

Evolution and Impact of Operations Management in the Healthcare sector:

a bibliometric and content analysis approach

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Research Questions

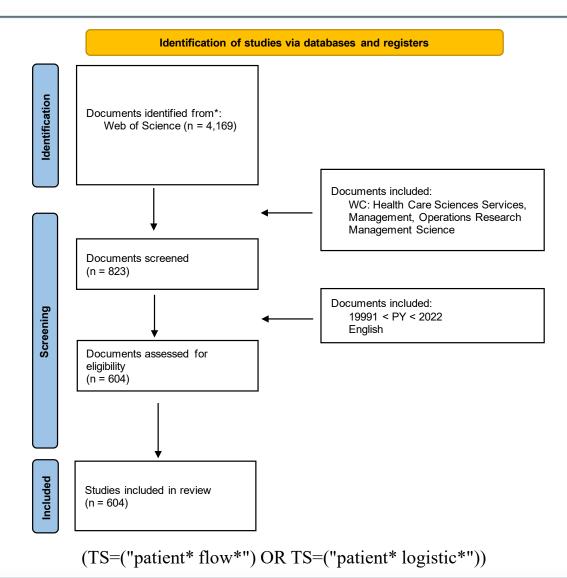


Gap: Extensive OM research in the industrial sector, but a lack of comprehensive analysis of OM's longitudinal evolution in healthcare. There's a need for a bibliometric systematic literature review to understand OM's thematic shifts and applications in healthcare.

- 1. What insights can be gained from a bibliometric systematic literature review of OM within the healthcare sector, particularly regarding the growth and impact of publications, key authors and institutions, and emerging research themes?
- 2. How has OM evolved longitudinally within the healthcare sector, from its inception to its contemporary applications, and what are the key thematic shifts observed?

Methods





Data collection

Data were collected from the Web of Science Core Collection[™], a premier scientific literature repository valued for its broad coverage and high data quality, essential for thorough bibliometric studies (Zupic & Cater, 2015; Booth et al., 2016; Visser et al., 2021).

Data analysis:

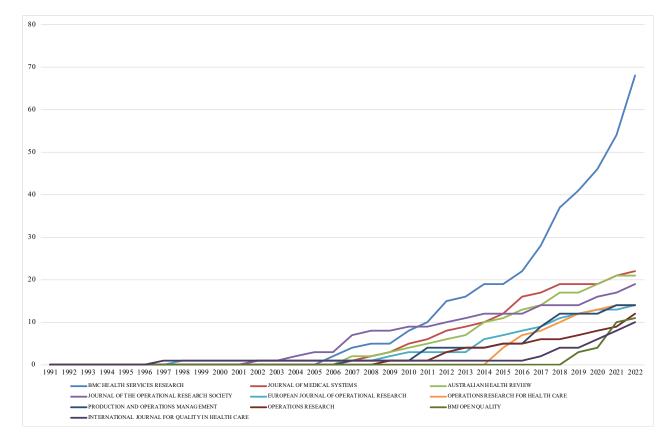
- (1) analysis of venues to identify and acknowledge key influential sources in the field;
- (2) examination of authors to distinguish between prolific and occasional contributors, and to assess their dedication to the research theme by analysing their publication record and active life over time;
- (3) scrutiny of documents to evaluate their citation impact, both on a global and local scale, and to pinpoint seminal works.

The review uses bibliometrics as a quantitative tool for science mapping, employing the open-source Bibliometrix R-package and its user-friendly web app, Biblioshiny (Aria and Cuccurullo, 2017).

Sample Overview



Main information about data	
Timespan	1991:2022
Sources	172
Documents	604
Annual Growth Rate %	15.14
Average citation per doc	16.22
References	17,546
Document contents	
Keywords Plus (ID)	1,063
Author's Keyword (DE)	1,635
Authors	
Authors	2,502
Authors of single-authored docs	18
Authors collaborations	
Single-authored docs	22
Co-Authors per Doc	4.63
International co-authorships %	18.21



Annual Scientific Production

Background: OM in Healthcare Sector



1990s

- Emergence of OM in Healthcare: Integration begins in response to resource scarcity and efficiency/productivity issues.
- **Challenges**: Hospital bed availability and emergency department (ED) overcrowding become prominent issues (Derlet and Richards, 2000; Derlet et al., 2001; Green and Nguyen, 2001).

2000s

• Initial Efforts: Development of <u>frameworks and methodologies</u> to support production planning and scheduling within hospitals, focusing on optimizing resource utilization in EDs and operating rooms (Bagust et al., 1999; Jun et al., 1999).

2010s

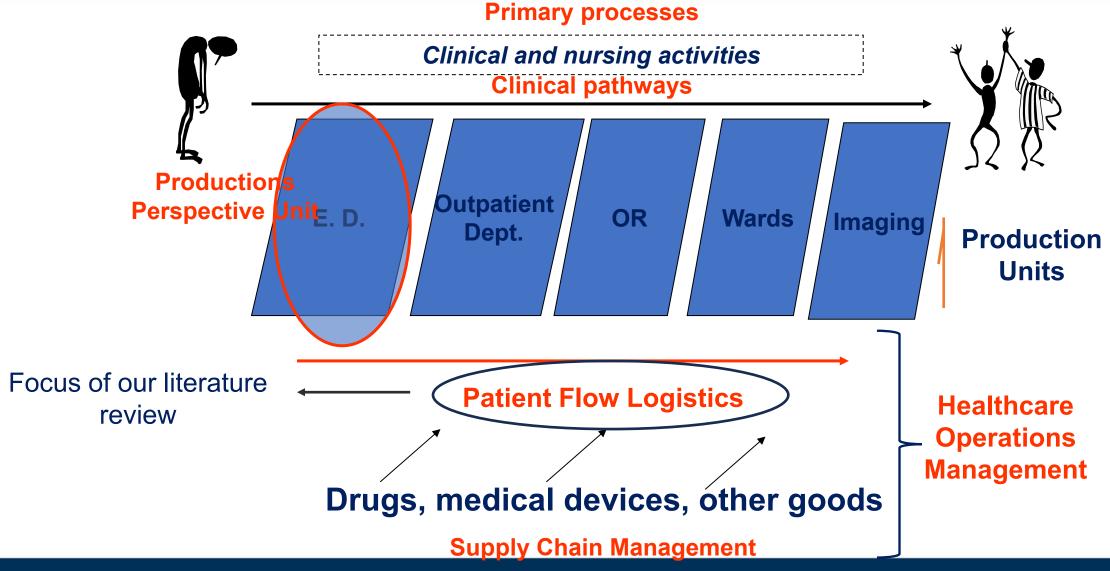
• Integrated Approach: Importance of informed, strategic decision-making considering interconnections between hospital areas and processes for effective resource management and enhanced patient experience.

2020s

• Focus on Effectiveness: Emphasis on outcomes such as extending life expectancy and improving quality of life, with studies highlighting the benefits of timely patient transfers and efficient patient flow.

The need for integration

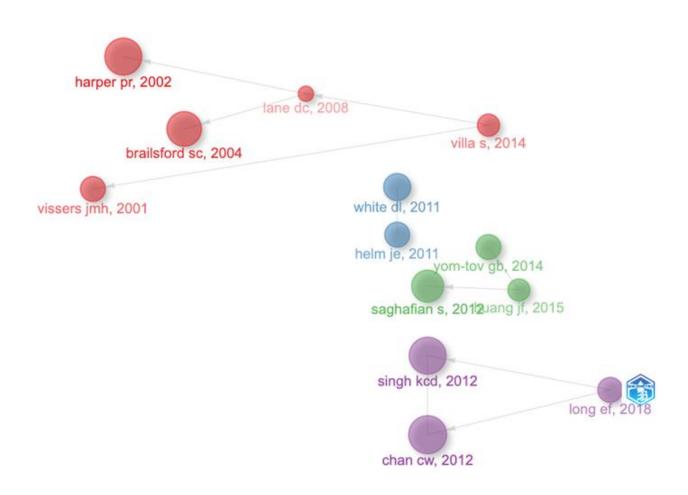




Historiographic mapping



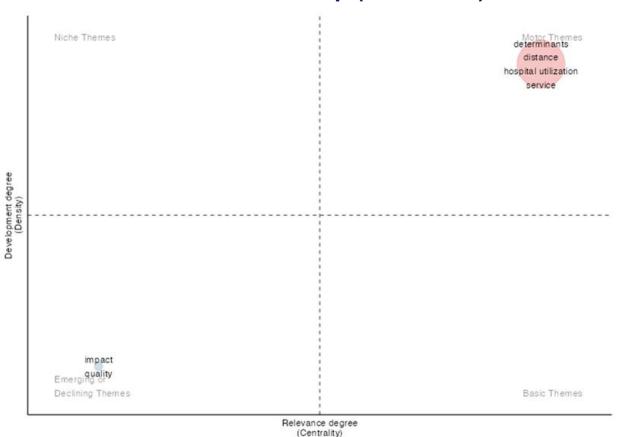
- **1. Red Stream:** Focuses on **Production and Efficiency** in hospitals by proposing a hierarchical framework for balancing service provision with operational efficiency through multi-level planning (Visser et al., 2001; Villa et al., 2014; Harper and Shahani, 2002; Brailsford et al., 2014; Lane and Husemann, 2008).
- **3.** Blue Stream: Highlights the role of the Patient Flow Approach in strategic decision-making, resource management, and patient safety enhancement (Helm et al., 2011; White et al., 2011).
- **4. Green and Purple Streams**: Emphasize **Specific Hospital Settings** (EDs and ICUs), showing a shift from theoretical frameworks to practical applications. These streams use quantitative tools and systemic resource allocation approaches, recognizing both economic and clinical benefits, and employ strategies to reduce readmissions and enhance hospital capacities.



Thematic Map

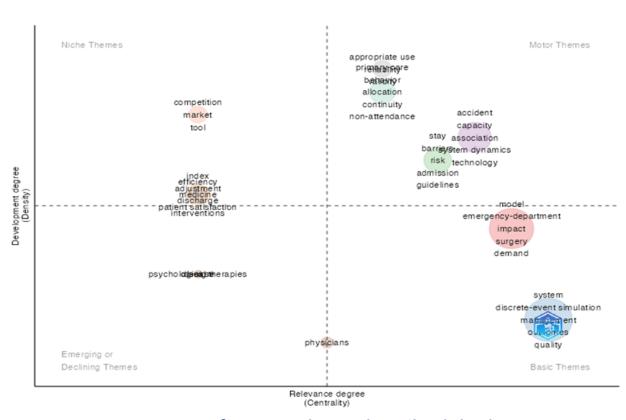


Thematic Map (1991-2001)



resource scarcity and efficiency/productivity

Thematic Map (2002-2012)



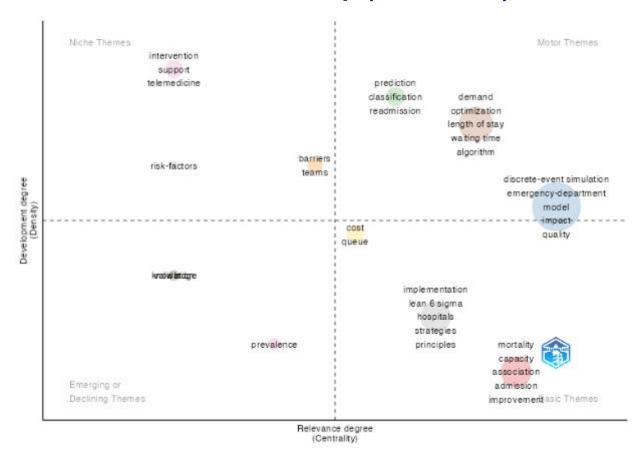
frameworks and methodologies + integrated approach

EHMA 2025 7

Thematic Map



Thematic Map (2013-2022)



Focus on Effectiveness



Focus on single setting



System view

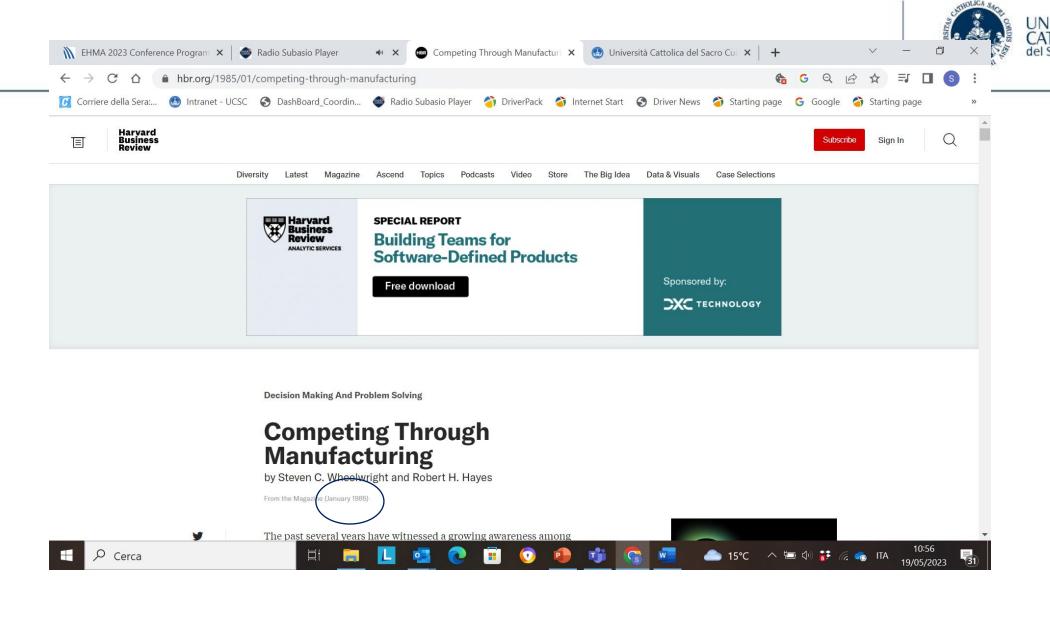


Support to clinical pathways

- Efficiency / productivity
- Elimination of waste
- Variability control

- Lean thinking
- Six sigma
- Flows' separation
- Process management

- Clinical outcome
- Patient-centered solutions
- Patient profiles





Evolution of operations management in manufacturing



Managing these transitions requires a special kind of leadership because the task at hand is to change **how people think**.

In the last, however, the dominant approach to the work force must be in terms of **teamwork**

Take-home messages



- ✓ Do not look for short-cut
 - Learn the tools and apply to single specific settings / problems
 - OM offers quiet pragmatical solutions to solve current urgent problems such as (i) beds' shortage; (ii) waiting list and (iii) ED overcrowding.
- √ Adopt an integrated approach
 - Patient flows logistics clinical pathways supply chain
 - DO NOT forget people

New Challenges for operations management



- Redesign operations to support the patient-centered model
- Relationships with clinical governance
- Support multidisciplinary team working
- Organize resources around clinical conditions
- Go outside the hospital boarders

In the near future Big Data, Artificial Intelligence predictive analytics and telemedicine can surely offer an important support.