COLLANA DI STUDI DI MANAGEMENT ECONOMIA E DIRITTO DELLE IMPRESE

2

Direttore scientifico

Roberto Cafferata

Comitato direttivo

Roberto CAFFERATA Università degli Studi di Roma "Tor Vergata"

Marco Fazzini Università Europea di Roma

Hans HINTERHUBER Universität Innsbruck

Pietro MASI Università degli Studi di Roma "Tor Vergata"

Consiglio scientifico

Dermot Breslin Sheffield University Management School

Giovanna Dossena Università degli Studi di Bergamo

Giancarlo Ferrero Università degli Studi di Urbino "Carlo Bo"

Giuseppe Lombardo Università degli Studi di Genova

Paolo Parini Università degli Studi di Genova

Harald PECHLANER Katholische Universität Eichstätt–Ingolstadt

Adriano Propersi Università Cattolica del Sacro Cuore di Milano

Luigi PUDDU Università degli Studi di Torino

Jean–Pierre van der Rest Universiteit Leiden

COLLANA DI STUDI DI MANAGEMENT ECONOMIA E DIRITTO DELLE IMPRESE



ad honorem della professoressa Isabella Marchini

La collana si inserisce nel quadro fortemente evolutivo degli studi di Economia aziendale e delle relazioni degli studi aziendalistici con quelli di altre discipline, soprattutto di matrice giuridica. La collana si propone di valutare scientificamente e pubblicare, sulla base del referaggio anonimo di autorevoli studiosi, opere che aspirino ad avere cinque fondamentali caratteristiche — in vario modo richiamate dai documenti ufficiali pubblicati dall'Aidea e dalle Società scientifiche operanti nell'ambiente universitario del Paese sintetizzabili nel modo seguente: contenuto di monografia organicamente strutturata; originalità del pensiero; rigore metodologico; potenziale impatto positivo sulla comunità degli studiosi di Economia aziendale e di diritto delle imprese anche a livello della reciproca interazione degli studi economici con quelli giuridici; innovatività, nel senso dell'apprezzabile contributo dato al progresso della ricerca teorica e/o empirica in sede universitaria.

La collana si avvale dell'inserimento nella produzione di una casa editrice a diffusione nazionale — e più di recente internazionale — dalla consolidata storia editoriale a servizio della comunità scientifica italiana.

Luna Leoni

The Role of Servitization and Knowledge Management in Enhancing Firms' Competitiveness





www.aracneeditrice.it info@aracneeditrice.it

Copyright © MMXVII Gioacchino Onorati editore S.r.l. – unipersonale

> www.gioacchinoonoratieditore.it info@gioacchinoonoratieditore.it

> > via Vittorio Veneto, 20 00020 Canterano (Rome) (06) 45551463

ISBN 978-88-255-0871-0

No part of this book may be reproduced by print, photoprint, microfilm, microfiche, or any other means, without publisher's authorization.

Ist edition: November 2017

To all Researchers... ...of Happiness

What is doomed to reach you, will find the way to get to you.

Hester Browne writer and journalist

Secondo alcuni autorevoli testi di tecnica di aeronautica, il calabrone non può volare, a causa della forma e del peso del proprio corpo in rapporto alla superficie alare. Ma il calabrone non lo sa e perciò continua a volare.

> Igor' Ivanovič Sikorskij pioniere dell'aviazione russo

My deepest gratitude to all those – each in their own way – made this book possible.

Luna

Contents

15 *Preface* by Paola M.A. Paniccia

17 Introduction

21 Chapter I Underpinnings the concepts of Servitization and Knowledge Management

1.1. Introduction, 22 - 1.2. Manufacturing economy vs. Service economy, 23 - 1.3. What is meant by servitization?, 26 - 1.3.1. Servitization in theory, 27 - 1.3.1.1. Origins, definitions, and research communities involved, 27 - 1.3.1.2. Servitization elements, 31 - 1.3.2. Servitization in practice, 35 - 1.3.3. Servitization: a summary, 38 - 1.4. What is meant by Knowledge Management?, 39 - 1.4.1. What is knowledge?, 39 - 1.4.2. Knowledge management: origins and definitions, 43 - 1.4.3. Knowledge management: a summary, 49

51 Chapter II

Interdependence between Servitization strategy and Knowledge Management process: a theoretical analysis

2.1. Introduction, 52 - 2.2. Systematic review of the literature on servitization and knowledge management, 53 - 2.2.1. Search strategy and protocol, 54 - 2.3. Servitization and knowledge management: a descriptive analysis of the literature, 56 - 2.3.1. Time-line distribution, 56 - 2.3.2. Geographical distribution, 57 - 2.3.3. Journals distribution, 59 - 2.4. Servitization and knowledge management: a thematic analysis of the literature, 60 - 2.4.2. Identification of codes, 60 - 2.4.2. Identification of key themes, 61 - 2.5. Main findings, 62 - 2.5.1. Research methodologies, 62 - 2.5.2. Business functions, 64 - 2.6. Discussion and conclusions, 65

67 Chapter III Empirical evidences from the IBM Corporation case study

3.1. Introduction, 68 - 3.2. Theoretical background, 70 - 3.3. IBM Corporation: a story of changes and successes, 71 - 3.3.1. From foundations to 1950, 72 - 3.3.2. From 1950 until the crisis, 73 - 3.3.3. Emerging from the crisis through servitization, 75 - 3.3.4. From 2002 to the present, 77 - 3.4. Case study methodology, 80 - 3.4.1. Data collection, 80 - 3.4.2. Data analysis, 84 - 3.5. Case study results, 85 - 3.5.1. Adding services implies adding knowledge, 85 - 3.5.2. Integrate activities without melting them, 87 - 3.5.3. Knowledge management system follows business strategy and ICT opportunities, 88 - 3.5.4. Social perspective and informal network structure, 90 - 3.5.5. Encouraging knowledge sharing, 91 - 3.6. Discussion and conclusions, 92

95 Chapter IV

Latest developments and trends

4.1. Introduction, 96 - 4.2. Deservitization, 97 - 4.3. Industry 4.0, 100 - 4.4. Convergence between manufacturing and service sectors, 107 - 4.4.1. *Productization*, 110 - 4.4.2 *An integrated model*, 111

- 117 Conclusions
- 123 References

Preface

by Paola M.A. Paniccia¹

Today, the ability to change represents – as never before – a crucial element for all organizations that want to maintain their competitive position and take advantage of opportunities in the market. This is especially true if we think about the growing importance that services, knowledge, and technology have in the current global competitive environment.

Eurostat reports that, in 2016, services contributed 73.9% of the EU-28's total gross value added, and the activities with the strongest growth were information and communication activities (4.1%) and business services $(3.1\%)^2$. The European Council (in Lisbon in 2000 and Barcelona in 2002) aims to turn the European Union into the most competitive and dynamic knowledge-based economy in the world. And, it is only in the U.S., that the technology industry employs more than 6.7 million people (in 2016)³.

These changing market conditions have inevitably affected the more traditional sectors, such as manufacturing. The consequences are visible in the profound changes faced by manufacturing companies, at organizational, strategic, but also and above all, at social and cultural levels.

Obviously, these phenomena have attracted the interest of many scholars and have led to the birth and development of various research communities actively involved in trying to understand and, at the same time, explain the nature and scope of the same.

In this vein, and as clearly stated in the title, this book aims to provide a sufficiently exhaustive and rich overview of the role played

¹Full Professor in Management at Tor Vergata University of Rome.

²Data source: http://ec.europa.eu/eurostat/statisticsexplained/index.php/National_accounts_and_GDP#Main_statistical_findings.

³Data source: https://www.comptia.org/about-us/newsroom/press-releases/2016/03/01/u.s.-tech-industry-employment-surpasses-6.7-million-workers.

by the adoption of a servitization strategy and the implementation of knowledge management processes in the enhancement of firms' competitiveness.

In order to do so, the author initially provides insights on the actual competitive environment, deeply describing – also through an indepth analysis of the academic literature – the two phenomena under investigation (i.e., servitization and knowledge management). Subsequently, she offers empirical evidence of the implementation of the above-mentioned studies, through an inductive case study of the IBM Corporation. Finally, the book ends with an overview on the ongoing trends and developments stemming from the adoption of servitization and knowledge management, providing useful reflections for the future.

In general, this book provides an important contribution by demonstrating how the juxtaposition of theory and practice deserves greater attention, both from academics and practitioners, in order to deepen our real understanding of the world around us.

Introduction

Over the last few years – in response to the many economic changes and to the growing importance acquired by intangible elements and assets (such as services and knowledge) – industrialized countries have increasingly based their economic activity on the tertiary sector. Likewise, scientific reflection, once largely devoted to manufacturing, has favoured the study of services.

Obviously, this shift has not led to the disappearance of manufacturing companies, but to their radical rethinking. Today, in fact, an increasing number of manufacturing firms are moving from the production of tangible goods to the offering of integrated solutions (i.e., a combination of tangible and intangible).

Moreover, the financial crisis and the intense technological innovation processes are regenerating the interest in manufacturing, especially by mature economies. Italy is not excluded from this trend; indeed, the importance of the manufacturing sector is back in favour. In this context, particularly significant is the title of one of the last conferences organized by Sinergie⁴: *"Manufacturing: what future?"*, in which both academics and practitioners have shared their experiences, reflections and theoretical contributions about this "new manufacturing".

What emerges is the importance of the capability to innovate (i.e., to change) and to create added value through the application of technologies and knowledge development, for the production of goods and services able to meet new needs and to generate a competitive advantage.

⁴Further information available at: http://www.ita.sijm.it.

In line with this renewed context, this book aims to shed light on the effects that phenomena such as Servitization and Knowledge Management have generated on the manufacturing sector.

Two main points have been addressed. On the one hand, the book highlights the role and impact of knowledge management tools and practices in manufacturing firms that aim to successfully implement a servitization strategy. On the other hand, the book shows many possible routes that contemporary manufacturing companies can take, besides servitization strategy and knowledge management process, but strictly linked to them.

This volume is the result of research and teaching activities carried out by the author during the last six years and it is articulated in four chapters.

Chapter 1 "Underpinnings the concepts of Servitization and Knowledge Management" describes the new competitive environments in which manufacturing firms compete today, and provides the main theoretical foundations of this book. In fact, both servitization and knowledge management concepts are addressed starting from their origins and definitions, together with their role in improving the firms' ability to compete.

Chapter 2 "Interdependence between Servitization strategy and Knowledge Management process: a theoretical analysis" provides a deeper understanding of the two concepts, with explicit reference to the existence (or not) of link(s) between them. The chapter is based on a systematic literature review and its findings constitute the main assumptions of the third chapter.

Chapter 3 "*Empirical evidences from the IBM Corporation case study*" stems from the results of the second chapter and aims to verify if there is a relationship between servitization strategy and knowledge management tools and practices, through the examination of a business reality. The chapter is based on a case study methodology and concentrates on the analysis and discussion of the IBM Corporation.

Chapter 4 "*Latest developments and trends*" deals with the new strategic routes that have been undertaken by manufacturing companies and that are the direct consequence of the servitization and knowledge management processes. Moreover, in the chapter, the

convergence trend between manufacturing and service sectors is addressed. The analysis of this trend has allowed the conceptualization of an integrated model that led to a new way of thinking about companies, namely *solution providers*.

Basically, the main strengths of the book can be traced back to three key points. First is the relevance of the addressed topics, both for general management studies and for a country such as Italy, where the manufacturing sector is so important. Second, the book provides an in-depth analysis of the academic literature on servitization strategy and knowledge management process, as well as their interconnections in an important business reality such as the IBM Corporation, addressing a literature gap and meeting industrial needs, and making a significant contribution both to theory and practice. Third, the book offers a useful overview of the major trends, developments, and challenges for companies in the actual competitive environment.

At the same time, considering the breadth and complexity of the issues dealt with, this book does not have the ambition to cover all facets of the phenomena, but it aims to provide a good starting point for reflection and future research paths on the subjects addressed.

The book is intended not only for academics and students, but also for practitioners interested in learning about the manufacturing organizations' transformations in the current competitive environment.