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## **Management Accounting for Service: A Research Agenda**

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# Management Accounting for Service: A Research Agenda

*Forum session: S-D Logic*

## ABSTRACT

**Purpose** – The purpose of the paper is to point out a research agenda for Management Accounting under the emergent Service-Dominant (S-D) Logic. S-D Logic is widely discussed in the field of Marketing, the paper tries to extend S-D Logic in the Management Accounting context and develops some related considerations.

**Methodology/approach** – Service related change in economy and firms raises new challenging issues in management accounting topics such as cost classification, cost structure, cost object, the role of “traditional” accounting tools and models, price-cost relations for pricing decisions.

In this paper, we identify several critical research questions that address a tentative research agenda in the field of management accounting to better explore its role within service science. Throughout the paper many different examples are provided in order to support what is sustained.

**Findings** – The conclusions of the paper trace some aspects addressed as core in the distinction between Goods-Dominant Accounting and Service-Dominant Accounting. Considering the new changing service environment, the role of management accounting in providing information to support managerial decision making and control can be widely renewed.

**Research implications** – The paper opens many underexplored topics on Management accounting in the interface with service and traces a research agenda for further research.

**Originality/value** – This is the first paper, after the brief overview on accounting and Service Science provided by Kerr (2008), aiming at understanding the role of Management accounting in the context of S-D Logic.

**Key words** – Service-Dominant Logic, Management Accounting, Costing, Measurement, Value

**Paper type** – Conceptual paper

## Introduction

The service weight in economy has reached an extent never achieved before: in the 138 countries surveyed in the report of the 2010-2011 World Economic Forum (2010), 98 have a level of gross national product that comes from service activities for more than 50%. In 25 countries the ratio exceeds 70%: over 70% of gross domestic product in these countries is due to the service industry (or tertiary sector).

Service growth has largely established on the diffusion in the use of digital equipment and communication networks (i.e. digitization) that has grown very fast in the last two decades. This digital (r)evolution is mainly due and is centred around the fast development of the internet network, that allows for cheap and fast communication of enormous quantity of data, and is also fostered by the widespread availability of fast and internet-enabled personal computers and mobile devices of all sorts and prices. In general, the effect of digitization on firms is twofold: on one side it changes the traditional day to day activity of running businesses and on the other side it opens business opportunities firms can seize.

Furthermore, the diffusion of the new technologies and the new opportunities rising from their application have boosted the relevance of “service” far beyond the increase of the weight of “service sectors” in the overall economy. A different perspective of the essence of contemporary business is emerging: a new “Service Dominant Logic” (S-D Logic) (Vargo and Lusch, 2004a) has been proposed in Marketing studies and the process of “servitization” is expanding as a competitive strategy in manufacturing (Vandermerwe and Rada, 1988; Oliva and Kallenberg, 2003). Recently, “Service Science” has been proposed as a set of intertwined disciplines able to face the complexity of social and economic organizations (service systems) (Maglio and Spohrer, 2008; Spohrer and Kwann, 2009).

Despite this, research in Management Accounting (MA), as the discipline dealing with provision of relevant accounting information for business decision making and control, has basically maintained the principles and the focus based on manufacturing firms. Services have been generally considered “special products” in dealing with MA issues on decision making and control and the importance of service organizations has been underestimated and treated as special case of manufacturing industries. The implications for MA of more recent developments in SDL have not been explored more in deep yet.

This paper aims at providing insights and to figure out the challenges to management accounting in considering the new role and meaning of “service” in modern business, proposing an explorative research agenda with respect to the main areas of interest of the discipline.

To this aim, the paper is structured as follows: the first paragraph introduces the typical distinctions between goods and services traditionally recalled by the MA literature. Then the servitization process and the rise of S-D Logic is presented. The third paragraph firstly provides an overview of the topics covered by MA and then deepens the potential roles of MA in service settings and its changes respect to traditional manufacturing firms. The paper closes with some reflections and further research on the role MA can play under a Service-dominant mindset.

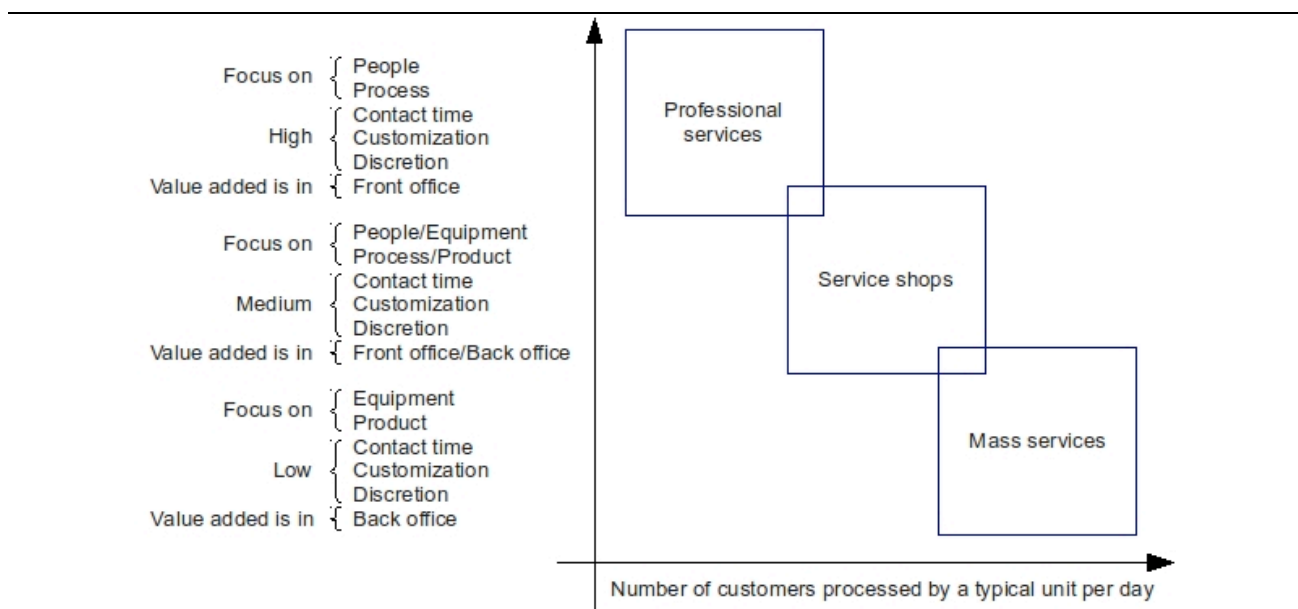
### 1. The traditional approach to service as MA object: services vs goods

Research on services in business has historically focused on the differences between services and manufactured goods as outputs (Fisk *et al.*, 1993; Snyder *et al.*, 1982; Modell, 1996). Shostack (1977) proposed four characteristics (identified with the acronym IHIP) that differentiate services from manufactured goods.

The first characteristic, Intangibility, refers to the immateriality of several aspects of the service package (a service cannot be touched). The second, Heterogeneity, refers to the uniqueness of the service: each service is unique according to the circumstances and conditions at the time it is supplied, according to the customer and his expectations and according to the service staff performance. The third characteristic, Inseparability, refers to the necessary presence of the customer (or of some of his property) during service supply, this is simultaneity, and thus inseparability, of service production and consumption. The fourth characteristic, Perishability, refers to opportunity costs related to idle resources when no service is provided (i.e. if there are no customers requesting the service, but the provider is available).

Silvestro *et al.* in 1992 proposed an important classification of service processes into three kinds: professional services, service shops and mass services (Silvestro *et al.*, 1992). The main distinction between each type is in the volume of customers that can be processed by a typical unit per day, with professional services processing only few customers, mass services processing a lot of customers (hundreds or thousands) with service shops falling in between. Beside volume of customers, there are six dimensions that characterize each service type as shown in figure 1: focus on people (versus equipment), focus on process (versus product), source of added value (front office versus back office), and different levels (low/medium/high) of contact time, customization and discretion. Silvestro *et al.* (1992) conclude suggesting that the three types of service process "give rise to different management concerns, and that service strategy, control and performance measurement will differ significantly between the three" (p. 74).

**Figure 1 – Service typology (adapted from Silvestro *et al.*, 1992)**



Based on this approaches (IHIP, typologies), services represent outputs with specific features to be managed in accounting terms by Management Accounting Systems accordingly. Most of the contributions in this area are based on this concept of service/service-firm belonging to one of these three typologies.

Brignall *et al.* (1991) carry on a research in service firms according with the Silvestro *et al.* (1992) scheme of service typology, observing the differences in cost traceability and cost allocation among them. Comparing product costing procedures in five service organizations

the authors point out that traceability of costs to products is an important issue in service industries: basically service firms appear to trace a smaller proportion of total costs to products as the number of customers processed by a typical unit per day increases. Brignall (1997) uses such process type theory together with a life cycle theory as the two major contingent variables to be considered in guiding cost system design and Auzar and Langfield-Smith (2005) use it as one of the contingent variable to explain the design of Management Control System in service organizations.

Together with the “service typologies”, the IHIP perspective of differentiating products from services constitutes a recurrent approach in management accounting and control research in services (Modell, 1996):

- the simultaneity of production and consumption with the subsequent absence of inventories makes cost accounting for inventory evaluation meaningless; in this context, the classical distinction between "product costs" and "period costs" has no longer meaning;
- cost structure in service organizations would be classified as overheads and it is difficult to separate costs into their fixed and variable components (Dearden, 1978; Lowry, 1990)
- the "value co-creation process" and customer involvement into the process introduce strong elements of uncertainty in planning and management of control systems due to customer behaviour and definition of the boundaries of internal accountability. The variability in the needs and expectations of customers induces variability in the response by the service providers. The ambiguity in the controllability principle results in significant difficulties in the evaluation of individual performance. All these aspects impact on the effectiveness of the planning and control;
- the intangibility of output is the source of problem of measurement both in quantity and in quality of output: research around Performance Measurement Systems in service business has been carried out to overcome the issue by a multidimensional performance framework (Fitzgerald *et al.*, 1991; Brignall and Ballantine, 1996).

Recent developments in cost and performance measurement (Activity-Based Costing, Balanced Scorecard) have constituted and still constitute an approach for service firms to innovate and improve their management accounting systems. On one side these techniques are based on the analysis of activities and processes that are key elements for the government of services. On the other side non-financial metrics are introduced in the system and integrated with financial measures, allowing an increase in addressing an effective identification of performance drivers and evaluation of results (Brimson and Antos, 1994; Kaplan and Cooper, 1998; Kaplan and Norton, 2008).

However the reflection on the consequences on MA in considering the sensible changes in marketing service literature, the pervasive process of the infusion of service in modern business, the impact of digitization in firms structures, management and information needs, only recently started and began to address some directions for an innovative framework in this respect (Bhimani and Bromwich, 2010; Laine, 2009; Cugini *et al.*, 2007; Coller *et al.*, 2011).

## **2. The process of *servitization* and the evolution in the service concept : implications for MA**

### **2.1. *Servitization***

An HBR article by Wise and Baumgartner in 1999 exhorted manufacturing firms to “go downstream” and “look at the value chain through the customer's eyes” integrating services

into their core product offerings (Wise and Baumgartner, 1999). The rationale for such integration has been generally based on three main arguments (Oliva and Kallenberg, 2003). First, from an economic perspective substantial revenue can be generated from an installed base of products with a long life cycle; services, in general, have higher margins than products and may provide a more stable source of revenue as they are resistant to the economic cycles that drive investment and equipment purchases. Second, customers are demanding more services. The third reason is based on the competitive strategy considerations addressed by Vandermerwe and Rada, that first introduced the term “servitization” in the late 1980s (Vandermerwe and Rada, 1988). They argued that there were three reasons why manufacturing firms should servitize – (i) to lock out competitors by avoiding price competition and raising barriers; (ii) to lock in customers raising the costs of substitution and (iii) to increase the level of differentiation.

Several typologies have been proposed in literature on service strategy in manufacturing (Mathieu, 2001). A recent contribute by Neely (2008) define “servitization” as involving “(...) the innovation of an organisation’s capabilities and processes so that it can better create mutual value through a shift from selling product to selling Product-Service Systems”(PSS). He then distinguishes among 5 PSS:

- *integration oriented product-service systems* that involve going downstream by adding services through vertical integration. Ownership of the tangible product is transferred to the customer, but the supplier seeks vertical integration (e.g. by moving into retail and distribution, financial services, consulting services, property and real estate services and transportation and trucking services);
  - *product oriented product-service systems*, in which ownership of the tangible product is transferred to the customer, but additional services directly related to the product are provided, e.g. design and development services, installation and implementation services, maintenance and support services, outsourcing and operating services, procurement services;
  - *service oriented product-service systems* incorporate services into the product itself. Ownership of the tangible product is transferred to the customer, but additional value added services are offered as an integral part of the offering, e.g. Health Usage Monitoring Systems and Intelligence Vehicle Health Management;
  - *use oriented product-service systems* shift focus to the service (which is delivered through product). Often ownership of the tangible product is retained by the service provider, who sells the functions of the product, via modified distribution and payment systems, such as sharing, pooling and leasing.
  - *result oriented product-service systems* seek to replace the product with a service, changing the need for the product, or certainly an individually owned product. A classic example can be voicemail services where the service replaces the need for individuals to answering machines.
- Increasing research has been carried out about the issues faced by manufacturing companies in servitizing their production and the strategic and managerial implications of this process (Mathieu, 2001; Oliva and Kallenberg, 2003; Brax, 2005; Gebauer and Friedli, 2005)

Research about the economic impact of servitization has shown a “service paradox” related to the difficulty in gaining the expected level of returns from services (Gebauer *et al.*, 2005). While servitized firms generate higher revenues they tend to generate lower net profits as a % of revenues than pure manufacturing firms. Recently findings based on empirical research have addressed the reasons in that servitized firms have higher average labour costs, working capital and net assets (Neely, 2008).

### 2.1. The rise of Service Dominant Logic (S-D Logic)

In marketing literature a significant change has occurred since 2004 when the proposal by Vargo and Lush erupted in a “new dominant logic” for the theory and practice of marketing. In the same period IBM began a major reflection on structural change in business scenario of the new millennium: pivoting on service as a central subject in modern business settings, IBM proposes an integration of disciplines, scientific, managerial and engineering (Service Science) aimed at offering effective solutions to contemporary issues of enterprise. The basic objects of the new discipline in the new context become the systems of “services” (service systems) (IBM, 2004; Spohrer and Kwann, 2009).

In depicting the development of focus on service phenomena in Marketing since the nineties Moussa and Touzani (2010) have proposed a three stage approach summarized in table 1.

**Table 1 - A Three Stages Proposal in the Evolution of Service Research (Moussa and Touzani, 2010)**

Stage	Distinctive characteristics
“Racing Ahead” 1993-1999	Scholarly research on services created a strong knowledge development infrastructure for itself: introduction of several new service-related journals. <ul style="list-style-type: none"> <li>• A steady raise in the proportion of service articles appearing in premier marketing and management journals.</li> <li>• Service articles are becoming more sophisticated both theoretically and methodologically.</li> </ul>
“Looking Back and Moving Forward” 2000-2003	Concerns and fears about the state and future of the field are overtly expressed in the articles, books, and conference presentations of the period. <ul style="list-style-type: none"> <li>• Generally accepted concepts and paradigms are questioned: the goods versus services distinction and the four services characteristics (i.e., intangibility, heterogeneity, inseparability, and perishability) are challenged.</li> <li>• New opportunities and challenges arise in service business: Information technology infusion in service (e-service) and the increasing pressure on managers to be more accountable to shareholders.</li> <li>• The institution of the College of Service Operations within the Production and Operations Management Society.</li> </ul>
“Airborne” 2004-Now	Emergence, in 2004, of service science as a new interdisciplinary field under the significant push of IBM. <ul style="list-style-type: none"> <li>• The international scope of the field is becoming more evident than in any era before.</li> <li>• Development of new paradigms and concepts (e.g., the Service Dominant Logic and the Rental/Access paradigm).</li> <li>• Service articles have the lion’s share of space in leading marketing and management journals.</li> <li>• Foundation in 2007 within the INFORMS of the Service Science Section.</li> <li>• An outpouring of new service-related journals: <i>Journal of Service Science</i> debut in 2009.</li> <li>• In 2010, Arizona State University’s Center for Services Leadership develops the first list of research priorities for the field.</li> </ul>

As showed in the third stage (“Airborne”) 2004 is the year-divide of an innovative approach in service research. In their seminal article, Vargo and Lusch (2004a) addressed the service (rather than the product) as what creates value for the customer; accordingly, goods were interpreted as mere means or delivery mechanisms of service provision.

Service is the basis of all social and economic exchange; all businesses are service businesses; and all economies are service economies (Vargo and Lusch, 2004a). The value for customers emerges within the customers’ sphere for every kind of consumption: it is the *value-in-use* in their value-generating processes. This perspective challenges the prevailing view that value for customers in goods is embedded in the outputs of firms’ manufacturing processes and expressed as *value-in-exchange*. This traditional approach is labelled as Goods Dominant Logic (G-D Logic):

“As the label implies, G-D logic is centered on the good – or more recently, the “product”, to include both tangible (goods) and intangible (services) units of output – as archetypical units of exchange. The essence of G-D logic is that economic exchange is fundamentally concerned with units of output (products) that are embedded with value during the manufacturing (or farming, or extraction) process. For efficiency, this production ideally takes place in isolation from the customer and results in standardized, inventorable goods.” (Vargo and Lusch, 2008a: p.2)

According with this traditional view the distinction between products and service has been basically by looking at services as a “particular” units of output having specific peculiarities (the IHIP four characteristics), a logic that considers services to be “inferior goods” (Vargo-Lusch 2008a).

As a radical alternative view, in their 2004 article, Vargo and Lusch (2004a) portrays the S-D Logic as a shift:

“(…) from a goods-dominated view in which tangible output and discrete transactions were central, to a service-dominant view in which intangibility, exchange processes, and relationships are central” (Vargo and Lusch, 2004a: p. 2).

In proposing SDL, they define service:

“(…) as the application of specialized competences (operant resources—knowledge and skills), through deeds, processes, and performances for the benefit of another entity or the entity itself. It is important to note that S-D logic uses the singular term, “service”, which reflects the process of doing something beneficial for and in conjunction with some entity, rather than units of output—immaterial goods—as implied by the plural “services”. Thus, in S-D logic, goods and service are not alternative forms of products. Goods are appliances (tools, distribution mechanisms), which serve as alternatives to direct service provision.” (Vargo and Lusch, 2008b: p. 26).

Service, therefore, becomes the general case, the common denominator of the exchange process: it is the service that is always traded while the goods, when used, are the supports for the process of service delivery (Normann and Ramirez, 1993; Normann, 2001; Vargo and Lusch, 2004a; Grönroos, 2006).

According with the previous definition, the *process nature* of service emerges as its most distinguishing feature: the aim of this process is to assist customers’ everyday practices (Grönroos, 2008):



“A cleaner washes and irons a customer’s business shirts and, thus, enables him to go to his office; a lunch restaurant provides a meal for him or her during the lunch break, so that he or she will be able to manage the afternoon’s tasks successfully. In both cases, the firms’ activities are providing something of value for the customer.” (Grönroos, 2008: p. 300)

The interpretation of the *value creation process* changes accordingly: value is not created by the provider but by the customer in its value-generating processes, according to which value is created when customers *use* goods and services (*value-in-use*) rather than being embedded in goods or services (*value-in-exchange*).

This way, customers become value co-creator because the value is generated by the consumption of an offer (good or service); the offer constitutes the provision by firms of the necessary resources for the value-generating processes by customers. In doing so, on the other hand, firms have the possibility to “enter” the consumption processes and to develop opportunities to co-create value with their customers (Grönroos, 2008).

These shifts in service concepts and insights into the core of value creating process involve important changes and new relevant questions for business decision making and the informative function provided by Management Accounting Systems, such as:

- what consequences the servitization have on the relevant accounting information to support decision making of a product manufacturer becoming a service provider?
- how to measure the value created in the process of value co-creation and the part the company can appropriate considering also other networked partners?
- how to consider properly value-in-use to determining value-in-exchange and thus also for pricing?
- is there a shift in “output as a relevant accounting object” towards the increasing importance of the “accountability of the consumption process” by customer?
- what are the consequence in management and control of business of the shift to a process-driven, service-centric logic that provides a more solid foundation for a transition from a manufacturing model to a service-provider model (Vargo and Lusch, 2008c)?

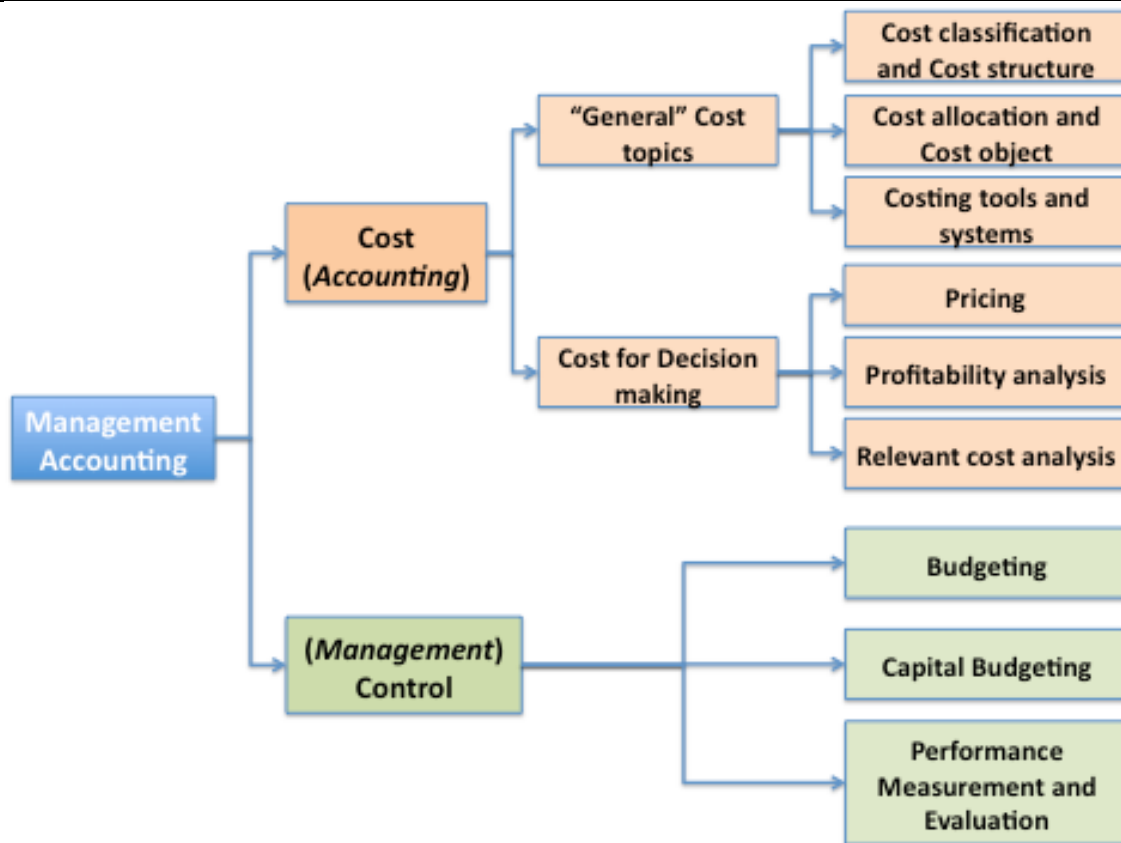
### **3. The role of Management Accounting in S-D Logic**

In the traditional literature Management accounting systems is recalled to satisfy a crucial role in the company providing (financial and non-financial) information to assist managers in their activities. In particular management accounting supports three managerial activities: planning, controlling and decision making (Garrison, Noreen and Brewer, 2010: pp. 2-3). *Planning* involves establishing goals and specifying how to achieve them. *Controlling* involves gathering feedback to ensure that the plan is being properly executed or modified as circumstances change. *Decision making* involves selecting a course of action from alternatives. Management accounting is concerned with collecting, classifying, processing, analysing and reporting information to managers. Unlike the financial accounting information prepared for external purposes and addressed to external stakeholders, management accounting information is designed to help internal decision makers (managers) for different purposes.

In order to analyse the management accounting issues affected by the Service-Dominant Logic perspective, we classify the topics covered by management accounting stemming from the framework proposed by Hesford *et al.* (2007). Hesford *et al.* propose a classification of

management accounting articles on the basis of research topic. We revise such classification for our broader purposes to map and systematize topics covered by Management accounting. The summary of the classification is presented in Figure 2.

**Figure 2** – *The proposed classification of Management Accounting topics*



A first distinction to be made is between cost (*accounting*) and (*management*) control. *Cost* refers to the systems and methods linked to the cost information. We classify cost accounting into “general” cost topics and cost for decision making.

*General cost topics* refers to the basic aspects related to costs like cost classification and cost structure, cost allocation and cost object and costing tools. *Cost classification* recalls the process of categorizing costs depending on the purpose; costs can be classified as direct or indirect, fixed or variable etc. *Cost structure* involves the consideration of the nature of costs in the different cost configurations and the understanding of the composition of manufacturing and non-manufacturing costs of a company. *Cost allocation* implies the allocation of overheads and joint costs but also the choice of a cost driver. *Cost object* refers to the choice of something for which a separate measurement of costs is desired. Finally *costing tools* relates the usage of different cost-related techniques like Cost-Volume-Profit analysis, Job-order costing, Full costing, Direct costing, Activity-based costing etc.

*Cost for decision making* refers to the function of management accounting to create and provide information in order to support the decision making process. We particularly address Pricing purposes, Profitability reports and Relevant cost analysis. *Pricing* decisions include the way of calculating costs in order to set prices based on the cost-plus pricing method and comparing the result with the market price. *Profitability analysis* refers to the comparison of costs and revenues of products or customers in order to understand the contribution to the

overall company result. Finally, *Relevant cost analysis* represents a tool for evaluating the economic convenience of two or more course of action evaluating only those factors which are different or unique among alternatives.

*Control* represents the main second stream of management accounting. It broadly refers to the setting of targets and the evaluation and comparison of results to the forecasted or budgeted values. We classify control into different subcategories: budgeting, capital budgeting, performance measurement and evaluation and other forms of control. *Budgeting* embraces the definition of a plan for the future expressed in financial terms. *Capital budgeting* refers to investment decisions and the appraisal of investment in the long run. *Performance measurement and evaluation* recalls the explanation of metrics to set and measure company performance (i.e. Balanced Scorecard) and furthermore the uses of such measures for the incentive system design.

In the prosecution of the paragraph we are intentioned to explore the new challenging issues in management accounting topics related to the previously described changes in service economy and to the emergence of service science and S-D Logic.

### *3.1. Cost accounting Issues*

There are many research questions arising on the cost-side when investigating service companies. Are the classifications of fixed/variable and direct/indirect costs still meaningful? How does the cost structure change? Which is the cost object of the analysis? And is the output (product or service) still a meaningful cost object? Which costing tools, if any, become more relevant? Which are the drivers of the price-cost relationship? How to measure the value in-use and value in-exchange? Is Profitability analysis and relevant cost analysis still useful? How does profitability relates to value for customer?

#### *Cost classifications and cost structure*

On the cost side, starting from the topic of cost classifications, it is quite clear that the “manufacturing costs” (like direct labor, direct material and manufacturing overhead), also called “product costs” in broader terms, are losing relevance when comparing a service company to a traditional manufacturing company. “Product costs” are related to acquisition or to the physical realization of the product or also the cost of goods sold, and because they are linked to the physical production and are related to the inventory they are also called “inventoriable costs”. “Product costs” are different from “period costs” which represent all the other costs that are expensed in the income statement of the period in which they are incurred, such as the cost of Marketing and Sales or Administration (Garrison, Noreen and Brewer, 2008). In service companies this distinction appears to be useless because all costs are period costs given the absence of costs related to the physical production of goods (product costs) (Dearden, 1978; Modell, 1996).

With regard to the distinction between fixed and variable costs, it is recognized that service companies are composed in large part by the fixed cost component, that is the part of the cost that, within a certain range of variation, remains constant regardless of changes in the level of activity or others factor, typically the production volume in manufacturing companies. In service companies personnel (labour), technology and frequently R&D costs represent the bulk of the total company costs (Dearden, 1978; Modell, 1996). In the specific case of service companies based on the internet (web companies like for instance Google, Aol and Yahoo!), the prevalence of fixed costs is perceived as even more true if we consider the high level of R&D and infrastructure costs (i.e. servers and other hardware in general) they have to sustain. For instance if we consider Google Search the total cost of the search service includes the cost of web servers and the cost of developing and maintaining the software platform. The same

consideration can be extended to Apple; if we consider the App Store, the cost of the infrastructure represents the main cost component. All these costs are fixed costs since they do not directly depend on the number of searches, app sold or users.

Let us move the attention to the factor (driver) respect to which we classify a cost as variable or fixed. In service companies it is not easy to define “the amount of service provided”; what is it and how do I measure the service provided by Facebook? And Google? It is difficult to define because many services are actually often linked each other (referring to Google just think about the services of Gmail, Google Sites, Google Earth, Google Docs, Google Talk etc...) rising the issue of joint costs and revenues.

#### *Cost allocation and Cost object*

To distinguish between direct and indirect costs, we previously define a cost object, or anything to which cost information are desired (Garrison, Noreen and Brewer, 2010). A direct cost is a cost that can be easily and conveniently traced to the cost object; an indirect cost is a cost that cannot be easily and conveniently traced to the cost object, but it can be assigned using a cost driver. The distinction between direct and indirect costs brings out the issue of determining potential cost objects in service companies worthwhile to be considered. The cost object may be the service (mailing, consulting, e-mail, web hosting, etc.), the customer or the end user if different. Anyway the issue of cost allocation increases in service companies as many cost objects can be identified. The R&D, IT and infrastructure costs, among the others, are not only fixed but also indirect costs. In this respect we can conclude that in service companies we can reasonably expect to find greater part of the costs as indirect (Dearden, 1978; Modell, 1996).

#### *Costing tools and systems*

In the perspective of value co-creation and servitization, on the side of the costing tools, is no longer relevant only the “cost of production/product” or “service”, but the “cost of use” as part of its overall life cycle becomes relevant. In other words, the focus shifts to the analysis of the costs of the services offered and their maintenance over time. Only in this way it is possible to support strategies for innovative services that link the costs incurred (or to be incurred) and the utility by the user/customer (Normann, 2001). In this perspective the costing systems capable of detecting the “Total Cost of Ownership” (TCO) (or the Life cycle cost – LCC) are becoming increasingly important. This evolution is linked to the gradual shift of strategic focus (especially for industrial companies) from the processes of physical production to the processes of using what is produced (Normann, 1984). The shift in the object of cost analysis (from the product to the user) can support decisions aimed at reducing the utilization costs for the customer through the innovation in the design of the offer. Thus the cost/performance ratio may increase and therefore the value for the customer, which can also be monetized with a reduction in cash outflow to be paid to the supplier. The TCO analysis was born with reference to a more accurate assessment of the cost of supply within the supply chain that enables to understand the burden beyond the transaction price (Ellram, 1995; Ellram and Siferd, 1998). Such an approach, however, can also be applied with respect to the final customer, to understand the nature and effectiveness of services provided by the manufacturer/supplier and act in terms of both performance improvement on that of efficiency in the perspective of value co-creation. Barontini *et al.* (2011) presents the case of EltagDatamat, an ICT company of the Finmeccanica Group, which uses TCO in customer relationship in order to demonstrate the economic benefit resulting from assigning some services to them.

### *Pricing*

On the revenue side, an important issue concerns the dissociation between investment (costs) and sources of revenue, which raises new problems in the rationale of the traditionally understood costing for pricing (Bhimani and Bromwich, 2010). In such contexts what is “produced” is not what generates revenues, so the pricing has no sense to follow traditional models of the cost-plus or market base type. The pricing is rather linked to the dynamics of business strategy and revenue generation, and is dissociated from the cost of production. In most cases the price charged for the service is zero, in some cases the price is fixed, and in other cases the price changes according to customers behaviour (cannot be set a priori).

The pricing policy is also linked to the type of business model chosen by the company; in an *attention based model* (as Google) the service is free of charge for the user and, as a form of exchange, the user offers its attention to the service provider. The service (i.e. Gmail, Google or other search engine or the social network) is provided for free to the user, but the provider can sell to advertisers, through the banners, the user’s attention. This is also called the “two-sided market” (Anderson, 2009). In a *transaction based model* there is a “traditional” exchange of money for a service (i.e. software or advertisement acquisition).

In the cases of Facebook, Google and broadly web-companies the volume of users becomes the most important driver of revenues and profitability, as it determines the attraction of investment in advertising (i.e. 99% of Google's revenues in 2007 and 2008 and 97% in 2009 derived from advertising). In this way the conditions for coverage of the amount of investment (fixed costs) in IT infrastructure related to the development of hardware and software applications are created; but the direct link between costs and prices that characterize the business world of the G-D logic is missing. In the world of goods, the cost-price causal link, derives from the direct focus on the processes that create products or services, under the assumption that producers should manage the resources they own.

A different but anyway complicated cost-price link in service company is also provided for instance by Xerox. The company no more sells photocopiers but sells document management capability. The main issue in such change for the company is to forecast the level of capacity usage in order to fix the price per copy. A similar issue in the pricing policy arises in Fiat when offering the service of fleet management. The issue of capacity utilization is even more critical in service companies (Brignall *et al.*, 1991).

If we consider in particular the internet-based service firms, we observe that in the control systems the prediction of future revenues (and not so much of the cost) is very important; in fact the value of those companies, that is reflected in its stock price, is essentially revenue driven and the number of customers (volume of users), as already said, is considered the most important leading indicator of future revenues (Sjoblom, 2003). In this perspective we can observe the phenomena of price discounting of goods or services, sometimes innovative, which may extend to free (Amigoni, 2000) to attract significant market shares that are essential in the business of network services (i.e. for a browser or a search engine like Google) or the use of price as a tool to draw attention on the product by a consumer basically indifferent (Bertini and Wathieu, 2010); in either ways we go well beyond the traditional logic of the costing for pricing.

### *Profitability Analysis and Relevant Cost Analysis*

The important role of value and value measurement has been widely discussed; the part of the value captured by the company is always crucial for the definition of the company profitability. Upon this point the use of profitability analysis is still useful in service companies under the S-D Logic. The knowledge of the profitability of the single service or group of services widely supports the decision making process. What should be deeper

considered regards the significance of the figure coming out from the difference between revenues and costs, as the sum between the directly assigned and the allocated costs. Given the high component of indirect costs, the inaccuracy of cost allocation greater affects the consequent computation of service profitability. In some cases, given the non direct relationship between costs and revenues as previously addressed, can be difficult to define revenues related to a single service; in such contexts profitability analysis is consequently difficult to be performed (i.e. the Gmail service).

Regarding the use of Relevant cost analysis for service companies we cannot clearly express upon its usefulness. Anyway we can reasonably develop a consideration. The starting point of our thought is once more the high incidence of fixed costs on total costs; most of such costs are also "sunk" (i.e. R&D and server costs) in the sense that they are already be incurred and cannot be avoided regardless management decision. Sunk costs are also classified as irrelevant costs in Relevant cost analysis; by the way the relevant costs, on which the analysis concentrates, have a low weight on total costs determining a substantial useless of the tool. For this reason we doubt such analysis could have the same relevance than in manufacturing companies.

### *3.2. Management control Issues*

Many other research questions arise on the control-side in investigating service companies. Is it possible to forecast the level of service sold and, consequently, is the use of budget still useful? How can I evaluate long-term investment in such context? How does the company performance is measured? Is it possible to measure the value co-created by the customer/user?

#### *Budgeting*

The budgeting process is the same in all organization. The starting point is to forecast the level of sales and establishing a sales budget. Then the other parts of the Master budget are consequently developed up to a budgeted income statement and balanced sheet. We think the problem here for service companies lies once more in the general high incidence of fixed costs. For that reason the relevance of budget, even if always important in forecasting revenues and costs, is fairly limited in service companies.

#### *Capital Budgeting*

Capital budgeting decision once more closely relates to the consideration that in service companies costs tend to be fixed and time-orientated. In this sense personnel and technology should be accurately considered if recorded as capital items or not (Kerr, 2008). Another crucial point is that traditional capital budget misses to consider in the analysis the part of the value co-created by the customer; and some cases it can make the difference in the evaluation of alternatives.

#### *Performance Measurement and Evaluation*

In the world of services, however, the process of value co-creation is the ultimate source of profitability and that should be monitored, measured and managed. In internet-based services (i.e. Social networks or platforms like eBay) the products include digital entertainment features but also a personal entertainment linked to an experience that the consumer lives in the use of the service. Often, these platforms are instrumental to the creation of independent "products" by the customer in the rationale of co-creation (i.e. Facebook). This is the *value-in-*

use recalled earlier. But in our management accounting perspective the value-in-use implies the issue of measuring the part of the value co-created by the customer/user.

Another major area where we believe that the rising issues in service influences the development of management accounting research concerns the problem of the distribution and measurement of value between value co-producers/co-creators in a system of services. In this context the aspect of co-creation of value with customers becomes important, both in the sense of business to business relationships than in business to consumer. In this context, the value is not only caused by the internal efficiency and determined, from the perspective of the Porter's value chain (Porter, 1980), as the difference between sales revenues and expenses of "strategically relevant" activities of the value chain. In the service-oriented logic company's goal is the mutual creation of value for the company itself and for its customers and the service is a mediating factor in this process (Gronroos and Ravald, 2009). In other words, the value that a company can create in the relationship with a customer depends on the value that the same customer can create from the involvement in the relationship. In this sense the "mutual value creation" is addressed: the customer is acting as co-producer in the process of the supplier while the supplier is acting in the corresponding process of creating customer value and is involved in an active way (Gronroos and Helle, 2010: p. 570). A step towards the measurement of value in this logic is carried out by Gronroos and Helle (2010) who propose a model of evaluation in which the joint supplier-customer productivity and how this comes from the efficiency and effectiveness of the relationship itself is considered. It is clear that the capacity to make this measurement depends on the availability of data based on costs and expected cash flows as well as the degree of trust and mutual opening of accounts by the availability of the actors involved in the relationship.

With a similar view to the logic of "mutual value creation" model Pardo *et al.* (2006) argue that there are three categories of value: *exchange value*, which originates in the activities of the company and is consumed by the customer; the *proprietary value*, created and consumed only by the supplier who performs the activities for its own efficiency and effectiveness; the *relational value*, co-created by the company and the customer resulting from the activities of border straddling the two actors. It is the latter relationship that affects the performance measure of the value formed in customer-supplier relationship, and how this performance is divided between the company (as captured value) and the customer (as value creation). With this in mind and focusing on the value captured by the service provider, Storbacka and Nenonen (2009) suggest that the "value capture" can be measured by discounting the future profits arising from the relationship with the customer, and also argue that this value can be used as a proxy of value creation for shareholders. The value of long-term relationship between customer and supplier (Ravald and Gronroos, 1996) especially in service companies becomes subject not only for the exclusive use of the marketing field but also an area in which management accounting can make a substantial contribution.

## Discussion and Conclusions

The following Table 2 summarizes the main aspects characterizing accounting under a Goods-Dominant Logic as opposed to a Service-Dominant Logic that we consequently call Goods-Dominant Accounting and Service-Dominant Accounting.

The first relevant transition in G-D Accounting is to *change the focus of customer interactions from transaction- to relationship-based*. This is one of the most important consequences of the process of "servitization". This shift implies the orientation towards a long-term relation with the customer and the transformation of the producer in a "service provider": an example is given by the development of service offering given by an equipment manufacturer (Oliva and

Kallenberg, 2003). The implications in term of accounting information required to support the process of servitization are in different aspects.

**Table 2** – *Goods-Dominant vs. Service-Dominant Accounting*

ASPECT	GOODS-DOMINANT Accounting	SERVICE-DOMINANT Accounting
<i>Customer interaction (Value creation)</i>	Transactions based (value in exchange)	Relationship-based (value in use)
<i>Profitability driver</i>	Minimize resource consumption (efficiency)	Maximize resource usage (capacity)
<i>Measurement orientation</i>	Product centric	Customer centric
<i>Resource position</i>	Resources owned to produce and sell “output” to customer	Resources made available to support customer in value co- creation process
<i>Cost drivers</i>	Volume-related	Capacity/Customer-related
<i>Price setting</i>	Production process driven (Cost-plus and Market)	Customer value co-creation driven (Capacity choice and Business model)

Moving along this dimension changes the way the service is priced (*price making*): from a mark-up for labor and parts every time a service is provided, to a fixed price covering all services over an agreed period. Relationship-based services centered around the product normally take the form of maintenance contracts priced in terms of operational availability and response time in case of failure. The accounting information to support such decision making process change: the *profitability driver* is resource usage (capacity) and cost information (resource consumption) loses relevance for pricing. According with Oliva and Kallenberg (2003: p.168):

“The move towards maintenance contracts is often triggered by a desire to make better use of the installed service organization. For the service provider, once the service organization is in place, it becomes a fixed cost and the main driver of profitability is capacity utilization. Established service contracts reduce the variability and unpredictability of the demand over the installed capacity, and allow a higher average capacity utilization.”

It has been observed that the emerging service culture, with respect to the metrics, values and incentives predominant in the manufacturing organization, can be supported by an appropriate information system to monitor the business operations related to the servitization process, in order to demonstrate the contribution to profitability of the service organization activities within manufacturing (Oliva and Kallenberg, 2003).

In this way also in web services (i.e. Google) the profitability is strictly linked to the capacity usage; the marginal cost of an additional unit of web-based service (i.e. Gmail service) is nearly zero and provides a potential revenue becoming entirely profit (by the advertisements to be displayed on that new Gmail account). The fundamental choice for a company highly becomes the capacity.

Adopting “customer-centric” thinking involves gaining a detailed understanding of the activities a customer performs in using and operating a product through its life cycle, from sale to decommissioning (Davies, 2004). And coherently also the *measurement orientation* shifts from the “cost of production” to the “cost of use” as part of its overall life cycle. The



analysis of the costs of the services offered and their maintenance over time on the customer side assumes relevance in the analysis. Only in this way the company is able to support strategies for innovative services linking the costs incurred (or to be incurred) and the utility by the user/customer. Costing techniques like Total Cost of Ownership or Life Cycle Costing greater fit in such context.

Another differentiating aspect is the *resource position*: for G-D Accounting the resource consumption is crucial in order to attain a certain level of efficiency and being able to satisfy the customers through the acquisition of a product. The customer is satisfied only when he/she owns the product and resources are consequently used in that way. Under a S-D logic the company makes available the resources to the customer in order to increase his/her involvement in the value co-creation process. In this way the sharing of the resources with the customer is critical. For instance the recent *cloud computing* (more broadly *cloud sourcing*) phenomena, referring to the fact that the software is not downloaded but used on the web, is an example (i.e. Google Docs). The firm is fundamentally a value facilitator, but during interactions with its customers the firm may in addition become a co-creator of value with its customers. Firms produce input resources into customers' value-generating processes, and hence firms only facilitate value creation (indirect support to value creation). Such resources do not include value themselves. During interactions with customers firms get opportunities to influence their customers' value-generating processes and thus can become co-creators of value with their customers (direct support to value creation) (Gronroos and Ravald, 2009). In this respect the model proposed by Gronroos and Helle (2010) represents an important reference point to broaden measurement up to the value co-creation process shedding light on its economic evaluation side.

Another important aspect distinguishing G-D to S-D accounting is the *cost driver*. In G-D accounting the core cost driver is the production volume; higher is the level of units sold and higher is the level of costs. The main reason of cost sustainment is the number of unit produced and sold. In S-D accounting the ultimate cost driver is the capacity choice and the level of capacity utilization (both structural and operational cost driver of Riley (1987) classification). On this point Time-driven Activity-based Costing (TDABC), a recent development of a costing technique, goes further on the need of considering the time as the main driver of capacity information. TDABC technique (Kaplan and Anderson, 2007) encounters the estimate of the practical capacity of committed resources, mainly people, and clearly fits the emergent need of service companies to better take into account the level of capacity usage.

A last crucial aspect differentiating G-D to S-D Accounting is the *price setting*. In the first type of accounting the price, as the cost records, is closely link to the product; it is calculated by the encounter of two methods: cost-plus or market. In the first case to the production unit cost (variable or full) is added a mark-up; in the second method the price is fixed on the base of a comparison with competitors' prices (Schlissel and Chasin, 1991). In S-D accounting the price is more driven by the business model and the capacity choice. The first refers to the recalled attention-based or transaction-based business model under which the monetary exchange can be realized or not. The capacity issue is critical, especially in service, in relation to the forecast of capacity usage in order to determine a reliable cost and, consequently, price.

These aspects characterizing S-D Accounting deeply change the approach of management accounting and the role it can play into the companies. In the attempt to bring the S-D accounting proposals within the accounting literature, we believe that the changes identified by the S-D logic, however, may fit into a wider change/evolution of management accounting in the framework of the so called "Strategic Management Accounting" (SMA). There is no agreed

definition of SMA (Langfield-Smith, 2008), but it is well recognised it has a clear “external orientation” to be interpreted as the importance of accounting information about competitors, suppliers and customers. Simmonds (1981, 1982) developed a conceptual framework of SMA underlying the importance of competitor information (related to cost, prices, market share, etc.) in developing and monitoring business strategy. Later Bromwich (1990) addressed the need for external orientation which focuses on the product offer that can satisfy customer needs but, at the same time, takes into account the product attribute costs. Coherently with such market orientation it is also possible to interpret as satisfaction of customer needs the achievement of a desired target profit/cost (Target Costing - Monden and Hamada, 1991). In SMA context S-D accounting would assume a significant and coherent role for its focus on the customer side. S-D logic emphasises the role of customer as value co-creator and consequently S-D accounting is addressed, among the others, to the challenge of the measurement of the part of the value co-created by the customer.

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