

|  | CONTEXT OF THE TRANSFORMATION   |   | TRANSFORMATION   | CONTENT AND RESULTS OF CHANGE   |
|--|---|---|--|---|
|  | <i>External</i>   | <i>Internal</i>   |  |   |
| <b>DESCRIPTIVE RESEARCH</b><br>(when, how, and what change occurred) | Research on ‘ <b>the external situation when change occurred</b> ’ is:<br><br><b>Developed</b> in understanding: <ul style="list-style-type: none"> <li>There is a rise in the importance and adoption of industrial services globally</li> </ul><br><b>Developing</b> in understanding: <ul style="list-style-type: none"> <li>Inherent weaknesses in the statistical classification to separate services and manufacturing</li> <li>International differences in the adoption of servitization and the role of demographic, educational, and regulatory factors</li> <li>Differing characteristics of goods and service sectors regarding international trade</li> <li>Impact of oligopolistic markets (e.g., government contracts) and how this affects contracting</li> <li>Role of value-creating systems, networks, ecosystems, and constellations in stimulating companies to reveal or anticipate market opportunities</li> <li>Endogenous and exogenous factors influencing a manufacturer’s ability to servitize</li> </ul><br><b>Undeveloped</b> in understanding: <ul style="list-style-type: none"> <li>Influence of disruptive innovation and dynamics of technology shift on servitization</li> <li>Broader environmental and social aspects of servitization</li> </ul> | Research on ‘ <b>the internal situation when change occurred</b> ’ is:<br><br><b>Developed</b> in understanding: <ul style="list-style-type: none"> <li>Service strategies influence the financial performance of manufacturing firms positively, but evaluation is complex and relationships are non-linear and bounded</li> </ul><br><b>Developing</b> in understanding: <ul style="list-style-type: none"> <li>Business motives underpinning servitization</li> <li>Impact of differing service strategies, their timing, and rate affect the revenue, profit, and growth of a firm</li> <li>Complement between goods and services sales</li> <li>Role of organisational focus (goods versus services) on profitability of additional services; service success depends on a supportive organisational design</li> <li>Role of product complexity and technology in reshaping business models</li> <li>Differing ways goods and service businesses innovations occur</li> <li>Influence of service innovation on product innovation and export performance</li> <li>Mediation of a separate service department for advanced service delivery on management commitments</li> </ul><br><b>Undeveloped</b> in understanding: <ul style="list-style-type: none"> <li>The manufacturer as a customer of advanced services</li> <li>Legal and financial frameworks that support advanced services</li> <li>Role and advantages of active manufacturing technology innovation in supporting services</li> <li>Social and collective dynamics of business leaders that influence the propensity to servitize</li> <li>Leadership styles</li> <li>How services support the business of the firm</li> <li>Influences of organisational size</li> </ul> | Research on ‘ <b>how change occurred</b> ’ is:<br><br><b>Developed</b> in understanding: <ul style="list-style-type: none"> <li>Organisational change takes place as manufacturing businesses adopt services</li> </ul><br><b>Developing</b> in understanding: <ul style="list-style-type: none"> <li>Stages in the change process as manufacturing businesses adopt services.</li> <li>Influence of incremental change in complex engineering services</li> </ul><br><b>Undeveloped</b> in understanding: <ul style="list-style-type: none"> <li>Factors influencing adoption of servitized business models</li> <li>Pathways of service business-unit development</li> <li>Change processes enacted in moving from a goods- to service-orientated climate</li> <li>Evolutionary patterns within business model that unfold through service-innovation-driven change</li> </ul> | Research on ‘ <b>what was changed</b> ’ is:<br><br><b>Developed</b> in understanding: <ul style="list-style-type: none"> <li>Language for describing the fundamental unit of exchange; traditional goods-service distinctions are unnecessary</li> <li>Typologies of service strategies and classifications of product-service value propositions and dimensions</li> </ul><br><b>Developing</b> in understanding the: <ul style="list-style-type: none"> <li>Co-design that blends industrial goods and services innovation design strategies to identify radical innovation</li> <li>Customer-supplier relationships (i.e., risk, information, operational, legal adaptations, norms, social capital, and trust) for differing service types; disparities in buying between buying goods and services</li> <li>Network structures/configurations, capabilities, and relationships with intermediaries (e.g., distributors, agencies, and dealers) to support types of services; inter-organisational power in complex networks, degrees of collaboration, and triadic arrangements</li> <li>Business-unit configuration and organisation design, arrangements, structures, systems, metrics, and capability acquisition.</li> <li>Human resources implications; antecedents of service climate and general traits, motivation, and skills of services-centred sales force in B2B</li> <li>Role of ICT (i.e., IOT, IES, and big data) in service innovation, delivery, value creation, and differentiation</li> </ul><br><b>Undeveloped</b> in understanding: <ul style="list-style-type: none"> <li>Dynamics of value propositions and co-creation in broader networks</li> <li>Customer acceptance of service offerings and customer behaviour</li> <li>Coexistence of goods- and service-orientated climates in an organisation</li> <li>B2C applications (i.e., current bias toward B2B)</li> <li>Link between inter-organisational relationships and contributions are intertwined between buyer and supplier for complex service strategies</li> <li>Application of systems thinking to service strategies of manufacturers</li> </ul> |

**Table 3.** Overview of proposed agenda and summary of research topics regarding manufacturers’ adoption of advanced services

| CONTEXT OF THE TRANSFORMATION                                      |  | TRANSFORMATION  | CONTENT AND RESULTS OF CHANGE   |  |
|--|--|---|---|--|
| External   | Internal   |   |   |  |
| PRESCRIPTIVE RESEARCH<br>(when, what, and how should change occur) | Research on ‘the external situation when change should occur’ is:<br><br><b>Undeveloped</b> in understanding: <ul style="list-style-type: none"><li>External conditions that influence the right time to adopt a service strategy to maximise growth of revenue and profit</li></ul> | Research on ‘the internal situation when change should occur’ is:<br><br><b>Undeveloped</b> in understanding: <ul style="list-style-type: none"><li>Internal conditions needed for service strategy adoption and growth in revenue and profit</li></ul> | Research on ‘how change should occur’ is:<br><br><b>Developing</b> in understanding: <ul style="list-style-type: none"><li>A classification of service offerings from a business-model perspective, portfolio analysis, and transitioning strategies</li><li>Proposed degrees of service-strategy development</li><li>A process model for extending service business and development of industrial service offerings</li><li>Firms should concentrate on developing SSP (services that support the product) portfolios before SSC (services that support customer)</li><li>Loyal, core customers should be targeted initially to develop service strategies</li><li>Firms should implement an organisational design across entire business, and de-centralise decision-making on developing SSP portfolios before SSC</li><li>Maturity models are valid for evaluating new service development and IS support during implementation of services business</li><li>Roadmaps for technology to support product-service integration</li></ul><br><b>Undeveloped</b> in understanding: <ul style="list-style-type: none"><li>Decision support systems that aid managers during servitization</li></ul> | Research on ‘what should be changed’ is:<br><br><b>Developing</b> in understanding: <ul style="list-style-type: none"><li>Design of service offering</li><li>Evaluating new service offerings from the viewpoint of acceptability to customers and customer experience</li><li>Goods-service blueprinting; visualisations to aid uncertainty and communication</li><li>Evaluation of strategies to increase services (e.g., PSS)</li><li>Identification of new organisational structures</li><li>Techniques supporting service cost estimating through life costs, dealing with uncertainty, pricing, and bidding</li><li>Techniques developing cost sharing to create capacity to deliver services</li><li>Support systems design frameworks, simulations, and enterprise imaging; activity-based process modelling</li><li>Techniques for analysing information requirements for design and delivery of complex engineering systems</li></ul><br><b>Undeveloped</b> in understanding: <ul style="list-style-type: none"><li>Holistic audits and capabilities for servitization</li></ul> |

**Table 3.** (continued) Overview of proposed agenda and summary of research topics regarding manufacturers’ adoption of advanced services