are effective in solving multiple barriers simultaneously. The research may give significant statute to the decision-makers and domain experts to build up their arrangement of organizational activity for short terms as well as for the long haul for implementing reverse logistics.

1. Introduction

Rapid industrialization and growing population have led to increased production and consumption of a wide variety of products. Due to unplanned industrialization, human life and the natural environment are affected by energy waste and pollution (Munny et al., 2019). The generation of enormous waste causes substantial damage to the planet (Prajapati et al., 2018). Environmental disturbance, government policies, sustainability, globalization of market, warranty returns, end-of-life components, etc. has led to the recognition and adoption of reverse logistics practices (Ali et al., 2018; Govindan and Bouzon, 2018). Implementation of reverse logistics practices in India receives very less attention because of the lack of strict waste management policies and closed-loop supply chain structure (Mangla et al., 2016). The majority of the wastes are collected by the rag pickers and junk dealers in the country which counts in the informal sector and having negligible knowledge of scientific waste management (Kannan et al., 2016). In India, Solid Waste Management Rules, 2016 exists which covers policies for management of plastic waste, e-waste, biomedical waste, hazardous waste and construction and demolition waste. This rule focuses on better integration of rag pickers, waste pickers and junk dealers to bring the informal sector under the formal sector. It also emphasizes to segregate waste at source and directs industries to invest in waste processing and treatment (Down to Earth, 2018). These rules and regulations may take years for successful implementation if enforced properly. Once enforced, the industries are destined to implement reverse logistics practices. The best reverse logistics practices would prompt reduce waste generation, higher sales income and decreased operational expenses (Abdulrahman et al., 2014). Reverse logistics is defined as the management of product, component and materials to acquire the maximum economic and environmental valuation while

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An integrated framework for prioritizing the outsourcing performance outcomes

Himanshu Prajapati, Ravi Kant and Sandeep Mani Tripathi
Department of Mechanical Engineering,
Sardar Vallabhbhai National Institute of Technology, Surat, India

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5 February 2020
Accepted 10 February 2020

Abstract

Purpose – Outsourcing is a crucial tool for an organization to focus on its core business operations. The purpose of this study is to find critical success factors (CSFs) of outsourcing and to prioritize the performance outcomes of outsourcing because of the adoption of its CSFs.

Design/methodology/approach – This research proposes the hybrid framework of fuzzy Delphi, fuzzy analytic hierarchy process (F-AHP) and fuzzy additive ratio assessment (F-ARAS) to fulfill the research objectives. Fuzzy Delphi is used to finalize the CSFs of outsourcing and F-AHP provides the relative weights to it. F-ARAS is used to prioritize the outsourcing performance indicators with respect to CSFs. The empirical case investigation of three Indian large-scale public sector process industries is conducted to demonstrate the applicability of the proposed framework.

Findings – The result shows that increased dominance in core activity, ability to increase or decrease capacity, improved financial performance, optimized resource utilization and increased market share are the top five performance outcomes because of the adoption of outsourcing CSFs.

Research limitations/implications – Factors such as cultural, political, environmental and size of the organization may have a significant implication on the research results.

Originality/value – This is a novel approach towards the prioritization of performance outcomes of outsourcing. Moreover, the present research is a helpful tool to manage outsourcing and choosing which performance outcome of outsourcing ought to be used to measure implementation. This will help to recognize potential opportunities and preparing strategic planning for both short-term and long-term goals.

Keywords Outsourcing, Critical success factors, Enablers, Fuzzy analytic hierarchy process, Qualitative, Performance outcomes, Process industry, Fuzzy Delphi, Hybrid MCDM

Paper type Research paper

1. Introduction

In the present century, numerous associations have endeavored to survive colossal difficulties such as uncertain economy, business globalization and frequent technological changes (Dirani and Kuchinke, 2011). Resources had a critical role in the collaborative strategic decision-making process because of a dynamic situation in the supply and demand of products and services, ruthless competition throughout the market, lack of quality assurance in the business environment and purchase behavior of the company (Kang *et al.*, 2009). Furthermore, no association can exclusively rely on alone assets to remain competitive in the current globalized economic environment. Hence, outsourcing can be a perfect response to the challenges in the present business conditions.

Outsourcing is associated with the outside contracting of decided non-crucial endeavors necessary for manufacturing goods or providing services through contracts or agreements with firms that are capable to attempt such activities (Baraldi *et al.*, 2014). It is a well-established historical practice, back from the Romans era who offered a contract for tax

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Emergence of circular economy research: a systematic literature review

Swapnil Lahane, Himanshu Prajapati and Ravi Kant
Mechanical Engineering Department,
Sardar Vallabhbhai National Institute of Technology, Surat, India

Received 4 May 2020
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13 December 2020
22 January 2021
Accepted 30 January 2021

Abstract

Purpose – This paper aims to examine the current status and trends in circular economy (CE) research. The state of CE research is assessed by critically examining the field by considering diverse dimensions.

Design/methodology/approach – The systematic literature review (SLR) of CE research articles is analyzed using the content analysis methodology. The articles are selected from the Scopus database containing the keyword "Circular economy" in its title, abstract and keywords. In total, 587 research articles published on CE in various reputed peer-reviewed journals over 15 years (2005–2020) are selected for review.

Findings – The research in the domain of CE is in the beginning phase. It has numerous quantitative modeling opportunities, value creation and propositions aspects and application in real-life case problems. One of the significant findings is that the CE research field is more inclined toward the implication of the empirical qualitative research. The identified research gaps and future opportunities could provide further direction to broaden CE research.

Research limitations/implications – The review focuses on publications published in peer-reviewed journals in the English language only. It restricts the recognition of relevant articles published in conference proceedings and languages other than English.

Originality/value – This research study will provide a deeper understanding of CE research's existing status and highlights the research trends, gap and its applicability in real-life case problems and setting up future research directions in the CE field.

Keywords Circular economy, CE, Systematic literature review, Content analysis, Sustainable development, Sustainability

Paper type Literature review

1. Introduction

Growing population, rising economic growth, fast urbanization and varying living standards have significantly declined the available natural resources. Further, it also increases the planet's waste generation rate (Liu *et al.*, 2018). There is remarkable depletion of natural resources and damage to the environment due to increased societal requirements for manufactured products (Mangla, 2019). In China alone, the waste generation rate was around 3,454 m tonnes in 2014, with an average yearly rise of 11% (Ministry of Environment Protection of China, 2015). In 2016, the worldwide waste production was 2.01 bn tonnes, and it may increase up to 3.4 bn tonnes in the upcoming 25–30 years (Lange *et al.*, 2018). It is an alarming situation, and total waste will be increased up to 70% on its current level by 2050 if urgent action is not initiated (Hrabec *et al.*, 2020). In a developed nation like the USA, the annual e-waste generation had been raised from 1.90 m tons in 2000 to 3.41 m tons in 2011 (Lu *et al.*, 2015). At present, about 2.01 bn metric tons of municipal solid waste is produced annually worldwide. It is estimated that overall waste generation will rise to 3.40 bn metric tons by 2050 (The World Bank, 2018).

The European Union (EU) initiated the zero waste management programs to implement the circular economy (CE) concept and the closing-loop action plan strategy. Also, they realized that transitioning to a CE could gain 600 bn euros annually in the manufacturing sector of the EU (Sverko Grdic *et al.*, 2020). India, the second most populated country globally,

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