

# The Key Indicators Used to Measure the Performance of the Service Companies: A Literature Review

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## Abstract

*Performance has begun to become a real challenge for those who want to study it. So much has been written about performance over time that you can hardly imagine that you have something new to add. But as technology advances at astonishing speed and the world adapts to changes in the environment, the ways to evaluate and improve performance will need to be adapted to the times we live in. Through this paper, the authors aim to identify the most used performance indicators in the field of services, but also the fewest used indicators of performance that can be found in the literature. Following the findings, the authors wish to identify the less-valued areas when it comes to service performance, to further improve the performance area of industrial services.*

**Key words:** performance, industrial services, industrial service performance, key performance indicators

**J.E.L. classification:** L00, L25, L80, P47

## 1. Introduction

In the last decades, the peoples' skills, knowledge, needs, and expectations have evolved greatly as well as the technology sector. Individuals are not satisfied with their current conditions and want to develop themselves both personally and professionally. So they started to think about performance problems, whether we are referring to an individual, a product, or an organization.

This study is an initial part of a much more complex study that will be conducted to determine various practices to improve organizational performance in industrial services. The study aims to determine the most commonly used performance indicators, but also the fewest used indicators that can lead to less developed areas that are worth analyzing to make important contributions to improve organizational performance.

## 2. Theoretical background

### *Company performance*

By looking into the concept of performance in the literature, a lot of articles and papers dealing with this concept can be found. For example, at the beginning of May 2018, a search of the keyword "performance" using the Google Academic Search Engine generated 6,290,000 results, out of which approximately 72,600 were published in 2018. On the same search engine, this time using the keyword "performanță" (same keyword but in the Romanian language), there were 14,300 results, of which only 133 were published in 2018, most of them being published in Romanian scientific bulletins.

In his papers, Ph. Lorino (1998) defines the performance of an enterprise as "what, and only what contributes to the improvement of the value-cost pair" or "what and only what contributes to the achievement of the strategic objectives".

In the opinion of J.H. Jacot (1997) "in order to achieve global performance at the physical level, you need to look for productivity, at the level of the market competitiveness and at the financial level profitability". This idea was also supported by P. Pottier (2000), which states that performance within an enterprise must be analysed through the interaction of productivity, competitiveness, and profitability.

#### *Performance dimensions and key performance indicators*

According to Kaplan and Norton (1996), the most important dimensions of performance can be found in the Balanced Scorecard, which involves developing a strategy that focuses on 4 perspectives: Financial Perspective - the main goal of maximizing shareholder value, Customer Perspective takes into account the value created for consumers, the company's internal processes perspective - which analyses key processes in a company and their performance, the Learning and Development Perspective - which refers to the knowledge, skills and systems needed to continuously improve the business.

According to M. Niculescu and G. Lavalette (1999), performance can be seen as "an unstable balance between efficiency and productivity," a definition that was reiterated by M. Barabel and O.Meier (2006). According to them, performance can be seen as an objective measure of effectiveness or efficiency of action. Studying the works of various Romanian authors, we found that the main dimensions defining the performance models refer to: effectiveness (Albu and Albu, 2005), economy, efficiency (Deselnicu, 2015), but also the competitiveness of companies or their behaviors (Verboncu and Zalman, 2005).

Key performance indicators (KPIs) can be defined as different kind of items of information collected at regular time intervals in order to track the performance of a system (Fitz-Gibbons, 1990). KPIs have attracted the attention of many researchers, managers, and also business people who are trying to find the most representative elements that should be monitored and analysed to improve organizational performance.

### **3. Research methodology**

Regarding this study, the authors have set four objectives.

- The first objective was to determine the level of interest in the literature for the term "performance";
- The second objective was to identify the main elements that are associated with the term "service performance";
- The third objective was to achieve a hierarchy of these identified elements that help to improve service performance;
- The fourth objective of the study was to identify the items which are the least used and that can improve service performance, the authors start from the hypothesis that those items could be the starting point for future research, because those elements are not yet sufficiently studied in the literature, indicating areas where the authors could make improvements.

### **4. Findings**

In order to determine the level of interest in the literature for the term "performance", at the end of May 2018 (May 22, 2018), the authors made various searches in several of the most important databases, such as: ISI Web of Science, Science Direct or Springer Link, the initial search results being shown in Table no.1.

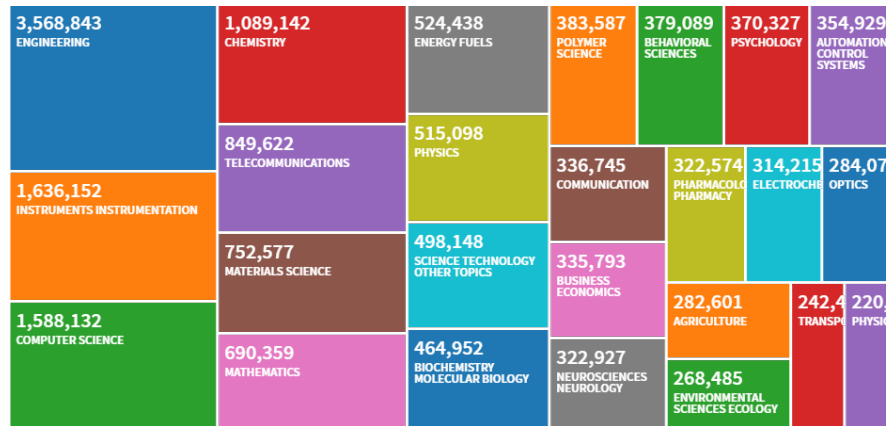
*Table no. 1. The number of results from different databases as a result of searching for the keyword "performance"*

<b>ISI Web of Knowledge</b>	<b>Science Direct</b>	<b>Springer Link</b>
6.271.560	3.250.450	2.249.474

Source: Authors' own research

There are a number of about 11,771,500 results, of which the most numerous are ISI indexed. Most of the papers dealing with the term "performance" are in the "engineering" field (approximately 57% - Figure no.1), being largely written by Chinese authors, most of the papers being written in US and China, while 0.281% of papers are written by authors from Romania. The authors also noticed that most performance papers are written after 2014 (over 500000 works/year).

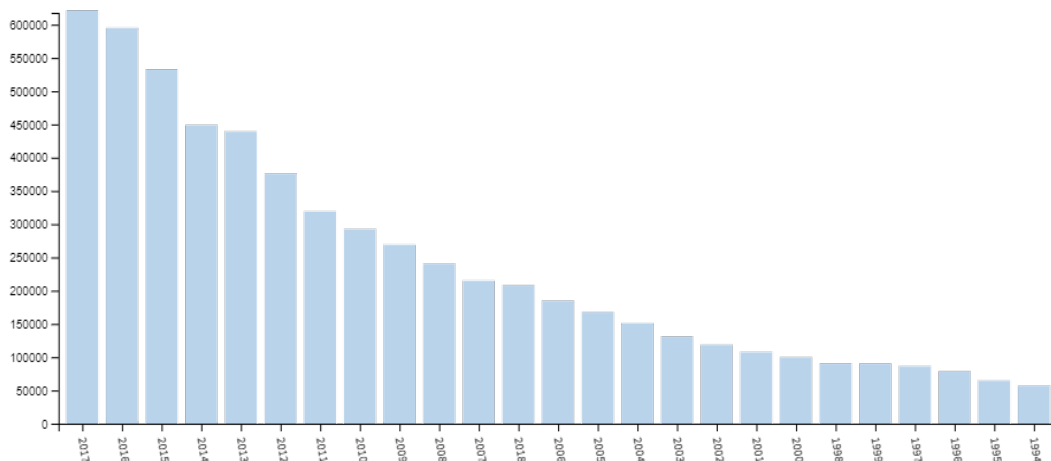
Figure no. 1. The search results of the term "performance" in the ISI Web of Knowledge database by domains



Source: Authors' own research

Following previous results, the authors have decided to restrict the search circle, using the same databases (ISI Web of Science, Science Direct and Springer Link), limiting searches for 2015-2018, first doing searches after the term "service performance" and then searches for "performance of industrial services".

Figure no. 2. The results of searching the term "performance" in the ISI Web of Knowledge database after the year of occurrence



Source: Authors' own research

Table no. 2. Number of results from different databases following the search for "service performance" (sites accessed on June 4, 2018)

ISI Web of Knowledge	Science Direct	Springer Link
118.178	167.911	196.965

Source: Authors' own research

Table no. 3. Number of results from different databases following the search for the keyword "performance of industrial services" (sites accessed on June 4, 2018)

ISI Web of Knowledge	Science Direct	Springer Link
3.678	48.009	55.365

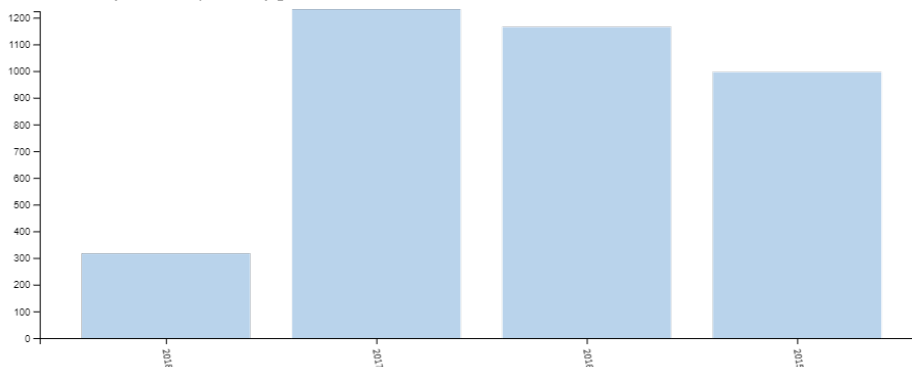
Source: Authors' own research

Analysing only the results of the ISI Web of Knowledge database from 2015-2018, it has been observed that most of the work is in the fields of engineering, computer science or business economics.

In 2018, up to June 4, 2018, approximately 300 papers covering the term of industrial service performance were published, most of which were published in 2017 (1,224), most of which were articles (2,156) and patents (956) (Figure no. 3).

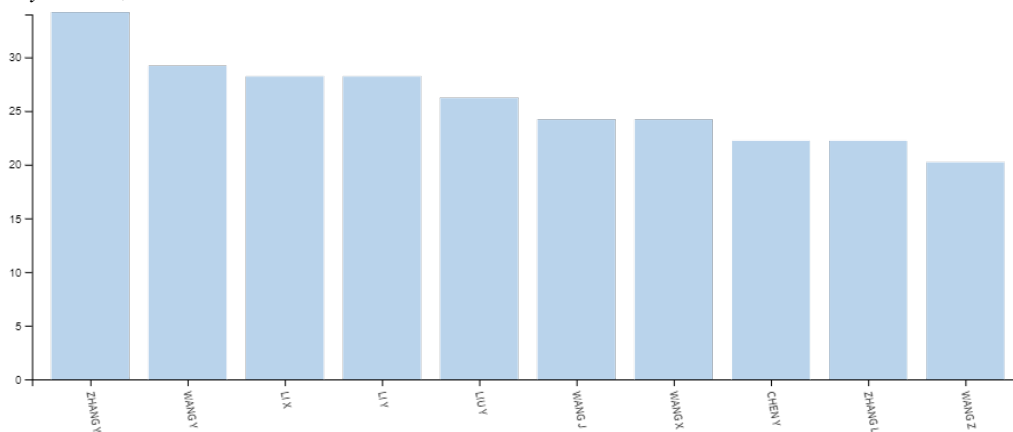
The authors also noted that in this case, those who address this subject are the Chinese authors (499), followed by those in America (432), the person who published the most articles in this field between 2015-2018 being Zhang Y. (34 papers) (Figure no.4).

Figure no. 3. The results of the search for the term "performance of industrial services" in the ISI Web of Knowledge database after the year of publication (2015-2018)



Source: Authors' own research

Figure no. 4. Results of search for the term "performance of industrial services" in the ISI Web of Knowledge database by author, 2015-2018



Source: Authors' own research

## **5. Study on the current state of research on the performance of organizations in the field of industrial services**

The authors conducted a literature research to identify studies related to the term „performance”. First of all, using the Google Scholar Search Engine (accessed on June 14, 2018), the authors searched the terms "service performance", "industrial service performance" and "measure service performance", selecting 48 papers by relevance and number of citations. Then, the authors read the selected papers but found out that only 26 of them are indeed relevant for the study and the established objectives.

All of the 26 analysed articles were receiving a code from A to Z, as it can be seen in Table no.4. For this study, no special selection was made in terms of the publication year of the papers.

For each article, the authors identified the main elements contributing to the performance of organizations in the industrial services sector that were used by the authors of the selected papers, their number being visible in Table no.5. It can be seen how out of the 26 papers, the Paul Folan and Jim Browne's paper (2005) contains the most analysed concepts that can contribute to a company's performance (22 items).

Next, in Table no.5, the authors listed the 33 elements identified, also mentioning the articles in which they are found. Then he ordered the items according to their number of appearances in the analysed articles (Table no.6), making a classification of the most common defining elements for the concept of performance.

In Table no.6, it can be seen how the most used concepts are: financial factors (in general); customer orientation; customer loyalty; technology, equipment, computer systems; costs; processes, employee satisfaction; customer satisfaction; employee development; education and training, these items being discussed in more than 10 of the analysed papers.

Financial factors are ranked first, which means they are still the easiest to use to measure performance, being easy to define, identify, track and quantify. Then the satisfaction part occupies an important place in the measurement of performance, whether we are talking about employee satisfaction or customer satisfaction. Taking into account that an employee needs to be happy and satisfied at work, he needs education, training and other various ways to develop new skills or competencies.

In the second group of classification of elements that help to determine and measure performance, there are concepts that were mentioned in between 4 and 10 papers of the 26 analysed. Most of the concepts focus on organizational culture, stakeholder relationships, flexibility, and communication within the organization, material resources used and results, techniques used to reduce losses, productivity, innovation and customer participation in the service delivery process, as well as environmental attention surrounding.

In the queue of the ranking, there are the least used elements, including balanced scorecard, benchmarking, but also elements such as the time resource, quality, digital marketing elements or prizes, the distinctions received and the achievements.

Table no. 4. Articles included in the authors' research

Code	Title of the articles	Authors	Year of publication	Where articles were published	Number of identified items associated with performance
A	A Business Tool to Measure Industrial Service Performance - The Total Care Index	Dehmer, J.; Niemann, J.; Wemer, W.	2016	Conference: Africa, Europe, Middle East 4th International Conference on Quality and Innovation in Engineering and Management, At Cluj-Napoca	5
B	Service Delivery Performance Measurement System: A Conceptual Framework	Marakeset, Tore and Kumar, Rajesh and Michel, Jacques-Etienne	2007	Proceedings of the 2nd International Conference on Operations and Supply Chain Management, 18-20 May 2007, Novotel Bangkok on Siam Square, Bangkok, Thailand.	2
C	Customer Orientation in Industrial Service Innovation. Deepening the Understanding on Customers, Needs, Involvement, and Value	Heidi M. E. Korhonen	2016	Aalto University publication series DOCTORAL DISSERTATIONS 124/2016 VTT SCIENCE 131	3
D	Employee development and organizational performance: a review of literature and directions for future research	Ronald Jacobs & Christopher Washington	2003 (ONLINE 2010)	Journal Human Resource Development International, 6:3, 343-354	1
E	Education and Entrepreneurship Selection and Performance: A Review of the Empirical Literature	Justin Van Der Sluis, Mirjam Van Praag, Wim Vijverberg	2008	Journal of Economic Surveys	1
F	Implementing performance measurement systems: a literature review	Bourne, M., Neely, A., Mills, J. and Platts, K.	2003	Int. J. Business Performance Management, Vol. 5, No. 1, pp.1-24	9
G	Performance measurement systems: A consensual analysis of their roles	Edson Pinheiro de Lima, Sergio E. Gouvea da Costa, Jannis Jan Angelis, Juliano Munik	2013	Int. J. Production Economics 146(2013)524-542	12
H	Evolution of the performance measurement system in the Logistics Department of a broadcasting company: An action research	Debora M. Gutierrez, Luiz F. Scavarda, Luiza Fiorencio, Roberto A. Martins	2015	Int. J. Production Economics 160(2015)1-12	7
I	Flexibility in industrial service relationships: The construct, antecedents, and performance outcomes	Bjoern Sven Ivens	2005	Industrial Marketing Management 34(2005) 566 - 576	11
J	State of the art literature review on performance measurement	S.S. Nudurupati, U.S. Bititci, V. Kumar, F.T.S. Chan	2011	Computers & Industrial Engineering 60(2011) 279-290	8
K	Reviewing and improving performance measurement systems: An action research	Renata Gomes Frutuoso Braz, Luiz Felipe Scavarda, Roberto Antonio Martins	2011	Int. J. Production Economics 133(2011)751-760	6
L	What Do We Mean By „Company Performance“?	CLAUDIU MARIAN GRUIAN	2010	Analele Universității "Constantin Brâncuși" din Târgu Jiu, Seria Economică, Nr. 4/2010	8
M	Financial and nonfinancial performance measures: How do they affect job satisfaction	Chong M. Lau, Mahfud Sholihin	2005	The British Accounting Review 37(2005) 389-413	17
N	Transforming the Balanced Scorecard from Performance Measurement to Strategic Management: Part I	Robert S. Kaplan and David P. Norton	2001	American Accounting Association Accounting Horizons Vol. 15 No. 1 March 2001 pp. 87-104	12
O	Patent: Key Performance Indicator System And Method	Grzegorz Guzik, Amir Netz, Marin Bezic	2010	United States Patent No.: US 7,822,662 B2 Date of Patent: Oct. 26, 2010	10
P	Performance measurement system design A literature review and research agenda	Andy Neely, Mike Gregory and Ken Platts	1995	International Journal of Operations & Production Management, Vol. 15 No. 4, 1995, pp. 80-116.	13
Q	Developing New Business-to-Business Professional Services: What Factors Impact Performance?	Ulrike de Brentani, Emmanuel Ragot	1996	Industrial Marketing Management 25, 517-530 (1996), Elsevier Science Inc., 1996	13
R	Social Media Use and Potential in Business-to-Business Companies' Innovation	Hannu Kärkkäinen, Jari Jussila, Jaani Väisänen	2010	MindTrek '10 Proceedings of the 14th International Academic MindTrek Conference: Envisioning Future Media Environments, Pages 228-236	4
S	Predicting service industry performance using decision tree analysis	Benjamin Yeo, Delvin Grant	2018	International Journal of Information Management 38 (2018) 288-300	4
T	Success and Failure in New Industrial Services	Ulrike de Brentani	1989	Journal of product innovation management	8
U	Key performance indicators for assessing the planning and delivery of industrial services	Horst Meier, Henning Lagemann, Friedrich Morlock, Christian Rathmann	2013	Procedia CIRP 11 (2013) 99 - 104	11
V	A New Approach for the Development of Services for Industrial Product-Service Systems	Dieter Haeblerle, Saed Imran, Christian van Husen and Carsten Droll	2016	Procedia CIRP 47 (2016) 353 - 357	10
W	Performance measurement and performance management	Michel J. Lebas	1995	Int. J. Production Economics 41 (1995) 23-35	13
X	A review of performance measurement: Towards performance management	Paul Folan, Jim Browne	2005	Computers in Industry 56(2005) 663-680	22
Y	Putting the profit service chain to work	James L. Heskett, Thomas O. Jones, Gary W. Loveman, W. Earl Sasser, Leonard A. Schlesinger	1994	Harvard Business Review, Vol. July-August (2008), pp. 118-129	15
Z	The Service-Profit Chain: A Meta-Analytic Test of a Comprehensive Theoretical Framework	J Hogreve, A Iseke, K Derfuss, T Eller	2017	Journal of Marketing: May 2017, Vol. 81, No. 3, pp. 41-61.	15

Source: Authors' own research

Table no. 5. Elements related to the performance of firms in the industrial services sector

Articles	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
<b>Elements</b>																										
Financial factors (in general)	x				x	x	x	x		x	x	x	x		x			x	x	x		x	x	x	x	x
Costs	x				x	x	x	x		x	x	x	x		x				x	x		x	x	x	x	x
Market share; sales; competitiveness																	x		x		x		x	x	x	x
Customer orientation; customer loyalty			x		x	x		x	x			x	x	x	x	x			x	x	x	x	x	x	x	x
Co-creation; customer participation			x							x							x								x	
Value of the service										x												x	x	x	x	x
Customer satisfaction									x	x		x	x	x	x	x					x	x		x	x	x
Safety; trust; risks								x	x			x									x	x		x	x	x
Employee satisfaction	x				x	x	x		x			x	x		x	x							x	x	x	x
Employee development; education and training				x	x	x						x	x		x							x	x	x	x	x
Employee loyalty									x			x												x	x	x
Productivity											x			x											x	x
Lean techniques; reducing losses and resources							x						x									x				x
Efficiency; effectiveness											x	x		x												
Inputs and outputs											x	x		x								x		x	x	
Time																						x	x		x	
Material resources																						x				x
Technology, equipment, information systems	x						x	x	x		x		x	x	x	x	x	x	x	x		x	x	x	x	x
Digital marketing																										
Improving stakeholder relations		x				x		x													x		x		x	
Processes	x					x	x	x	x		x	x	x	x	x	x	x	x	x				x	x	x	
Communication																						x			x	x
Improving delivery and shipping strategies		x					x	x			x											x	x			x
Innovation			x										x	x	x	x	x	x								
Balancescorecard						x								x	x											
Defining and setting goals; planning						x	x		x	x	x		x		x											x
Organizational culture							x			x				x										x		x
Benchmarking							x																			
Quality							x			x																
Flexibility									x			x														x
Development of new processes, products and services																										
Attention to the environment																										
Awards, distinctions, achievements																										

Source: Authors' own research

Table no. 6. Classification of performance-related elements in industrial services

Articles	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Number of references	
Financial factors (in general)	x				x	x	x	x	x	x	x	x	x	x	x		x	x	x	x	x	x	x	x	x	x	17	
Customer orientation; customer loyalty		x			x	x	x	x	x			x	x	x	x	x		x	x	x	x	x	x	x	x	x	17	
Technology, equipment, information systems	x					x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	17	
Costs	x				x	x	x	x	x	x	x	x	x	x	x						x	x	x	x	x	x	16	
Processes	x				x	x	x	x	x	x	x	x	x	x	x	x	x						x	x	x		16	
Employee satisfaction	x				x	x	x	x	x		x	x	x	x	x	x							x	x	x	x	13	
Customer satisfaction								x	x		x	x	x	x	x	x						x	x	x	x	x	12	
Employee development; education and training				x	x	x						x	x	x	x								x	x	x	x	11	
Improving delivery and shipping strategies	x						x	x		x					x	x					x	x					9	
Defining and setting goals; planning					x	x	x	x	x	x	x				x											x	x	9
Safety; trust; risks							x	x				x										x	x		x	x	8	
Improving stakeholder relations	x				x			x							x	x					x		x		x		8	
Innovation		x									x	x	x	x	x	x	x										8	
Organizational culture						x			x					x		x							x		x	x	8	
Value of the service									x													x	x	x	x	x	7	
Market share; sales; competitiveness																	x				x		x		x	x	6	
Employee loyalty									x			x											x	x	x	x	6	
Inputs and outputs											x	x		x								x		x	x		6	
Productivity												x			x									x	x	x	5	
Development of new processes, products and														x	x	x	x	x									5	
Co-creation; customer participation		x							x																x		4	
Lean techniques; reducing losses and resources							x					x										x		x			4	
Communication																						x		x		x	4	
Flexibility								x		x					x									x			4	
Attention to the environment																x	x		x						x		4	
Efficiency; effectiveness												x	x		x												3	
Time																							x	x		x	3	
Balancescorecard						x						x	x														3	
Material resources																							x		x		2	
Quality							x		x																		2	
Digital marketing																										x	1	
Benchmarking							x																				1	
Awards, distinctions, achievements																									x		1	

Source: Authors' own research

In the international databases searching for these keywords associated with the industrial service performance term, the authors have found that there are quite a lot of results from these queries, most of which are found even at the top of the chart presented in Table no.6 (ex. over 108,000 results associated with the searches of cost term and industry service performance in the Science Direct database). However, many results have also been found for items at the end of the ranking (e.g., more than 100,000 results associated with the search of the time term and industry service performance in the Science Direct database), which contradicts the authors' hypothesis that this



positioning of the elements in the ranking queue would suggest the lack of authors' concern to research performance in terms of analyzing these elements.

As a result, there may be two possible explanations for identifying this inconsistency. The first one refers to the fact that although there are several papers containing these key elements, they are not found in the same structures in articles, not necessarily correlated and analysed in the author's direct link. Also, there are still many shortcomings in the literature on the broad research of the links between the elements presented in the ranking queue and the performance of the industrial services. The second explanation is strictly related to the research conducted by the authors. It is possible that the authors did not include in his research the most relevant and complex papers that were not published online, but only in special journals.

## 6. Conclusions

When it comes to measuring service performance, the study of literature offers us a starting point for our research. Following the analysis, the authors will continue to research the performance indicators used within an industrial service organization, analyzing each department of a company for that purpose. This will identify the most used performance indicators at any department level, identifying departments where these indicators are not sufficient, clearly defined or inadequate. Together with the results of this study and with the results of future studies, the authors wish to identify the area where he can make significant contributions in order to improve the performance of industrial service organizations by combining business process modeling with organizational performance.

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