



UNIVERSITÀ POLITECNICA DELLE MARCHE  
FACOLTÀ DI ECONOMIA “GIORGIO FUÀ”

---

Corso di Laurea Magistrale in  
International Economics and Commerce  
Curriculum Business Organization and Strategy

L'ANALISI DELLA REDDITIVITÀ NELLE AZIENDE E-COMMERCE:  
IL CASO LASHMANIA

PROFITABILITY ANALYSIS IN E-COMMERCE COMPANIES:  
THE LASHMANIA CASE

Relatore: Chiar.mo  
Prof. Marco Montemari

Tesi di Laurea di:  
Sabrina Sassaroli

Correlatore esterno:  
Dott. Salvatore Franciosi

Anno Accademico 2020 – 2021



## TABLE OF CONTENTS

|   |           |
|---|-----------|
| <b>ABSTRACT</b> .....   | <b>1</b>  |
| <b>INTRODUCTION</b> .....   | <b>3</b>  |
| <b>MANAGERIAL ACCOUNTING: AIMS, ROLE AND EVOLUTION</b> ...                                  | <b>7</b>  |
| 1.1. Managerial Accounting basics.....  | 7         |
| 1.1.1. The pillars of Managerial Accounting: Planning, Controlling and Decision Making..... | 7         |
| 1.1.2. Managerial Accounting vs Financial Accounting .....                                  | 13        |
| 1.2. The role of Managerial Accounting.....   | 19        |
| 1.3. The evolution of Managerial Accounting practices.....                                  | 23        |
| 1.3.1. The four stages of evolution .....   | 24        |
| 1.3.2. The 21st century as the fifth stage of evolution.....                                | 28        |
| 1.3.3. The digital transformation of managerial accounting .....                            | 30        |
| 1.4. Pros and cons of Managerial Accounting application .....                               | 34        |
| <b>COST ACCOUNTING METHODS</b> .....  | <b>38</b> |
| 2.1. Introduction to costs.....   | 38        |
| 2.1.1. Cost concepts and cost classifications.....  | 39        |
| 2.1.2. Cost configurations and cost accounting methods .....                                | 50        |
| 2.2. Direct costing method.....   | 52        |
| 2.2.1. Variable costing.....  | 53        |
| 2.2.2. Traceable Costing.....   | 54        |
| 2.2.3. Advantages and limitations .....   | 56        |
| 2.3. Full costing method .....  | 58        |
| 2.3.1. Traditional costing system.....  | 59        |
| 2.3.2. Activity Based Costing system.....   | 63        |
| 2.3.3. Time Driven Activity Based Costing .....   | 72        |

|        |  |            |
|--------|--|------------|
| 2.3.4. | Advantages and limitations .....                                     | 76         |
|        | <b>MANAGERIAL ACCOUNTING PRACTICES IN E-COMMERCE COMPANIES .....</b> | <b>80</b>  |
| 3.1.   | E-commerce: the present and the future of companies .....            | 80         |
| 3.2.   | Features and peculiarities of e-commerce companies .....             | 83         |
| 3.2.1. | The major different types of e-commerce .....                        | 84         |
| 3.2.2. | Key success factors and critical failure factors .....               | 87         |
| 3.2.3. | The virtual value chain .....  | 98         |
| 3.3.   | The application of managerial accounting in E-commerce contexts..... | 101        |
| 3.3.1. | The challenge of managerial accountants in online enterprises .....  | 102        |
| 3.3.2. | E-commerce cost structure .....                                      | 104        |
| 3.3.3. | ABC system as a suitable tool for e-commerce.....                    | 110        |
|        | <b>THE LASHMANIA CASE .....</b>                                      | <b>119</b> |
| 4.1.   | Overview of the company: when a need becomes enterprise .....        | 119        |
| 4.2.   | Research methodology.....  | 124        |
| 4.3.   | Company cost structure and managerial income statement.....          | 128        |
| 4.4.   | Financial statement analysis .....                                   | 133        |
| 4.5.   | Profitability analysis .....   | 137        |
| 4.5.1. | Sales and a first-level margin analysis .....                        | 138        |
| 4.5.2. | A second-level margin analysis with ABC system .....                 | 155        |
|        | <b>CONCLUSIONS .....</b>   | <b>169</b> |
|        | <b>BIBLIOGRAPHIC REFERENCES .....</b>                                | <b>179</b> |



## ABSTRACT

Le aziende che operano nell'ambiente e-commerce sono in costante crescita nel mercato mondiale. Tuttavia, seppure semplice, veloce ed innovativo, l'e-commerce non rappresenta una fonte di guadagno certa per le aziende. Per questo motivo, la progettazione, l'implementazione e l'utilizzo di strumenti e approcci di controllo di gestione possono dare un contributo importante a queste realtà poiché sono in grado di fornire informazioni finanziarie sul livello di profittabilità del canale e-commerce. Seppure sia agevole intuire il contributo che il controllo di gestione potrebbe fornire alle aziende che operano online, la letteratura presente a riguardo non esplora sufficientemente l'argomento. Pertanto, l'obiettivo di questo lavoro di tesi è quello di indagare le peculiarità e le sfide derivanti dalla progettazione e dall'implementazione di strumenti del controllo di gestione in aziende operanti in tali contesti. Per fare questo sono state condotte un'analisi teorica e una empirica, prendendo in considerazione il caso di una azienda italiana e-commerce B2B e impegnata nel settore del beauty: *Lashmania*. Dopo aver calcolato un primo margine di contribuzione a costo standard si è sviluppato un modello di analisi dei margini a due livelli con un sistema di Activity-Based-Costing. Da un lato, l'analisi empirica dimostra che un sistema di analisi dei margini a due livelli fornisce all'azienda un adeguato strumento di contabilità

gestionale per analizzare la redditività e introduce un nuovo oggetto di costo sul quale un'azienda e-commerce dovrebbe raccogliere informazioni di costo: l'ordine e il suo processo di evasione. Dall'altro, suggerisce un nuovo ruolo del controller, il quale diventa un partner di business e digitale, che deve avere consapevolezza del contesto altamente competitivo in cui si immette un'azienda che utilizza il canale e-commerce. L'analisi, inoltre, conferma che l'adozione di un e-commerce ha un impatto sulla struttura dei costi di un'azienda e, di conseguenza, sulla sua efficienza. Questo scatena una nuova catena del valore, quella virtuale, guidata dal flusso delle informazioni. Tuttavia, il mondo digitale è in continua evoluzione e questo rapporto tra controllo di gestione ed e-commerce è ancora poco esplorato dalla letteratura. Non c'è dubbio, questo argomento merita attenzione in ulteriori ricerche riguardanti non solo le peculiarità e le sfide dell'implementazione di strumenti di contabilità manageriale nei contesti di e-commerce, ma anche le leve e i fattori abilitanti in grado di affrontare tali sfide.

## INTRODUCTION

In recent years, e-commerce has become a crucial factor of the global sales market. On the one hand, digital shoppers continue to grow every day, and on the other, more and more companies are moving towards an online business, generating a deep change of the competitive environment where firms operate. In 2021, retail e-commerce sales amounted to approximately 4.9 trillion U.S. dollars worldwide (Statista, 2022). This figure is forecast to grow by 50 percent over the next four years, reaching about 7.4 trillion dollars by 2025 (Statista, 2022). The 2020-2021 biennium has certainly accelerated this phenomenon. In fact, the Covid-19 pandemic has not only shaken the global economy but has totally changed buying habits, behaviours, and the mindset of consumers, generating alterations that will take root and remain permanent. Even for the wholesale trade, the numbers are constantly growing. In many countries, the pandemic restrictions from Covid-19 have pushed companies in the B2B market to sell more and more products or services online, applying strategies typical of B2C commerce: efficient customer care, customization, and targeted marketing strategies. The data, confirming the constant growth of the trend, represent an important signal as they clearly reveal the present and future direction of the market.

However, although selling through e-commerce seems to be an easy, fast, and innovative solution, it does not always represent a certain source of income.

Operating online also hides many pitfalls due to the great competition on the digital market and the wide range of products always in line with market trends. It is certainly not easy to stay up-to-date and win the absolute trust of a consumer. Moreover, any problems, such as delivery delays or navigation difficulties, reported in the form of negative comments from users can build a bad reputation to the e-commerce site and reduce profitability itself. For this reason, the design, the implementation and the use of managerial accounting tools and approaches can make an important contribution to these realities since they are able to provide key financial information to support planning, controlling and decision making activities of managers and entrepreneurs. In other words, managerial accounting tools and approaches have the potential, if properly designed and implemented, to provide managers and entrepreneurs with information on the profitability of online channels. Surprisingly, despite the intuitive link that can be created between managerial accounting and e-commerce companies, this topic is still little explored. The literature about this link turns out to be scarce and the usefulness, challenges, peculiarities, levers and barriers on the use of managerial accounting tools and approaches in e-commerce contexts are topics which have been given little attention, despite their relevance. Hence the desire to combine these two worlds and address the existing gap. Therefore, the aim of this thesis work is to explore and investigate the peculiarities and challenges arising from designing and implementing managerial accounting tools in online contexts.

In order to achieve this aim, a theoretical and an empirical analysis, through a case study, will be carried out.

Hence, the thesis is divided into four chapters. Chapter one introduces managerial accounting and frames its main aspects. Starting from the basics, the chapter provides an accurate description of this branch of accounting, the role it plays in the company and the pro and cons of its application. Particular attention was given to the evolution that this practice has had over time, identifying 6 phases, the last of which has just begun.

Chapter two describes the main existing cost accounting methods and focuses on the difference between direct and full costing methods, paying particular attention to the activity-based costing system. For each cost system there are pros and cons useful to decide what type of methodology to apply.

Chapter three deals with e-commerce companies, highlighting their characteristics and peculiarities. Next, it provides a view on the relationship between managerial accounting and e-commerce, which is poorly treated in the literature. To do this, it analyses the main challenges of managerial accounting in online contexts, the cost structure of an e-commerce and finally the application of an ABC system to calculate the profitability of web companies. Finally, chapter four presents the *Lashmania* case study, an e-commerce company engaged in the beauty industry, where a managerial accounting tool, a profitability analysis more in particular, was designed and implemented. After a general overview of the company, the

chapter shows the main data obtained by analysing the financial statement, and then continues with an analysis of profitability. In this respect, an analysis of the company's sales and a first contribution margin, calculated at standard cost, is carried out. Subsequently, thanks to a participatory survey in the company, an ABC system is developed, adapted to the information needs of Lashmania and aimed at calculating a second more accurate margin. All with the ultimate goal of providing a useful methodology to calculate the profitability of an e-commerce company and to discuss the results arising from empirical data against the literature on the peculiarities and the challenges of applying managerial accounting tools in e-commerce contexts.

# CHAPTER 1

## MANAGERIAL ACCOUNTING: AIMS, ROLE AND EVOLUTION

### 1.1. MANAGERIAL ACCOUNTING BASICS

#### 1.1.1. The pillars of Managerial Accounting: Planning, Controlling and Decision Making

Many authors have given their own definition of Managerial Accounting (hereafter MA). Robert N. Anthony, in 1965, said that management Accounting is concerned with accounting information, which is useful to the management (Anthony, 1965). Later, in 1985, in the writing entitled Managerial Accounting and Finance, John L. Brown e Leslie R. Howard suggested that management accounting is concerned with the efficient management of a business through the presentation to management of such information that will facilitate efficient planning and control” (Brown and Howard, 1985). More recently, instead, the Institute of Management Accountants (IMA) described the MA as “a profession that involves partnering in management decision making, devising planning and performance management systems, and providing expertise in financial reporting and control to assist management in the formulation and implementation of an

organization's strategy". (IMA, 2008, p. 2). Although distributed in a different time span, in each of these definitions there are concepts such as utility, simplicity and assistance. MA practice, in fact, allows the work of a company to be more efficient and effective. Managers generally perform three activities in order to create business value and to transform ideas into real actions: Planning, Controlling and Decision Making. The MA helps the manager by supporting him or her in the execution of these three activities. At this point, another possible definition is the following:

"Managerial accounting is a set of tools and approaches that managers can use to support planning, controlling, and decision making activities" (Garrison et al., 2017, p. 58).

These three vital actions are nothing more than the pillars on which MA comes to life, let's take a closer look at them.

*Planning* means setting objectives and defining lines of action to achieve desired results and it has an essential role in the growth and sustainability of an organization (Garrison et al., 2017). Indeed, setting goals means establishing what the company expects to accomplish over time. The planning phase has to be divided into:

- *Strategic planning*: establishing global and long-term objectives and lines of actions (Garrison et al., 2017). It is a process that matches resources available to opportunities, adapting itself to any change of the

environment. The long-term strategy of a business is necessary for a company to pursue its mission by distributing the required tasks over time. Generalizing, it answers to questions such as: “Which is the market share we aim to achieve in 5 years?”. The most important aspect of planning is creating a competitive advantage for the organization. Through the analysis of business strengths and weaknesses, managers can determine the industry position in the market and towards competitors. While through analysing opportunities and threats it is possible to catch expansion opportunities.

- *Operational planning*: establishing specific and short-terms goals and lines of actions. These are micro-objectives that describe how to achieve the macro-ones. Each micro lens will be connected to a tool, one or more assigned persons and a start and end date. In this case, examples of questions that a manager has to answer are: “how many resources I have to acquire next year?”, “on which products should I push the sale?”, “how much money should we invest in online advertising on the next year?”. One of the main tools that accompanies the manager during this phase is the budget. The budget is a forecast document expressed in quantitative terms generally drawn up before the beginning of the year, through which an organization allocates its economic resources to carry out the micro-objectives defined upstream (Garrison et al., 2011).

Once the objectives have been defined, they are put into practice through the execution of the lines of action. Managers oversee day-to-day activities and try to keep the organization functioning smoothly. Their role is that of assigning tasks to employees, arbitrating disputes, answering questions, solving problems, and making many small decisions that affect customers and employees (Garrison, 2011). The results obtained from the performance of certain tasks are then recorded so as to move to the *control phase*.

Controlling occurs when managers compare the actual performance with objectives planned (Garrison, 2011). This phase has a twofold aim:

- Identify differences and minimize the deviations between achieved and planned results;
- Understand the reasons behind the deviation.

The information can be achieved through the process of feedback, that, in turn, it can be distinguished in two mechanisms (Garrison, 2011). The first one is performed at the end of the period and it is known as “*feedback mechanism*”. It consists in comparing actual results against planned objective and, as such, it is definitely very accurate but not action-oriented. In fact, it does not have a great anticipative capacity and does not reveal the presence of deviations in time. However, it is an effective technique in stable business situations where changes are gradual and sporadic. The second one, instead, it is called “*feedforward mechanism*” and it consists in comparing planned results with forecasted results

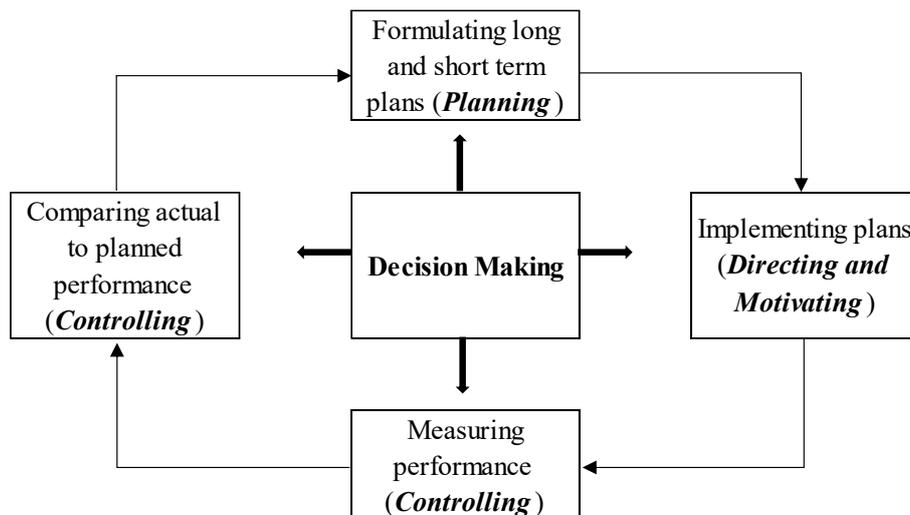
periodically, so that, during the implementation of the business performance. This action-oriented technique reports the results through the preparation of periodic interim reports, anticipating corrective actions instead of putting them into effect when the problem has already arisen. Unlike the feedback mechanism, however, this technique is expensive and labour and time intensive.

In conclusion, control activity allows managers to understand if the company is continuing in the right direction, considering the objectives and budget set initially, and whether the objectives decided in the programming phase are fully attainable or if it is necessary to make changes in some business area. Therefore, the importance of monitoring the strategy is crucial to the success of the organisation. It is easy to imagine that the control function can give a positive result, which confirms the excellent performance of the company from the managerial point of view, or a negative one, finding deviations. In the latter case, certain corrective actions, which primarily concern operational planning, shall be implemented. However, it is not said that the problem does not concern the strategic planning of long-term objectives.

*Decision-making* is a process involving the selection of a number of actions from a number of alternatives. This activity has a central role with respect to the two functions described above (see the Figure 1.2). In the planning phase the manager has to face one choice after another: what the company should do, for whom and how, both in the long, medium and short term. Similarly, during the controlling

phase, the decision concerns what deviations to investigate, as well as the corrective actions to be implemented.

**Figure 1.1** - The planning and control function



**Source** – Eric W. Noreen, Peter C. Brewer, Ray H. Garrison. (2011), *Managerial accounting for managers, Mc Graw-Hill Irwin*, 2nd Edition, p. 62.

Making a decision follows understandable steps that depend from case to case.

Simplifying, the steps identifiable could be (Sharma, 2010):

- 1- Identifying the problem;
- 2- Specifying the goal and the objective to be achieved;
- 3- Listing the possible alternative courses of action;
- 4- Gathering the information about the consequences of each alternative;
- 5- Making a decision, by selecting one of the alternatives.

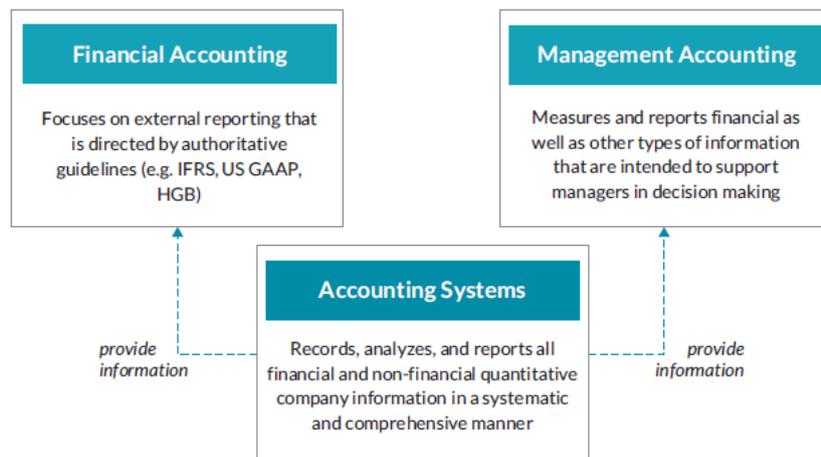
The MA plays a critical role especially in step four (Sharma, 2010) because thanks to the information and data available it is able to predict the results of various courses of action suggesting to the manager the best choice to make. The cost-benefit analysis measures the profitability of each action by considering relevant costs and benefits, in order to determine the best decision to make. The total costs and benefits that differ between alternatives are relevant in a decision. Otherwise, if the total amount of a cost will be the same regardless of the alternative selected, then the decision has no effect on the cost and it can be ignored (Garrison, 2011). Another type of analysis useful in the decision-making phase is make or buy analysis. A decision to carry out one of the activities in the value chain internally, rather than to buy externally from a supplier, is called a make or buy decision. Quite often these decisions involve whether to buy a particular part or to make it internally. Make or buy decisions also involve decisions concerning whether to outsource development tasks, after-sales service, or other activities (Garrison, 2011).

#### 1.1.2. **Managerial Accounting vs Financial Accounting**

MA is just one of the parts that compose an accounting system of a company. This latter, in fact, is composed by two main subsystems with the common objective of providing information, financial accounting on the one hand and MA on the other.

The necessity not to overlook the differences between these two accounting systems dates back to 1965 when Robert. N. Anthony, professor at Harvard Business School, published the script entitled “*Planning and Control Systems*”. The major discrepancy between the two accounting systems, said Prof. Anthony, stems mainly from the different information requirements that they want to meet. The financial accounting is directed towards the outside of the organization. It means to those subjects that, although not personally involved in the enterprise, are interested in understanding the business economic and financial performance. The second, instead, is aimed at producing information to support the internal management activity (see the figure 1.1).

**Figure 2.1 - Accounting systems**



**Source** – Michel Charifzadeh and Andreas Taschner (2017). *Management Accounting and Control: Tools and Concepts in a Central European Context*, Wiley, p. 14.

Although information user orientation is one of the main differences that drives the actions of the two accountings, it is not the only one. In this regard, it is possible to detect seven key differences in order to make a comparison (see the table 1.1).

**Table 1.1** – Comparison of Financial and Managerial Accounting

|                                   | <i>Financial Accounting</i>   | <i>Managerial Accounting</i>   |
|-----------------------------------|---|--|
| <b>Users</b>                      | External persons who make financial decisions (owners, creditors, tax authorities). | Managers inside the organization for planning, controlling and decision making |
| <b>Time focus</b>                 | Historical perspective  | Future emphasis  |
| <b>Verifiability vs Relevance</b> | Emphasis on objectivity and verifiability   | Emphasis on relevance  |
| <b>Precision vs Timeliness</b>    | Emphasis on precision   | Emphasis on timeliness   |
| <b>Subject</b>                    | Primary focus is on companywide reports   | Focus on segment reports   |
| <b>Rules</b>                      | Must follow GAAP/IFRS and prescribed formats  | Not bound by GAAP/IFRS or any prescribed format                                |

|                    |                                |               |
|--------------------|--------------------------------|---------------|
| <b>Requirement</b> | Mandatory for external reports | Not mandatory |
|--------------------|--------------------------------|---------------|

**Source** – Ray H. Garrison, Eric W. Noreen and Peter C. Brewer. (2017) *Managerial Accounting, McGraw Hill Education*, 16th Edition, p. 2

**User:** the information provided by the financial accounting are directed to investors, creditors, suppliers, regulators, and tax authorities to help them make investments, credit, or other financial decisions (Bianchi and Bubbio, 2002). The information generated by MA, instead, are useful for all the management functions of the company because they help managers in planning, controlling, and making decision.

**Time focus:** financial accounting is based on an historical perspective for at least two reasons. First, companies are reluctant to publish sensitive and confidential information, such as future plans and objectives, to the outside public. Second, the reports prepared by the financial accounting should provide accurate, objective and verifiable data on the past and present financial results of the company (The Institute of Cost Accountants of India, 2019). It is the task of external stakeholders to draw conclusions about the future through the information that they receive. On the other hand, MA has a future orientation because the manager’s planning is based on forecasts and estimations.

**Verifiability vs relevance:** as already mentioned in the previous point, financial accounting reports verifiable data. Instead, an accounting system used for internal interests prefers the relevance of the information rather than their objectivity. Relevance means the flexibility to provide whatever data is relevant for managers in order to make specific decisions (Bianchi and Bubbio, 2002).

**Precision vs timeliness:** reports provided to external stakeholders require an accuracy that takes effort and time of a financial accountant (Garrison et al., 2017). A time that, in the vast majority of cases, does not reflect the needs of a manager. This latter, in fact, prefers to have an immediate estimation rather than a more precise information later.

**Subject:** the level of detail of the information is also a distinguishing variable for the comparison between the two accountings. In fact, while the financial accounting is mainly focused on the company as a whole, the MA reports information at the level of business segments. These segments can be departments, production lines, consumers, territories, or any other division that the manager considers useful to analyse. It is intuitive to understand that, while MA can generate very detailed information because directed to an internal public, financial accounting is limited (Garrison et al., 2017). It prefers to provide data regarding the financial performance of the company as such, avoiding disclosure of excessively detailed data to the general public of competitors.

**Rules:** another big difference between the two accounting subsystems concerns the type of report to be elaborated and the consequent rules to follow in order to submit them. Financial accounting statements must be prepared taking into account accounting standards, such as the Generally Accepted Accounting Principles (GAAP) or the International Financial Reporting Standards (IFRS)<sup>1</sup>. This allows to reduce fraud and misinterpretations, ensuring external users an output that reflects strict rules. This is not the case for MA, which is not obliged to follow GAAP or IFRS accounting standards. Managers, in fact, set their own rules for the realization of internal reports that will be tailored to specific decisions.

**Requirement:** while financial accounting is mandatory and external parties such as the Securities and Exchange Commission (SEC), the tax authorities or certified public accountants, verify financial statement at least on an annual basis; the MA is completely optional (Garrison et al., 2017). In fact, it is required by companies

---

<sup>1</sup> IFRS and GAAP are separate frameworks because they have been created by two different boards, respectively the International Accounting Standards Board (“IASB”) and the Financial Accounting Standards Board (FASB), an independent organization delegated by the Securities and Exchange Commission (SEC). Both refer to two standards and principles that countries around the world adhere to in relation to financial reporting. Despite the many similarities, the IFRS and GAAP main difference comes from the basis of each set of rules: “Generally, IFRS is considered to be more ‘principles-based’, while U.S. GAAP is the more ‘rules-based’ set of standards” (Cussatt, M., Huang, L., & Pollard, T. J., 2018, p. 21). “International Financial Reporting Standards (“IFRS”) have swept the globe even as Generally Accepted Accounting Principles (“GAAP”) have retained their hold over reporting companies and securities markets in the United States” (Bratton, W. W., & Cunningham, L. A., 2009, p. 989).

only because they have a need for the information and it is a “free” process implemented by the manager on a monthly or weekly basis.

## 1.2. THE ROLE OF MANAGERIAL ACCOUNTING

Supporting the manager in the execution of the phases previously described the MA assumes a role of incredible relevance within the company. First, it provides key information for decision making and planning, participating as an active team member in the process. The information produced by the MA function is intended for many uses within the enterprise. One of the main types of information provided is *cost information*<sup>2</sup>. Enterprises use cost information to support important decisions regarding product characteristics or product lines, to support the formulation of development strategies and to improve operational activity. For example, the MA is able to associate the costs to certain activities that make up the business process, understanding the need to redesign the activity or even eliminate it permanently (process that takes the name of "*reengineering*") or choose to make it more efficient and therefore less expensive (process of "*continuous improvement*"). Second, it assists managers in the direction and in the

---

<sup>2</sup> Other types of information processed by the management accounts are, for example, efficiency indicators, such as performance measures (input used/output obtained), quality measures and service level measures (ability to meet customer needs). Ref needed

control of operative phases; the managerial accountant motivates managers and the employees toward the company values and targets. Third, it measures the performance of the activities also suggesting the best placement of resources and the division of tasks.

The institute of Cost Accountants of India has detected a list of seven functions of MA, defining them as the manner in which the MA satisfies the various needs of management (The Institute of Cost Accountant of India, 2019, p.5):

- **Storehouse of Reliable Data:** MA collects data from various sources and stores information, both monetary and qualitative, for appropriate use, as and when necessary.
- **Modification and Presentation of Data:** Once the data have been collected, they are made understandable to the management. Indeed, they are modified according to the requirements and issues of the management. For example, if sales data are required, the managerial accountant can present them making a classification according to product, customer, geographical area, seasonality, etc.
- **Communication and Coordination:** The success of an organisation depends largely on the coordination of the departments within it. Aligning the different departments on the objectives to be achieved, as well as on the company values, is one of the biggest challenges of a manager because it is a crucial variable to increase effectiveness and profitability.

- **Financial Analysis and Interpretation:** In addition to providing the information requested and presenting it in an understandable manner, the MA provides an interpretation of the data available for the purpose of making strategic decisions. The top executive managers, in fact, do not always have the ability to read certain types of information because they lack economic-technical knowledges.
- **Control:** As already specified in the description of the second pillar in the previous paragraph, MA supports the manager in the control phase. The role it assumes is to communicate and assist the manager in achieving his goals. The information provided by the MA is used to bring to light any deviations and correct them as quickly as possible.
- **Supplying Information to Various Levels of Management:** In addition to the coordination of the departments, communication of information is also essential for a successful organization. Providing information at the right time increases efficiency at all levels. For this reason, moments of sharing, in which the various business areas can discuss the progress of activities and exchange information, become indispensable.
- **Reporting to Management:** the information collected, elaborated, and interpreted is made available to the manager through reports.

MA practices influence decisions and planning in many business departments. Planning, controlling and decision-making condition three business majors: marketing, supply chain management and human resources management. For example, in the marketing profession, marketing managers have to plan the budget for the advertising, they have to control the inventory accumulated during the holiday shopping season and they have to decide whether to sell directly to the consumer or through a distributor. In the supply chain area, instead, supply chain managers have to plan how many units to produce for the next period, they have to monitor the deviations between actual and planned expenditure and they have to decide if redesign the manufacturing process in order to lower the inventory. HR managers, instead, should plan the budget for the employee recruitment advertising or for the resources training. In terms of control, they have to monitor the retention rate or the resources performance. While for the decision making, they have to decide when and what type of worker to hire, temporary or full-time employees. Obviously, these are not the only departments conditioned by MA. Product managers, engineering departments, project managers or the field of research and development may need such information to improve their internal processes and achieve the efficiency constantly pursued. Therefore, the information elaborated is useful to the entire organization.

As explained above, the managerial accountant is a figure that interfaces with the managers from all the company's areas. In other words, managerial accountant

supports the government of the company to ensure its survival by receiving information from the lower levels of the structure which, in turn, require data produced by the management control.

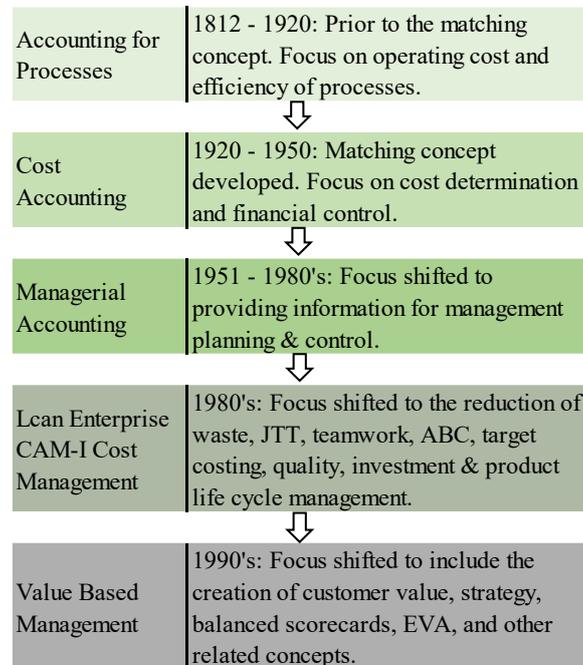
### 1.3. THE EVOLUTION OF MANAGERIAL ACCOUNTING PRACTICES

A significant body of research has been published in the field of the evolution of MA. The literature available allows a subdivision into four temporal phases that go from the birth of modern<sup>3</sup> MA in the early 19th century to the nineties (see the figure 1.4). More recently, a fifth and sixth stage have been added to the analysis highlighting the changes of the 21<sup>st</sup> century that definitively disrupt MA.

---

<sup>3</sup> In medieval England, corporations already made extensive use of cost information, relating to the materials used and labour, to ensure the quality of the product to potential customers. However, until the 19th century, individual companies only performed one stage of processing within the production process, so most transactions were with external entities. Thus, the general accounting system (officially records all transactions) was sufficient to provide the desired information (C. Bianchi and A. Bubbio, 2002, p.7).

**Figure 1.3 - The Evolution of Managerial Accounting Practice**



**Source** – Shah Kamal, 2015, Historical Evolution of Management Accounting, *Bi-monthly Journal of the ICMAB*, p. 5.

### 1.3.1. The four stages of evolution

- **Stage 1: Before 1950s**

In the figure 1.4 the first two phases constitute the former stage that covers the period before the 1950s. From 1812 to 1920 MA was considered a technical activity needed to achieve organizational objectives (IFAC, 1998). In order to assess the efficiency of the production process, managers of the time used parameters that substantially measured the efficiency with which the productive

factors were transformed from raw materials to finished products. There was no interest in determining the cost of the different products and not even the operating income, the main focus was just the execution of the production process with the maximum efficiency. From 1920 to 1950, instead, MA focused on determining the cost of the product and on the financial control. By the middle of the 19<sup>th</sup> century, in fact, much more complex enterprises begin to develop. This is the time of scientific management<sup>4</sup>, a group of engineers interested in the concept of production process in order to reconstruct the workflow and thus improving economic efficiency, especially labour productivity. Scientific management experts developed new cost accounting procedures to evaluate and control physical and financial efficiency of tasks and processes in complex machine-making firms and to assess the overall profitability of the enterprises (Johnson & Kaplan, 1987). At the same time managers started paying attention to the productivity and performance of capital. The DuPont Powder Company<sup>5</sup>, born in

---

<sup>4</sup> Scientific management is a real movement founded by a group of mechanical engineers. Among the best known there is Frederick Taylor who was mainly interested in the study of the efficiency of workers. He dedicated his studies to the determination of physical standards related to materials and labor that could reflect the ideal conditions of these factors.

<sup>5</sup> The DuPont Powder Company was founded in 1903 by the merger of some pre-existing companies, partly family-run, partly autonomous. DuPont's managers were faced with problems related to the need of coordinating the different production and marketing activities within an organization. DuPont was one of the first companies to decide which activities to expand within a large portfolio rather than solely determining the appropriate size of the production capacity

1903, developed new MA practices to facilitate the evaluation of the performance of capital and to help managers in the allocation of new investments among various economic activities.

- **Stage 2: *from 1950 to 1979s***

In this phase the focus of MA shifted towards the provision of information for planning and control issues. According to IFAC, International Federation of Accountants, the second stage is described as "management activity, but in the role of staff". It means the involvement of management staff support to line manager through the use of technologies such as decision making and responsibility accounting (Kader and Luther, 2006). Management during this period paid more attention to the company production process and internal analysis rather than to the external business environment. This phase is characterized also by a more reactive MA, able to identify problems (but not anticipate) in case of deviations from the business plan. The popular MA tools that were introduced in the second stage were Standard Costing, Cost Volume Profit (CVP) and Break Event Point analysis (BEP) (Sunarni, 2014, p.6).

---

needed to produce a single product (C. Bianchi and A. Bubbio, 2002, p.14). Thanks to the managers of the DuPont company, some operating and budgeting mechanisms were devised. However, the most important innovation was that of ROI (Return On Investment) an indicator created to measure the profitability of the invested capital.

- **Stage 3: *from 1980 to 1989s***

The period between 1980 and the early 1990s was characterized by the increasing of global competition, due to Japan's economic progress of those years, and the rapid technological development. The priority for companies was to adapt themselves to the economic environment, reducing costs and improving quality at the same time. It is during this phase that MA practices focused on reducing the waste of resources used in the production process by eliminating the "non value added activities" (Sunarni, 2014, p.6). In order to improve quality, instead, the use of robotics and computer-controlled processes allowed companies to transfer the necessary information at all levels of the company. The design, maintenance and interpretation of the information system assumed a fundamental role. In brief, cost and MA innovations in the third stage can be identified as: Activity based costing, Target costing, Value-added management, Theory of constraints and Vertical integration (Kamal, 2015, p. 4).

- **Stage 4: *from 1990s***

The focus of MA, due to the technologies, the expansion of the worldwide web and the appearance of E-commerce, shifted to the generation of customer, shareholder and organizational value. The information system, already seen in stage 3, continued to be an essential part of the management process and the

distinction between staff and line manager disappears. The advanced management accounting<sup>6</sup> such as Just in Time (JIT), Balanced Scorecard (BSC) and strategic management accounting were used extensively at this stage (Sunarni, 2014, p.6).

**Figure 1.4** -Characteristics of MA Practices in Four Stages of Evolution

|                                   | Stage 1: Cost Determination and Financial Control            | Stage 2: Provision of Information for Management Planning & Control                               | Stage 3: Reduction of Waste in Business Resources  | Stage 4: Creation of Value Through Effective Resources Use  |
|-----------------------------------|--|---|--|---|
| Representative period:            | Prior to 1950  | 1950 - 1964   | 1965 - 1984  | 1985 to date  |
| Where positioned in organization: | Similar to company secretarial.                              | A 'staff' management activity   | Management accounting an integral part of management 'owned' by all managers as the distinction between 'staff' and 'line' management becomes blurred. |   |
| Role:                             | A necessary technical activity in 'running' an organization. | Providing info to support 'line' management's operations.   | Managing resources (including information) to 'directly' enhance profits by bearing down on inputs.  | Directly enhance outputs and add value through the strategy of 'leveraging' resources (especially information).   |
| Main Focus:                       | Cost determination & controlling expenditure.                | Information for management planning, control and decision-making. Including basic model building. | Reduction of waste/loss in business resources through process analysis and cost management technologies.   | Creation of value through using resources effectively to drive customer value, shareholder value, and innovation. |

**Source** – Shah Kamal, 2015, Historical Evolution of Management Accounting, *Bi-monthly Journal of the ICMAB*, p. 8.

### 1.3.2. The 21st century as the fifth stage of evolution

Today MA is very different than it was years ago and also more important because there is a stronger link between the information that it provides and companies' survival in a competitive environment. The evolution of MA, like the

---

<sup>6</sup> Strategic or Advanced Management Accounting (SMA or AMA) is a term created to qualify a new information system, less administrative and more open, integrated even with data base outside the company. (C. Bianchi and A. Bubbio, 2002, prefazione, p. XXVI).

surrounding world, did not stop at the nineties and another stage could be identified. The last years evolution of MA practices can be led back to a series of determining factors. In this regard many studies have been made, such as the one developed in 2005 by Yazdifar and Tsamenyi<sup>7</sup>, who have drawn up a ranking, in order of importance, of fourteen change drivers that influenced the course of MA:

- 1- Information technology;
- 2- Organisational restructuring;
- 3- Customer-oriented initiatives;
- 4- E-commerce/electronic business;
- 5- New accounting software;
- 6- External reporting requirements;
- 7- New management styles;
- 8- Core competency aims;
- 9- Globalisation;
- 10- Quality-oriented initiatives;
- 11- New accounting techniques;

---

<sup>7</sup>Yazdifar and Tsamenyi, both professors at University of Sheffield, Management School, Sheffield, United Kingdom, have conducted in 2005 a study entitled *Management accounting change and the changing roles of management accountants*, that have dominated both the professional and academic accounting literature in recent years. This paper aims to contribute by providing evidence from a sample of 279 qualified management accountants working in both dependent (group) and independent (non-group) organizations in the U.K.

- 12- Take-over/merger;
- 13- External consultants' advice;
- 14- Production technologies.

These factors pushed companies to reorganize and, at the same time, to gather much more information. Therefore, from the 21<sup>st</sup> century, the focus moved from the value created by the accountancy personnel to the value created by the tools. Today managerial accountants work closely with the company organization, as a team player and effective agent for change, in order to provide the information to all organization levels in a clear and comprehensible manner. While in the past managerial accountants operated separately from the managers for whom they provided information, in more recent years they serve as internal business consultants, working side-by-side in cross-functional teams with managers from all areas of the organization. Rather than isolate managerial accountants in a separate accounting department, companies now tend to locate them in the operating departments where they are working with other managers to make decisions and resolve operational problems (Hilton, 2010).

### 1.3.3. **The digital transformation of managerial accounting**

A sixth phase is already on its way. On the wave of digital technology, MA is facing a new and shocking change. It's the complete digitization of economic

environment that changes the way leaders relate with their business. Digital Transformation is about cloud computing, mobility, Internet of Things (IoT), Artificial Intelligence, related technologies and Big Data Analytics (Fischbacher-Smith, 2016). With the exponential growth of new technologies, sustained by the increasing number of mobile and wireless devices and services, the customers need to respond in real time at their demands. This represents an Artificial Intelligence (AI) vast exploration field for today and future economic entities, of medium, small or start-ups size. AI became a powerful tool with critical impact on finance functions and workflows, reshaping the accounting departments and connecting them with cybersecurity in a new intelligence perspective. (Schwab, 2019). In other words, the increasing of AI, the human replacement with algorithms who manage the financial documents and the deep learning, lead to the emergence and development of new related concepts: *Accounting Intelligence or Cyberaccounting* (Bilcan et al., 2019). This is a new accounting type who will reshape the business information through the use of computers able to recognize and analyse documents in an automatic way. It is about capturing the financial anticipation, using Cloud<sup>8</sup>, Edge<sup>9</sup> and 5G Technology<sup>10</sup> to build a new Modern

---

<sup>8</sup> A cloud is an environment in which it is possible to store data or run applications. It is a software-defined environment implemented through datacentres or server farms. In other words, a cloud is an IT environment that abstracts, aggregates and shares IT resources connected to a network.

Economic Infrastructure (Chen, et al., 2015). “From the perspective of an economic entity, Cyber accounting is the new force of accounting in Digital Economy. The purpose is to make a significant, reliable, and positive impact on the finance department, by redefining key performance indicators and especially real profits, creating new business models, develop revolutionary business solutions for all type of economic entities, covering Accounting Services, Bookkeeping, TAX filing and VAT reporting services as “technology building blocks” with the expansion in maximizing the value of financial data” (Bîlcan et al., 2019, p. 269). In the professional view, instead, Cyber Accounting will be the new language with which Accounting and Finance will speak to the world. Adding the blockchain technology between them and the financial institutions, audit and anti-fraud automation race, Cyber Accounting will help future leaders build a strong economic entity by developing a better business model (Bîlcan et al., 2019). The future of accounting substantiates in the transformation of classical accounting procedures, in which accountants process invoices, purchase orders or

---

<sup>9</sup> An edge is a physical environment formed by hardware components outside a data centre where data is collected. It refers to a physical processing location at the edge of a network as well as the hardware and software components available at that location.

<sup>10</sup> 5G is the fifth generation of telecommunications networks, with associated upgrades in bandwidth and latency. 5G is a transport mechanism that enhances the capabilities of cloud computing and edge computing, but does not itself constitute the edge, an edge device, or edge computing.

deliver orders on paper documents, in an automated workflow process by software that analyses, recognises, directs, and exports data to a company's ERP/financial system (Karanja, 2017).

However, to date, one doubt still persists. While digital transformation enables the automation of information transfer processes, making the managerial accountant's work much faster and smoother, doubt remains as to whether this information can continue to be in line with corporate vision and therefore able to help the manager make strategic decisions for his or her business. Indeed, "AI impact on accounting will increase and expand the volume of processed data with the help of algorithms in order to improve the process of making decisions in an empirical way" (Bilcan et al., 2019, p. 270). Nevertheless, true business growth is based on strategy, on the ability to develop a real, powerful, and trust-based relationship between the leader of the future and the accountants, in order to reshape the business on the requirements of digital transformation (Bilcan et al., 2019). The sixth phase has just begun, but is proceeding at a rapid pace, leading to possible new theories and innovative solutions every day. In a few years, scholars will be able to answer the question.

## 1.4. PROS AND CONS OF MANAGERIAL ACCOUNTING

### APPLICATION

So far, a general overview of MA practice has been provided. Starting from today's definition it has been understood how MA has developed over time. Nowadays it is used a lot by companies, mainly by the large ones. The continuous need for information and control over the organization, in fact, push managers to hire a management accountant. However, even today, it is a discipline considered as innovative because it is not totally known. The advantages that MA brings with it are many and constantly evolving. Among these (Commerce Mates, 2018):

- **Helps and assistance:** MA supports the organization in making better plans for future activities. It provides all financial and non-financial data through which managers are able to perform better analysis. At the same time, it assists managers in front of decision making, taking correct decisions at the right time;
- **Increases the efficiency and efficiency:** MA aims at increasing the overall efficiency of the business, since it sets targets for each division in advance, ensuring that all departments fully utilize the resources at disposal and checking the fulfil of targets;
- **Increase the chance to raise the profitability:** One of the main purposes of MA is precisely to increase the profitability of the company, cutting the

extra expenses of the process. The many tools made available by managerial accountants, such as budget, allow to have a better control over expenses leading to the maximization of profits;

- **Looks to the future:** The managerial accountant is a strategic figure in a business organization because he has critical thinking, forecasting and problem-solving skills. He works for goals, trying to bring the company to success, but, with an eye to the future; he has the ability to understand what a company can do and how far it can go.
- **Coordination and Alignment:** Another advantage of MA is to allow a continuous alignment between all the levels of the organization on information, objectives and corporate values. This coordination is a source of motivation for employees who, feeling more involved in the processes, are more encouraged to complete their targets. The management accountant improves the communication between the various levels and in a certain sense the internal well-being of the company.

However, as with anything that has advantages, limitations in MA can be highlighted (Afaq, 2020):

- **Expensive:** MA system requires huge expenditure to be inserted within organizations. Companies need to make large investments for implementing this accounting system but it could happen that they cannot sustain the cost over time.

- **Dependency:** The information provided by MA are truthful and reliable only if the records carried out by the various departments, that collaborate in the company, are accurate.
- **Personal Bias:** Another major drawback is that of subjectivity of MA practices. The decisions are influenced by personal bias and prejudices, creating the possibility of manipulation from collection of data till its interpretation in financial records. It influences the overall validity of MA.
- **Lack of Knowledge and Understanding:** It is essential that managers have good knowledges of various field like accounting, economics, engineering, taxation, and management theory. It is clear to understand the difficulty to find a person that has all these skills. However, any inadequate grounding in any one or more of the subjects is bound to have an unfavourable effect on the management performance.
- **Evolutionary Stage:** as noted in paragraph 1.3, MA practices are constantly developing. MA is a discipline that, although dating back to the 19th century, it is still considered new and, like all new disciplines, has many obstacles and difficulties to overcome.

Surely the disadvantages put a brake on companies that would like to take advantage of MA, making a balance, in fact, they would seem more than the advantages. However, MA is constantly updated as are managerial accountants who never stop studying and learning. The transparency of the discipline and the

ethics behind it, frame the MA as an innovative matter able to solve business problems both in terms of profitability and accounting, and in terms of communication and coordination. At this point, having accurately defined the practices of MA, it is time to describe what are the main tools that allow this type of accounting to have such efficient results. Specifically, two macro themes will be addressed: full and direct costing.

## **CHAPTER 2**

### **COST ACCOUNTING METHODS**

#### **2.1. INTRODUCTION TO COSTS**

One of the most important inputs for MA is cost data. The cost factor assumes a considerable importance in an organization because, if related to revenues, it determines the level of profits and, as a consequence, the success of a company. Today it is no longer the entrepreneur who sets the market prices but the market itself that imposes them with an increasingly competitive logic. The mark-up is no longer as strategic as before, and the entrepreneur must adapt to be a price taker. Therefore, being the price "given" by the market and the possibilities to increase the sales rather limited, a way to improve the profitability of the company and to face the market is to act on the containment and management of the costs. For this reason, MA is aimed at designing cost accounting systems that can support management activity in the costs challenge. Cost accounting systems record the cost of resources acquired, such as materials, labour, and equipment, and track how those resources are used to produce and sell products and services (Horngren, 2015). In this chapter, once defined the concept of cost and the costs classification, it will be the time to analyse the different methodologies of cost

accounting. The choice of the calculation method is a fundamental decision that must be taken at the time of the design of the measurement systems and kept consistent with the company strategy. Cost accounting systems are traditionally based on two cost accounting methods: Direct Costing and Full Costing.

### 2.1.1. **Cost concepts and cost classifications**

Not everyone knows what a cost is. The definition of cost, in fact, is apparently simple but also shows many complications. Basically, a cost may be defined as the sacrifice made, usually measured by the resources given up, to achieve a particular purpose, for example to acquire goods and services (Hilton, 2010). From this definition three ideas related to the concept of costs can be detected (Bianchi and Bubbio, 2002):

1. This sacrifice may be the result of an exchange operation or may be the result of estimates. The purchase of a productive factor determines the so-called "acquisition cost". This may represent an investment if it has a repeated utility over time or a cost of production if it is consumed during the period;
2. Not all costs are expenses. Indeed, there can be inputs from non-monetary trade and costs linked to the consumption of multi-utility inputs, such as depreciation;

3. Costs is always related to a purpose, that is, a *cost object*. A cost object is anything for which cost data are desired. It can be products, services, customers, channels, departments, projects, geographic areas and any other activity or resource for which is relevant to have a measurement of costs (Garrison, 2017).

There are several different types of costs that incur for diverse situations. Every activity that composes the business process is connected to a high number of costs. When studying MA, a fundamental step is to understand the various types of costs, their computation, and how they can be used and managed. For this reason, costs are classified, that is, aggregated according to common features. Therefore, costs classification has the aim of grouping costs in homogenous categories according to different purposes (see the figure 2.1). This allows the accountant manager to provide appropriate cost data to the manager based on his needs.

**Figure 2.1 - Purpose of Cost Classification**

| <b>Purpose of cost classification</b>                              | <b>Cost classification</b>   |
|--|--|
| <i>Assigning costs to cost object</i>                              | - Direct Costs<br>- Indirect Costs                                   |
| <i>Accounting for costs in manufacturing companies</i>             | - Manufacturing Costs<br>- Non Manufacturing Costs                   |
| <i>Predicting cost behavior in response to changes in activity</i> | - Variable Costs<br>- Fixed Costs<br>- Mixed Cost<br>- Stepped Costs |
| <i>Making decisions</i>  | - Differential Costs<br>- Sunk Costs<br>- Opportunity Costs          |
| <i>Preparing financial statements</i>                              | - Product Costs<br>- Period Costs                                    |

**Source** – Eric W. Noreen, Peter C. Brewer, Ray H. Garrison. (2011), Managerial accounting for managers, *Mc Graw-Hill Irwin*, 2nd Edition, p. 12.

The various types of costs will be explained below according to their purpose in order to understand the cost terminology which will be used in the thesis work from here on.

- Assigning costs to cost object:

**Direct costs:** Direct costs are those costs that refer exclusively to a specific cost object. They can be easily and conveniently traced specifically to a unit of product or other cost objects. The most common examples are direct materials and direct labour, that can be traced in an objective and economically feasible way to cost

objects. Raw materials, for example, which is used for a product cannot be used for another, they are directly involved in the production process of a specific good. In order to allocate direct costs it is used a “specialty” criterion that is based on the exclusive use of the costs for a cost object or on the formula *Quantity of factor used \* Unit Cost of the factor*.

**Indirect costs:** Indirect costs, instead, are not easily traceable to a cost object because they do not incur exclusively for one cost object. In this case typical examples are the depreciation of a machinery used for several product lines or the electricity used to operate production departments, . The quantity of factor used to produce more than a single good is not measurable in an objective way. For indirect costs it is necessary to establish an appropriate allocation basis that must be the expression of the real consumption of resources made by the cost object. An allocation base, in fact, is a measure of activity that is used to assign indirect costs to cost objects. It must reflect how cost objects actually use the resources connected to indirect costs. The allocation of indirect costs it is based on a “Common” criterion that follows a certain cost allocation procedure. This latter is the process of identifying, aggregating, and assigning costs to cost objects (Accounting Tool, 2021). In short, given two product lines, say A and B, and an amount of indirect costs used for both, the allocation procedure sees the calculation of the allocation rate (Indirect cost to be shared/total amount of the

allocation base) and the subsequent multiplication of the result by the volume of allocation base used by product A and then by product B. To allocate costs, there are also quantitative criteria such as direct labour hours used in the cost centre or the machine hours required for manufacturing, and criteria based on the value of a given parameter, such as the cost of direct labour used for the cost centre or the cost of the raw material used for the product. An appropriate allocation basis has a significant impact on cost information. In fact, in addition to improving the accuracy of the distribution, it expresses the real consumption of resources made by the cost object.

- Accounting for costs in manufacturing companies:

**Manufacturing costs:** They are costs incurred in those companies that have a production department because they transform raw materials into finished products. They are further classified into the following three categories:

- *Direct material:* raw materials that are intended to become an integral part of the finished product and that can be easily traced to it.
- *Direct labour:* labour costs that relate directly to a single unit of product. It is also called touch labour because it refers to direct labour workers that touch the raw material in order to transform it into the final product.

- *Manufacturing overhead*: all manufacturing costs, except direct material and direct labour, not easily traceable to finished products. It is possible to distinguish between:
  - Indirect materials: materials that, even if required for the production process, are not monetarily significant because not integrated into a finished product or integrated in a small amount. Examples could be respectively lubrication oil and glue to assemble.
  - Indirect labour: cost of employees that is not directly involved in converting raw materials into finished products. Examples could be supervisors or maintenance workers;
  - Other manufacturing overhead: all other manufacturing costs that are neither material nor labour costs. Examples could be the depreciation of manufacturing plant or equipment, property taxes, insurance premiums incurred to operate a manufacturing facility, as well as the utilities such as electricity.

**Non-Manufacturing costs:** They are costs that incurred outside the production departments, that is, they are not involved in the physical transformation of raw materials in finished products. They are classified into:

- *Administrative costs*: the costs of general management of companies. Examples are the executive and accountant compensation and the depreciation of the accounting software;
- *Selling costs*: the costs incurred to ensure that the order arrives in the hands of the consumer. They consist of advertising, shipping, sales commissions, salesmen salaries or the depreciation of the van used to ship the products to customers.

Both administrative and selling costs can be direct or indirect costs.

- Predicting cost behaviour in response to change activities:

Cost behaviour expresses the sensitivity of a cost to changes in activity levels. It is possible to detect four types of costs that change with respect to the activity base (or cost driver): *variable*, *fixed*, *stepped*, and *mixed* costs. Activity base is a measure of what affects the behaviour of a cost and some examples are the volume of units produced, machine hours, labour hours, number of R&D projects or the number of customers.

**Variable costs:** They are costs that vary directly depending on the level of activity but are constant per unit within a relevant range<sup>11</sup>. They are also defined as avoidable costs because, if considered unnecessary, they can be avoided by the company who can decrease or completely eliminate the production. Examples of variable costs are raw materials, direct labour, and consumables.

**Fixed costs:** Unlike variable costs, fixed costs remain constant as the level of activity changes, as they are not sensitive to changes in quantities. These costs are necessary to prepare the production capacity, in manufacturing companies, and to the organizational/logistic capacity, in commercial ones, which must be faced in any case. Examples of fixed costs are rents or leases, depreciation, insurance.

There are two types of fixed costs:

- *Committed costs:* long-term investments already made and no longer recoverable in the short term. Examples are investments in facilities and equipment or insurance premiums;
- *Discretionary costs:* costs resulting from annual management decisions and easily reduced in the short term. In this case, typical examples are advertising campaigns and employee training.

---

<sup>11</sup> The relevant range is that range of activity within which the assumptions made about cost behaviour are valid.

**Stepped costs:** A stepped cost does not change constantly with changes in the volume of activity. Here, two examples are reported. If the cost of renting a property of 1000 square feet size is EUR 30,000 and this only increases when the square feet of the property increase to 2000. This means that a real estate of dimensions between 1000 and 1099 square feet has an unchanged cost, that is fixed. Outside this range the cost changes. The second example, instead, regards a company that hires one quality-control inspector for each 25,000 toy robots produced per month. The annual salary is EUR 30,000 per inspector. Production has been 65,000 units, so the company has three inspectors. If a special order increases volume from 65,000 to 75,000 units, the firm need hires no additional inspectors. If the special order increases production to a level greater than 75,000 units (say, to 85,000 units), the firm must hire a fourth inspector (Maher, 2008). Therefore, within a certain relevant range, it is a fixed cost, outside, instead, it changes.

**Mixed costs:** They contain both a fixed and a variable base rate. A typical example is that of electricity. This cost, in fact, is divided into two parts. The first is fixed utilities, which represent a fixed cost incurred even with zero energy consumption. The second, instead, is represented by consumables that refer to the amount of energy consumed in a given period and represent variable costs.

- Making decisions:

It is important to identify those costs and benefits that are relevant or not to the decisions.

**Differential costs:** Before making a decision, managerial accountants analyse differential costs. It means that they compare the difference in costs of two or more alternatives. Those costs can be fixed or variable, incremental or decremental. The same could be done for revenues. When costs or revenues do not differ between a series of alternatives, it means that they are irrelevant to the analysis.

**Sunk costs:** Sunk costs are dollars already spent and permanently lost that cannot be refunded or recovered. Unlike differential costs, sunk costs should be ignored when there are decisions to be made. Indeed, they do not weight on decisions because the money already spent are definitely lost. For example, considering a company that spends EUR 20,000 to train its sales staff in the use of new tablets, which they will be used to take orders from customers, if computers prove unreliable, and the sales manager wants to stop using them, the cost of training has already been borne. It means that they are sunk costs.

**Opportunity costs:** They are the worth of a missed opportunity. How much it costs to choose an alternative and consequently renounce to another. An effective example here concerns the choice a student has to make to get to college. He can either rent a house or use the train. Assuming the house costs EUR 300 per month, including utilities, if the student chooses to take the train, the opportunity cost would be equal to the cost of the house. If the student chooses to rent, then the opportunity cost would be the cost of the train subscription.

- Preparing financial statement:

In order to prepare financial statement two costs are essentials.

**Product costs:** Product costs are direct costs incurred in the production (for a manufacturer company) or in the acquisition (for a retailer company) of a product or service intended for sale. The costs of the product are treated as an inventory cost because they are used to evaluate it. When products are sold, the costs of the product become part of the costs of the goods sold, which are then shown in the income statement.

**Period costs:** The period costs are not directly related to the costs of the product, because they are not directly linked to the production process. They are the selling general and administrative expenses (SGA) also known as non-manufacturing

overhead. The period costs are not allocated to a particular product and they represent an expense in the accounting period in which they occurred.

### 2.1.2. **Cost configurations and cost accounting methods**

Once the information needs have been defined and the cost classification clarified, one of the most delicate choices faced by the managerial accountants, in the designing of a costing system<sup>12</sup>, concerns the cost accounting method. It is about the philosophy behind the whole management control systems that defines the method of detection of individual cost factors. The two alternative calculation methodologies are: *Direct Costing* and *Full or Absorption Costing* (Bubbio, 1991). Each of these two methods has its own specific fields of application and satisfies different information needs. It is therefore not possible to define one method better than the other. Their superiority is conditioned by the information needs that they want to satisfy (Bubbio, 1991). It is probably for this reason that the choice becomes difficult. The information needs, which were at the time of the original design, are indeed destined to change over time. Changes to the system may therefore be necessary.

---

<sup>12</sup> Costing systems record the cost of resources acquired, such as materials, labour, and equipment, and track how those resources are used to produce and sell products and services (Horngren, Datar & Rajan; 2015).

When a company is faced with this choice it must remember that with the various methods of calculation different variables are emphasized, (Toscano, 1991). In addition, the choice is delicate also because (Gatti, 2016):

- it must be consistent with the competitive strategy chosen by the company and functional to its critical success factors, since the configuration can influence management behaviour (decisions and subsequent actions);
- it must be consistent with the management style and communicate the information following a certain business logic;
- it conditions the setting of MA in all its tools, from the budget to the reporting system.

Before describing in detail, the cost accounting methods it is considered appropriate to define the cost structure of the product. Depending on the type of costs charged, in fact, the cost of the product assumes different configurations. Cost configuration means an aggregation of the different types of costs, from the most direct and specific to the most general. In particular, it is possible to distinguish between: prime cost, full manufacturing cost and full cost (Bubbio, 2002):

- **Prime cost:** This cost configuration is the most objective because it is given by the sum of *Direct Material* + *Direct Labour*. Therefore, it favours the

analysis of quantitative data aimed at controlling the efficiency of the production area;

- **Full manufacturing cost:** Derives from the sum of *Prime Cost* + *Manufacturing Overhead*. It is therefore the calculation of the total cost of production.
- **Full cost:** *Full manufacturing cost* + *Non-Manufacturing Overhead* (the SGA expensive also known as period costs) allows to calculate the full cost. This is fundamental to make decisions related to the determination of products selling prices and to assess the profitability of the company.

All previous costs described in this paragraph can be calculated according to different calculation methodologies. As Robert Kaplan said, it cannot be thought that the same configuration of cost can satisfy with equal effectiveness both the evaluation needs of inventories, for external informative purposes, and requirements of support of the decisional process (Bubbio, 1991).

## 2.2. DIRECT COSTING METHOD

The direct costing methodology can be divided into two further categories: variable costing, that it is consider the “simple” direct costing, and the traceable costing, known as the “evolved/advanced” direct costing.

### 2.2.1. Variable costing

The variable costing technique is based on the classification of variable and fixed costs. It is called this way because variable costs are the only costs to be considered. Fixed costs, in fact, are not treated as a product cost under this method. Rather, they are treated as a period cost and, like selling and administrative expenses, they are expensed in their entirety each period. Consequently, the cost of a unit of product in inventory or in cost of goods sold under the variable costing method does not contain any fixed costs. (Noreen et al., 2017). In other words, this calculation method recognises the direct costs to be charged to the product, while fixed costs are considered as structural costs because they represent the burden that the company decides to bear in the performance of a certain economic activity. Variable costing allows the calculation of the so-called *contribution margin*, expressed as the difference between revenues and variable costs. Contribution margin (CM) is the amount remaining from sales revenue after variable expenses have been covered (Garrison et al., 2017). What remains is intended, first of all, to cover fixed costs, which are considered to be costs common to all objects of calculation. Once the fixed costs are subtracted, what remains will contribute to net operating income (see the figure 2.2). Therefore, the contribution margin can be defined as a "revenue reservoir" available to cover fixed costs and create a profit (Antonelli and D'Alessio, 2004).

**Figure 2.2** - Contribution Income Statement

|                               |   |
|-------------------------------|---|
| Revenues                      |   |
| - Variable expensive          |   |
| <b>= Contribution Margin</b>  | $\% CM = Contribution\ Margin/Revenues*100$ |
| - Fixed expenses              |   |
| <b>= Net Operating Income</b> |   |

Source: own elaboration

### 2.2.2. Traceable Costing

The information provided by variable costing may show a higher contribution margin for capital intensive products, that require more investments, rather than labour intensive products. This is because fixed costs, specific to individual items of cost such as plant depreciation, are excluded from the calculation. Precisely for this reason, in the presence of high specific fixed costs, it is necessary to speak of traceable costing. This technique is based on the classification of direct and indirect costs, which, as already explained, is intended to allocate costs to cost objects. Indeed, it considers that all direct cost elements, both variable and fixed, are assigned to the object of the calculation. Therefore, in addition to the variable costs, *traceable fixed costs* are allocated. According to the academic definition of Garrison et al., “a traceable fixed cost of a segment is a fixed cost that is incurred because of the existence of the segment – if the segment had never existed, the fixed cost would not have been incurred; and if the segment were eliminated, the fixed cost would disappear.” (Garrison et al., 2011, p. 427). Since they support

the operations of only one segment<sup>13</sup>, they can be considered direct costs for that particular segment. Examples of traceable fixed costs are those costs related to a department "dedicated" to the production of a certain line of products or costs of a marketing initiative, aimed at promoting a specific product.

The approach of this methodology allows to highlight two margins:

- **the contribution margin**, also known as the first contribution margin or gross margin;
- **the segment margin**, also called second contribution margin.

The segment margin is given by the difference between Contribution margin and traceable fixed costs and it represents the margin available after a segment has covered all of its own costs. It is the best measure of the long-run profitability of a cost object (Garrison et al., 2017). As a consequence, the net operating income is given by the difference between segment margin and the common expenses<sup>14</sup> (see the figure 2.3).

---

<sup>13</sup> A segment is any part or activity of an organization about which a manager wants to know cost, revenue, or profit data. Examples could be an individual store, a service centre, a sales territory, a department, a customer, a product line (Garrison et al., 2017).

<sup>14</sup> Common fixed costs arise because of the overall operation of the company and would not disappear (with some exceptions) if any particular segment were eliminated (Garrison et al., 2017). They are involved in determining more than one segments and cannot be allocated.

**Figure 2.3** - Segmented Income Statement

|                               |
|-------------------------------|
| Revenues                      |
| - Variable expensive          |
| = <b>Contribution Margin</b>  |
| - Traceable fixed costs       |
| = <b>Segment margin</b>       |
| - Common Fixed costs          |
| = <b>Net Operating Income</b> |

**Source:** own elaboration.

### 2.2.3. Advantages and limitations

The direct costing technique, whether simple or evolved, is an objective method of costs calculation. In fact, it does not require any purely personal interpretation to attribute fixed costs to objects of calculation. An advantage linked to the use of direct costing arises precisely from this characteristic of objectivity and concerns the decision-making process. In fact, direct costing systems are a highly effective tool in terms of decision-making, because they allow the choose between several alternatives. The author C. Drury said: "The separation of fixed and variable costs helps to provide relevant information about costs for making decisions. Relevant costs are required for a variety of decisions, for example whether to make a component internally or purchase externally, and also with problems relating to product mix. (...) The assumption is that only with a variable costing system will such an analysis of costs be available. It is therefore assumed that projection of

future costs and revenues for different activity levels, and the use of relevant cost decision-making techniques, are possible only if a variable costing system is adopted” (Drury, 1990, p. 239). Variable costing is useful for decisions related to CVP analysis, it is valid when applied to relatively simple product mix, market, or technology and it is used in companies with a limited amount of fixed costs. Traceable costing method, instead, is less misleading. In fact, since it is applied to the multi product companies, the segment margin helps to define the best product mix to cover common fixed costs and it is useful in decisions that affect capacity such as adding or dropping a segment and in make or buy decisions. However, the temporal relevance affects the effectiveness of this technique in the decision-making process. In fact, direct costing can only be applied in short-term decisions when it is assumed that the company does not undergo substantial changes. In addition, direct configurations, in particular variable costing method, cannot be used within the financial statement because, since all fixed costs are considered as "period" costs, a correct and representative identification of the cost of sales is not possible.<sup>15</sup> An exception can be made for companies that adopt policies of reduction of inventories (so-called just-in-time production): in this case the

---

<sup>15</sup> The method of direct costing values the inventories at the prime cost, however, the civil discipline in matter of valuation of inventories imposes a configuration of full manufacturing cost, comprehensive of rates of common fixed costs.

inventories should be reduced to “zero” so it may not be necessary to accurately identify the full cost of the sold (Garrison et al., 2011).

### 2.3. FULL COSTING METHOD

The calculation method known as Full costing provides that a share of all company costs, be they specific or common, is charged to the cost object. This technique is based on the principle of full cost absorption, hence the name Absorption costing method. The ultimate aim is to capture the profitability of the cost object by allocating both direct and indirect costs to it, so as to determine how effectively the cost object contributes to the creation of the total business value. In this case, the cost configuration referred to is the "full cost" configuration in which, as described above, there are manufacturing costs plus SGA expenses. Therefore, the information provided by it are more than the information provided by the previous method, based on a prime cost configuration. Depending on the modality of allocation of common costs to cost objects, it is possible to detect different types of full costing methods:

- Single allocation base (SAB) method;
- Multiple allocation base (MAB) method.

They are the *Traditional Costing Systems*.

Alternative methodologies to traditional costing systems, based on a SAB and MAB approach, are instead:

- Cost centre accounting<sup>16</sup> (which will not be analysed in the following thesis work, although it is still widely used by companies);
- Activity Based Costing;
- Time Driven Activity Based Costing.

The latter two, developed according to the logic by activity, will be the focal point of the case study.

### 2.3.1. **Traditional costing system**

As with direct costing methodology, direct costs are allocated to the cost object without any difficulty. However, the problem arises with indirect costs, for which direct and immediate attribution is impossible. Therefore, there is the necessity to identify suitable bases for the allocation of common fixed costs<sup>17</sup>. To realize the

---

<sup>16</sup> Cost centre accounting is the most common method of determining the full cost of the product. It's characterized by a process of determination that sees the allocation of costs first to cost centers and then to products. The cost centers (productive, auxiliary and functional) are in fact used to aggregate the common costs and therefore make more precise the calculation of the cost of product. Ref needed.

<sup>17</sup> Examples of bases for the allocation of the company's common costs could be: the consumption of raw materials; the consumption of labour hours; the machine hours; the maintenance hours; the number of sales orders; etc.

imputation, it is necessary to consider the quantity of the most homogeneous, or at least comparable, consumed factor. Once the allocation basis has been chosen, it is necessary to identify the criterion by which the share of common costs should be allocated to the cost object. The criterion can be unique, single allocation base method, or multiple, multiple allocation base method.

- **SAB method**

Through the single allocation base method, indirect costs are assigned to cost objects by using only one allocation base. To do this, the phases detected are the following (Garrison et al., 2017):

- 1- identification of indirect costs to be allocated;
- 2- choice of the allocation base (single);
- 3- calculation of the allocation rate: *indirect cost/allocation base*;
- 4- share of indirect costs assigned to cost object: *allocation rate\*allocation base specific for each cost objects*.

It's extremely easy to understand the possible limitations of this method. Indeed, it is very difficult to identify a common allocation base for all indirect costs. This can only work in the case of companies that have a simple production process, few product lines with low levels of differentiation and a relatively low indirect cost weight. Therefore, if on the one hand its simplicity of implementation makes it an easily understandable method for the information users, on the other hand the information produced may be unreliable.

- **MAB method**

Multiple allocation based method is characterized by the use of multiple imputation allocation bases in the cost allocation process. This innovation seeks to reduce the error inevitably generated by the application of a single coefficient (D'Alessio and Antonelli, 2012). The principle behind this allocation technique is that cost objects do not use resources in the same way, so indirect costs will have to be allocated to objects of calculation through different bases of allocation. In this case the phases are (Garrison et al., 2017):

- 1- identification of indirect costs to be calculated;
- 2- choice of cost pools in which grouping indirect costs. These cost pools are nothing more than homogeneous classes in which exist a relationship between indirect costs and allocation bases;
- 3- choice of allocation bases (multiple);
- 4- calculation of the allocation rate: *indirect costs/allocation base*;
- 5- share of indirect costs assigned to cost objects for all the cost pools detected: *allocation rate\*allocation base specific for each cost objects*.
- 6- calculation of total indirect costs assigned to product.

To facilitate the understanding of this process, see the example in Figure 2.4.

MAB method is certainly more complex to implement than the SAB one. However, it can be used in more complex production processes, in companies that produce several products and in contexts where the weight of indirect costs is

greater. The choice of allocation bases is a key moment in the allocation phase of indirect costs. This, in fact, influences the degree of reliability of the information and their ability to offer a valid support to the business of management. However, it should be taken into account that the multiplication of indirect cost aggregations and allocation bases is not an automatic guarantee of increased accuracy (Antonelli and D'Alessio, 2004).

**Figure 2.4** - Example of indirect costs allocation with the MAB method

Company X produces 2 products:

| PRODUCT A  |   | PRODUCT B  |                  |
|--|---|--|------------------|
| Indirect Costs                                   |   |  |                  |
| Depreciation of machinery (common)               | Salary of the head of the production department | Rent of office space                             |                  |
| 5.000 €  | 10.000 €  | 25.000 €   |                  |
| COST POOL 1: Manufacturing costs                 |   | COST POOL 2: SGA expenses                        |                  |
| Allocation base: Direct Labour hours             |   | Allocation base: Sales                           |                  |
| Product A  | 200 h   | Product A  | 78.000 €         |
| Product B  | 120 h   | Product B  | 40.000 €         |
| Total  | <b>320 h</b>                                    | Total  | <b>118.000 €</b> |
| Allocation rate                                  |   | Allocation rate                                  |                  |
| $(5.000 + 10.000) / 320 \text{ h}$               |   | $25.000 / 118.000 =$                             |                  |
| <b>46,88 €/h</b>                                 |   | <b>0,21 €</b>                                    |                  |
| COST POOL 1: Indirect costs assigned to products |   | COST POOL 2: Indirect costs assigned to products |                  |
| $46,88 \text{ €/h} * 200 \text{ h}$              | <b>9.376,00 €</b>                               | $0,21 \text{ €} * 78.000 \text{ €}$              | <b>16.380 €</b>  |
| $46,88 \text{ €/h} * 120 \text{ h}$              | <b>5.625,60 €</b>                               | $0,21 \text{ €} * 40.000 \text{ €}$              | <b>8.400 €</b>   |
| Total indirect costs assigned to product A       |   | Total indirect costs assigned to product B       |                  |
| <b>25.756,00 €</b>                               |   | <b>14.025,60 €</b>                               |                  |

Source: own elaboration.

### 2.3.2. Activity Based Costing system

The traditional costing systems described above was considered, for a long time, the system par excellence capable of allocating indirect costs in a reasonably accurate way. However, the increase in demand for customised products and the

complexity of production led to a substantial increase in the percentage of indirect company costs not related to production volume. This situation created a necessity to reallocate indirect costs which, not driven by the production volume (direct labour hours, machine hours), risked to under cost or over cost products.

As previously mentioned, the ABC system follows the methodology of full costing on a multiple basis and for this reason some have defined it as a method "already seen". In reality, the innovations proposed by ABC system are multiple and qualified as follows (Bubbio, 2002):

- the cost object is no longer the product but the activities. The logic followed, in fact, says that resources are not consumed by products, but by the activities that are carried out to obtain and distribute them. It is therefore the activities that generate costs and not the products;
- the activity replaces the traditional cost centre, becoming the point of aggregation of information. The latter are no longer found with the intention of understanding where the costs are sustained, but why they are incurred;

- ABC system suggests that allocation bases should be considered as activity measures<sup>18</sup> not related to the volume of production. If in the traditional costing system, in fact, it was the production or sales volume that affected the costs, in the ABC system there are different levels of activities, matched to different type of allocation bases, that determine the magnitude of the cost and its variability.

Therefore, the activities are the new cost object with respect to which the cost information are collected. It means that it is crucial to define what an activity is.

A possible definition may be that an activity is the set of elementary actions and tasks which have as their objective the provision of a service or the production of a tangible output (a semi-finished product or a component of a product) which allows, directly or indirectly, to package the company's offer to its customers (Bubbio, 2002). In a nutshell, activities are things that a company does, such as designing products, setting up machineries or distributing products.

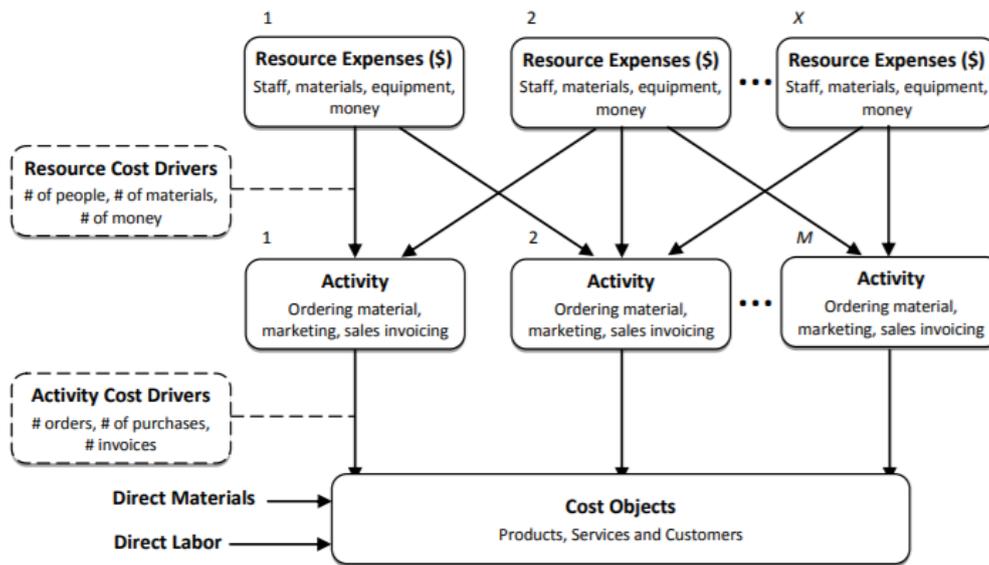
An activity presents four dimensions: *inputs* without which the activity does not start, *resources* necessary to carry out the activity, the *constraints* which affect the performance of the activity and the *output* of the activity.

---

<sup>18</sup> They are also called cost drivers. Two common types of activities measures are: transaction driver (count of the number of times an activity occurs) and duration driver (a measure of the amount of time needed to perform an activity) (Garrison, 2017).

To implement an ABC system, it is possible to identify five phases, summarized by a link between resources, activities, and cost objects (see the figure 2.5):

**Figure 2.5 - Activity-Based Costing Structure**



**Source:** L. S. Guzman, A. Van den Abbeele, J. Vandewalle, H. Verhaaren and D. Cattrysse (2013) Recent evolutions in costing systems: a literature review of time-driven activity-based costing, *REBEL Review of Business and Economic Literature*, vol. 58, no. 1, p. 5.

**1- Define activities, activity cost pools, and activity measures.**

First of all, it is necessary to identify which are the activities that compose the productive or commercial process of a company, for which it is necessary to collect data and information. This choice is linked to the information needs of the manager. With reference to the production process of the manufacturing enterprises, it is possible to build an activities' hierarchy, that concurs to

determine and to use drivers that reflect the behaviour of the cost object (Cinquini, 2008):

- Unit-Level Activities (performed each time a unit is produced);
- Batch-Level Activities (performed each time a batch is handled or processed);
- Product-Level Activities (relate to specific product lines);
- Customer-Level Activities (relate to specific customers and are not tied to any specific product);
- Organization-Sustaining Activities (support the company as a whole and usually they are not allocated to products)<sup>19</sup>.

The higher the hierarchical scale, the higher the activities generate common costs.

This system enables cost information to be identified even more effectively.

Once they have been defined, it's the turn of activity measures and activity cost pools. An activity cost pool is a "bucket" in which costs are accumulated that relate to a single activity measure in the ABC system. An activity measure is an allocation base in an activity-based costing system. The term cost driver is also used to refer to an activity measure because it should "drive" the cost being

---

<sup>19</sup> The identification of the hierarchy of activities illustrates well the differences between traditional and activity-based cost calculation systems: in the former, the bases for allocating indirect costs are identified only at the level of product units, Activity Based Costing systems identify other levels of onset and new drivers (Cinquini, 2008).

allocated (Garrison, 2011). There are two common types of activity measures (Garrison, 2011):

- *Transaction drivers*: they are simple counts of the number of times an activity occurs such as the number of bills sent out to customers or the number of orders processed;
- *Duration drivers*: a measure of the amount of time needed to perform an activity such as the time spent preparing and sending individual invoices for customers or the number of machine hours worked.

## **2- Assign costs to activity cost pools (first-stage allocation)**

Defined the first step and identified the activities for which it is necessary to collect the information, it is the turn of the assignment of the indirect costs detected to the various activity pools.

## **3- Compute activity rates for each cost pools**

*Total Cost of the activity cost pool/Total Activity Measure= Activity Rate*

In practice, it is the calculation of the cost per unit of activity.

## **4- Assign activity cost pools to cost objects (second-stage allocation)**

Multiplying the activity rate by the activity measure of a given cost object it is possible to calculate the ABC cost. To determine the cost of activities it is also

possible to implement a series of matrices, their logical sequence make the calculation even more understandable. Some types of matrices can be product-services/activities, clients/activities, resources/activities.

### **5- Prepare management reports**

In this phase the aim is that of computing and reporting to the manager the cost object's profitability. The first step is that of gathering each cost object's sales and direct cost data. The second step, instead, regards the incorporation of the computed activity-based cost assignments pertaining to each cost object. In the third one, cost object's direct and indirect costs are deducted from sales, in order to find the contribution and segment margin. In the fourth and last phase cost objects level of operating income, as well as the total company level net operating income/loss, are calculated (see the table 2.2).

**Table 2.2** - Cost Object profitability with ABC system

|  | Cost<br>Object 1 | Cost<br>Object 2 | Total |
|--|------------------|------------------|-------|
| <b>Sales</b>                                     |                  |                  |       |
| - Total direct costs                             |                  |                  |       |
| - ABC cost assignments                           |                  |                  |       |
| <b>= Cost Object line-level operating income</b> |                  |                  |       |
| Costs not allocated to Cost objects              |                  |                  |       |
| <b>= Company-level net operating loss</b>        |                  |                  |       |

**Source:** own elaboration

The information provided by the Activity Based Costing is able to help the manager in making decisions and evaluating company performance. In particular, the use of such information allows the manager to orient himself in the management of the costs through the activities, in order to make more valid decisions and improving profitability and customers' satisfaction (ref needed). In addition, cost information helps in making decisions about prices and the product mix. Indeed, ABC is used to identify how and where to reduce costs, but without compromising the value perceived by customers. However, this system is not exempt from limitations. Several authors have recognized that ABC models have

some criticalities. For example (Demeere et al., 2009; D'Alessio and Antonelli, 2012; Guzman et al., 2013):

- The complexity of the actual services or activities is not captured by ABC because of the degree of subjectivity involved in estimating employees' proportion of time spent on each activity;
- The accuracy of data is biased or distorted, because during the interviews employees tend to ignore their idle or unused time;
- The cost for the system implementation (time, resources and money for data collection) is excessive also because of the need to reinterview and resurvey employees every time something changes;
- The cost driver rate is inaccurate because it is calculated assuming that all committed resources are working to full capacity instead of a practical capacity;
- The development of a new culture of distributed control, based on empowerment and delegation of responsibility, is not easy to implement;
- The update of the informative system is also required because, on the technological front, the adoption of a model for the calculation of the costs with logic activity-based, for the procedural complexity and for the amount of data and information, must be managed.

### 2.3.3. Time Driven Activity Based Costing

The Time Driven Activity Based Costing, also known as TDABC, has been proposed to solve and face the main problems of the ABC system. In fact, this system has two main features: economy and simplicity. It has been developed by Kaplan and Anderson that have recognized the importance of the time that in TDABC plays a different role in allocating activity costs to cost object. Indeed, it requires the estimation of only two parameters to assign resource costs directly to cost objects:

- the cost per time unit of supplying resource capacity;
- an estimate of the time units required to perform a process, an activity, or a service.

The first parameter is gathered by dividing the total cost of supplying resource capacity by the practical capacity. The total cost is defined as the cost of all the resources of a specific department or process (such as personnel, supervision, equipment, technology, and infrastructure). The practical capacity<sup>20</sup> is defined as the amount of time that employees work without idle time<sup>21</sup> (Kaplan and

---

<sup>20</sup> There are two ways to obtain this value: 1) a percentage of the theoretical capacity, 2) calculating the real values adjusted for the company.

<sup>21</sup> In the Activity Based Costing system the cost of unused capacity is the difference between the amount of activity driver used to allocate the costs of the activities and the amount of activity driver that expresses the practical capacity. In Time Driven, since time is used as a capacity measurement tool, it is sufficient to determine the practical capacity of the personnel employed at

Anderson, 2007a). The second number can be obtained through interviews or by direct observation from employees when performing their work; no additional surveys are required. Authors argue that precision is not critical, that a rough accuracy is sufficient because gross inaccuracies will be revealed either in unexpected surpluses or shortages of committed resources (Kaplan and Anderson, 2007b).

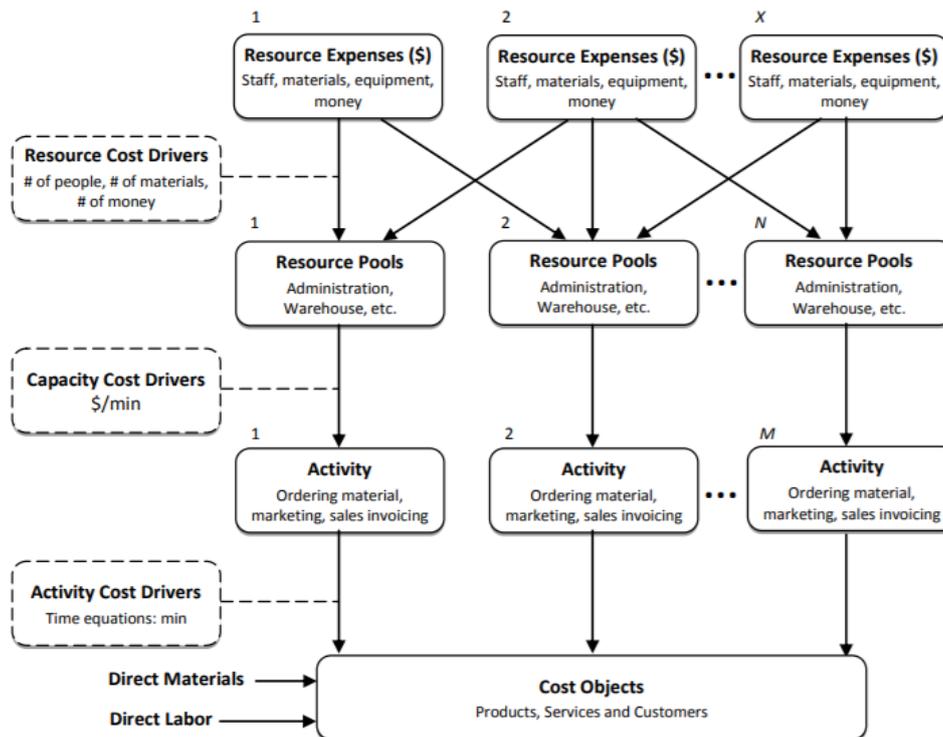
The phases that compose the TDABC (see Figure 2.6) are (Everaert et al., 2008):

- 1- Identify the various resources groups used to carry out activities;
- 2- Determine the costs of each resource group;
- 3- Estimate the practical capacity of each resource group (e.g., available working hours, excluding vacation, meeting, and training hours);
- 4- Calculate the unit cost of each resource group by dividing the total cost of the resource group by the practical capacity;
- 5- Determine the time estimation to perform each activity, based upon *the time equation* for the activity;
- 6- Multiply the cost per time unit of the resources by the estimate of the time required to perform the activities.

---

a given cost centre and the standard time to produce one unit of output for each activity considered. By multiplying the cost per unit of time of the cost centres by the standard time it is possible to get the cost of the productive capacity used; the difference between this data and the total costs provides the idle time.

**Figure 2.6** – Time driven Activity Based Costing model



**Source:** L. S. Guzman, A. Van den Abbeele, J. Vandewalle, H. Verhaaren and D. Cattrysse (2013) Recent evolutions in costing systems: a literature review of time-driven activity-based costing, *REBEL Review of Business and Economic Literature*, vol. 58, no. 1, p. 9.

The innovation of this method is therefore given by the time, that is a measure of the resource capacity used and that allows the costs of resources to be traced directly to the objects of calculation: activities, orders, products, services, or customers. Conversely with ABC, TDABC does not contain an activity pool in the model (Tse & Gong, 2009). Activities, in fact, can be represented by time

equations, which determine the time of the process as the sum of the times of the single activities. Through a simple mathematical expression of the time, it is possible to represent all possible combinations of activities as a function of several activity time drivers.

The time equation is given by:

$$T = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \dots + \beta_i X_i + \dots + \beta_k X_k$$

Where:

$T$  = The time required to perform an activity with  $k$  events

$\beta_0$  = The basic time to perform the activity (independent of the characteristics of the activity)

$\beta_i$  = The estimated time for the incremental activity  $i$ , with  $i = 1, \dots, k$

$X_i$  = The quantity of incremental activity  $i$  (transactional data)

$k$  = The number of time drivers taken into account

In conclusion, unit time of activities, as already mentioned, can be calculated monitoring the activities or through this time equation that implicitly assumes that the duration of an activity is not constant, but a function of the time consumed by the  $k$  possible events of an activity and their specific characteristics (i.e., time drivers). The use of the time equation allows an easy update of the model, adding variables or modifying the existing ones, to reflect the changes in the processes, in

the variety of the offered products/services and, finally, in the costs of the resources. Adding terms to the equation, with an increase in the complexity of the process, does not increase the complexity of management nor invalidates the validity of the model. Using a single time equation adds accuracy to the model against additional cost and effort.

#### 2.3.4. **Advantages and limitations**

In the course of the text, the advantages of the various methods that compose the full costing approach have already been presented, as well as the main limits that led to continuous innovation, from SAB to MAB, from ABC to TDABC. However, although the methods described seem to follow one another as in a temporal evolution, they are not substitutes. In fact, they coexist with each other and very often are used in complementarity with the main objective of providing the information requested by the manager. In other words, they are still used according to company contexts. Traditional costing systems is applied in business contexts with a low incidence of indirect costs and the presence of homogeneity products. This is used to make decisions involving temporary use of existing capacity and short run changes. Therefore, traditional costing system is not expensive and it is very useful for internal reports because it is simple and very easy to understand by the users. However, it does not give managers an accurate

picture of product costs because, as already mentioned above, if there are not significant links between the indirect cost and the allocation base, the accuracy of the information is low and can lead to wrong decisions.

With the ABC and the TDABC, on the other hand, it is no longer a *cost control*, that is checking whether the budget has been respected or not, but *cost management*. With this term it is meant the management of the causes of cost in order to understand "why" is put a data to budget and so carry out only the useful activities that create value for the customer (Bubbio, 2002). Companies that produce or distribute different product lines and that have an increasing production complexity find convenience in shifting the attention from the product to the activities. ABC and TDABC are methods used to identify how and where to reduce costs without reducing the value generated for the consumer. The main advantage of ABC is to avoid the phenomenon of *cross-subsidisation*. The use of traditional full costing, also on a multiple basis, in fact, can lead to the incorrect determination of the cost of a product that, consequently, leads to distorted information and therefore to wrong decisions. According to this paradox, the complex productions, even if they involve a greater consumption of general activities, are weighed down by a small proportion of indirect costs as they generally require less use of direct factors; while the simple ones, on the other hand, even if they consume fewer general activities, are attributed with a higher proportion of indirect costs. Consequently, the total cost of complex production is

artificially underestimated<sup>22</sup> and that of simple production is overestimated<sup>23</sup> (Nicolò, 2010). Therefore, ABC minimizes cross-subsidization because it enters into the analysis of indirect activities, resources consumed for each activity, and quantifies the quantities of activities for each product.

The use of the TDABC method is also made for the purpose of profitability analyses, also thanks to the ability to identify the cost of production more objectively. In addition, this manages to identify possible initiatives to improve the profitability of customers.

It is appropriate that the approach Time Driven Activity Based Costing is considered as a complement of the Activity Based Costing, in order to succeed in having a vision that allows to preserve the most advantageous aspects for both methodologies. These methods are more expensive than the traditional costing system but provide more accurate information especially in the long term because they go into detail much more. However, the choice between the two remains anchored to the information and reporting needs of the manager. It is not possible to define one method better than another. Nowadays, it is increasingly common to

---

<sup>22</sup> A product is underestimated when it consumes a high level of resources per unit, but it is reported in the costing system to have a low cost per unit. Underpriced products generate losses.

<sup>23</sup> A product is overestimated when it consumes a low level of resources per unit, but it is reported in the costing system to have a high cost per unit. Overpriced products lead to lose market share.

find hybrid systems in companies that combine the characteristics of different methodologies, for example the cost centres approach and the activity one.

## **CHAPTER 3**

### **MANAGERIAL ACCOUNTING PRACTICES IN E-COMMERCE COMPANIES**

#### **3.1. E-COMMERCE: THE PRESENT AND THE FUTURE OF COMPANIES**

The birth of e-commerce dates back to 1960 when corporate organizations began using Electronic Data Interchange (EDI) as a tool to exchange data with other business organizations. This was the first electronic service through which documents were transferred to large telecommunications companies (Ghislandi, 2012). With the birth of the World Wide Web and the advent of the nineties, this system was integrated with the public network. The usage of electronic networks has therefore seen a continuous growth, with an acceleration in 1990 when the large eBay and Amazon market platforms arrived (Taher, 2021). In Italy, the first online commerce site was founded in 1996 with the opening of the "Cybermercato" of Olivetti Telemedia that gave the opportunity to buy online a wide range of products, such as books, food, gift ideas, delivering directly to the home of the buyer (Ghislandi, 2012).

Within a few years e-commerce became extremely widespread, in short, a real revolution of business. Indeed, e-commerce has not only twisted the lives of consumers, but has revolutionized business, changing the form of competition, the computer communications network and creating an e-commerce market to unite consumers and companies. This opened the door not only to domestic but also international trade, offering companies the opportunity to enter into a wider context, extend to a greater consumer range, and advance prevailing market position by delivering an inexpensive and more operational distribution sequence for their products and/or services (Abbas et al., 2021).

In addition, the Covid-19 pandemic has further contributed to the development of e-commerce. While more and more people tend to avoid public and crowded places, offline commerce faces a drastic drop in turnover and the presence of online shops grows. According to a research study<sup>24</sup>, in 2020 e-commerce worldwide has produced a turnover of 10.780 billion, between B2C and B2B. A value destined to increase in 2021. Europe ranks first among the continents with the highest Internet penetration, equal to 89.4% (4.5% more than the previous year). Therefore, there is an increase in online sales and, at the same time, an

---

<sup>24</sup> The study is reported in the document "E-commerce in Italy": a report that describes the evolution of online commerce every year, through market surveys and the analysis of the main trends in the sector. The report can be downloaded at [https://www.casaleggio.it/wp-content/uploads/2020/12/CA-E-commerce-2021-report-ITA\\_WEB.pdf](https://www.casaleggio.it/wp-content/uploads/2020/12/CA-E-commerce-2021-report-ITA_WEB.pdf)

increase in the number of companies that make their products and services available on the Internet. In Italy, for example, it has been estimated that at the end of 2020 companies that have registered to the Companies Register with ATECO code 47.91.1 (related to online commerce) are 10.467, 50% more than the previous year.

In addition to large new businesses, also SMEs (small medium enterprises) have seen exponential growth on the web. Smaller firms, in fact, may particularly benefit from the opportunities offered by electronic commerce. First of all, they can adopt a business model that forces larger and established competitors to restructure their existing relationships and also provides opportunities to compete in new areas by creating new products or services. Secondly, the “scalability” of the Internet offers small players many of the advantages enjoyed by large firms in terms of expanding the range of e-commerce customers and transactions (OECD, 2000). The data registered by the report demonstrate the importance of electronic commerce for SMEs in Italy. Indeed, before Covid-19 pandemic, SMEs selling online via e-commerce on their website were 9%, while at the end of 2020 they increased to 17.2% (+8.2%). Many SMEs have opted instead to sell via social media, from 15.6% pre-emergency to 27.8% (+12.2 points).

The impact of e-commerce on business is therefore undoubtedly exponential. The growth that is expected is also large, ready to follow the technological

improvement and to accompany a new world that, affected by the pandemic, is even more linked to the Internet.

### 3.2. FEATURES AND PECULIARITIES OF E-COMMERCE COMPANIES

E-commerce is usually associated with the activities of buying, selling, ordering, and paying on Internet. However, this definition is not able to describe the recent developments of this phenomenon. Therefore, other definitions are possible. According to Gupta, “e-commerce is the usage of electronic communications and digital information processing technology in business transactions to create, transform, and redefine relationships for value creation between or among organizations, and between organizations and individuals” (Gupta, 2014, p. 1-2). Jamsheer, instead, describes e-commerce as the usage of telecommunication networks to automate business relations and workflow (Jamsheer, 2019). Finally, e-commerce is also described as the exchange of organization data, preserving business relations, and conducting operational transactions via telecommunication systems (Taher, 2021).

In these definitions the distinguishing features of an e-commerce system are highlighted, that is:

- electronically handle of business transactions;

- real-time exchange of information and data;
- business relations conducted via Internet.

An interesting distinction, that is necessary to clarify, is between E-commerce and E-business. They, in fact, are not interchangeable. While in e-commerce, ICT (Information and Communication Technology) is used to manage transaction among firms or between individuals and firms; in e-business ICT is used to enhance the activities carried out by a specific business. In other words, e-business is “the transformation of an organization's processes to deliver additional customer value through the application of technologies, philosophies and computing paradigm of the new economy” (Gupta, 2014, p. 2).

### 3.2.1. **The major different types of e-commerce**

Based on who buys and who sells, be they companies, private or governments, there are various models of E-commerce (Ghislandi, 2012; Gupta, 2014; Taher,2021):

- **Business-to-business (B2B)**

B2B e-commerce is simply the digital exchange between companies. This is the type of e-commerce that deals with relationships between businesses. The offer has as object goods and/or services offered by companies present in the network,

which can directly produce the good/service or simply behave as a distributor. At the same way, the demand comes from other companies operating in the market and/or professionals of a specific sector.

- **Business to-consumer (B2C)**

This is the online sale of products and/or services by a company directly to consumers. Also in this case the company can be the producer of the good or simply a distributor of the same. Today it is the most common and most recurrent form of e-commerce, since consumers have moved towards this type of shopping, which is called e-shopping.

- **Consumer-to-consumer (C2C)**

This is the most recent and popular e-commerce model. It represents the exchange of goods and services between consumers. The best-known reality in C2C e-commerce is definitely eBay, who wants to encourage the meeting of millions of people "on par", creating a transparent and economically advantageous market for all participants (Ghislandi, 2012). A firm using a C2C business model typically generates revenues from fees and commissions paid by consumers for participating in the electronic marketplace (Gordon and Loeb, 2001).

- **Consumer-to-business (C2B)**

It is not a widespread typology since it happens when a consumer sells their own goods or services to a business or organization (Al-Abrow and Alnoor, 2017). In this case, consumers represent the value for companies. Over time, more sophisticated forms of collaboration have emerged between companies and consumer groups that hold creativity, content, specialist skills and their own community of interests.

- **E-Government**

E-government is the part of e-commerce that involves the relationship between the public administration and citizens with the ultimate aim of automating and enabling through the Internet the following tasks (Ghislandi, 2012):

- requests for documents;
- dissemination of standards;
- collection of fees;
- votes and popular consultations.

This is divided into different solutions ranging from B2G (Business to Government) to C2G (Consumer to Government).

What it is important to highlight is that these main types of e-commerce assume a purely academic value because in reality they coexist creating mixed forms and business models in constant evolution, also accordingly to the continuous development and update of social commerce <sup>25</sup> (Ghislandi, 2012).

### 3.2.2. **Key success factors and critical failure factors**

It has already stated that e-commerce has led to a great change, especially during the Covid-19 pandemic phase, helping many companies to stay on the market and become even more competitive. However, very often businesses, especially the small ones, feel compelled to start their online business; but which are the actual advantages and disadvantages of e-commerce? Which are the critical success factors that allow an e-commerce to be competitive?

E-commerce offers many advantages, most of which are valid for both online buyers and companies. Among them, there are (Ghislandi, 2012; Gupta, 2014):

---

<sup>25</sup> Social commerce is a variation that evolved from e-commerce by capitalizing on the usage of large reservoirs of social capital and interaction data inherent in such widespread social networks. Its objective is to provide personalized service and product delivery based on consumer preferences, interest, and interactions through the net. Social commerce builds upon the usage of e-commerce. They include the “delivery of e-commerce activities and transactions via the social media environment, mostly in social networks, and by using Web 2.0 tools and capabilities” (Liang and Turban, 2011).

- **No geographical limitations:** The online market allows to overcome the local basin at lower costs than traditional channels. It gives the possibility to reach a number of customers resident in every part of the world;
- **Continuous service to customers:** E-commerce allows the reduction of time limits, providing an h24 service. This is definitely advantageous in terms of sales, considering that orders done after 6 pm are very popular in both B2C and B2B;
- **Wider catalogue:** The offer of physical shops is linked to logistic limits and weighed down by stocks, while the online offer is much more articulated. In addition, services and products can be customized according to customer preferences with greater ease.
- **Disintermediation:** The setting up of an e-commerce site allows to skip the passage of distribution, shortening the supply chain and decreasing the price of goods to the benefit of both the final consumer, which increases its purchasing power, and the company, which reduces intermediation costs. With this new concept, the needs of consumers become the central element on which to base production.
- **Collection of data and traceability of visitors:** Online companies have the ability to collect a large amount of data relating to customers and, therefore, assign the right audience to the right product. In other words,

through many tools, like CRM (Customer Relationship Manager) which help in the collection and analysis of quantitative and qualitative data, it is possible to profile the user in order to understand the consumption choices, purchasing preferences and behaviour, so that the company can exploit this information to target the offer and after-sales assistance. In addition, through an ad hoc computer system it is possible to obtain complete traceability of visitors in order to optimize promotional channels and adopt a good Search Engine Optimization (SEO)<sup>26</sup> strategy;

- **Price transparency:** Another evident benefit of e-commerce is the increase in price transparency. The gathering of a large number of buyers and sellers in a single e-market reveals market price information and transaction processing to participants. Internet allows for the publication of information on a single purchase or transaction, making the information readily accessible and available to all members of the e-market. Increased price transparency has the effect of pulling down price differentials in the market;

---

<sup>26</sup> SEO is the art, craft, and science of driving web traffic to web sites. The core practices of good SEO are fairly simple: understand how your pages are viewed by search engine software and take common sense steps to make sure your pages are optimized from the viewpoint of these search engines. (Davis, 2006).

- **Optimization of tasks and functions:** Thanks to the fact that many functions can also be performed at home, e-commerce conduces to a reduction of the physical presence of workers and in general the reduction of personnel costs. However, during the Covid-19 pandemic, this aspect became common to almost all companies that adapted to use online platforms in order to conduct the ordinary tasks, and also recruitment processes and hold meetings. Today, therefore, the smart working is also an integral element of the traditional value chain.

However, e-commerce also has significant drawbacks that can be classified into two main categories: nontechnical and technical (Taher, 2021).

In the first typology, problems that arise are:

- **Inability to test items first-hand before buying:** with this kind of shopping, customers are unable to try the item before getting it (Alhamdi et al., 2019). E-commerce, in fact, takes away a crucial part of the purchasing process, that is to test the product. Many customers therefore hesitate to proceed with the acquisition as they do not see a real guarantee of quality of the product and fear that the product purchased does not comply with what was expected;

- **Delay in delivery:** A crucial difference with offline trading is the impossibility of having the product immediately after purchase. Buying online there are waiting times that can often vary, lengthening considerably, instilling distrust in customers;
- **Cost and product feature comparison:** strong competition and low entry barriers are the rule in e-commerce contexts. The presence of countless products and services induce consumers to compare costs and characteristics in search of the best value for money.

The technical critical issues, instead, refer to:

- **Security:** The issue of security is certainly one of the broader topics related to the concept of e-commerce. Companies that start their online business must be aware of the threats that populate the world of Internet and that, as a result, increase the uncertainty of the user in making the purchase or simply in registering to the e-commerce site. Hackers are the main cause of fear for both parts. From one side people never fully trust to enter their personal and payment data on a site, especially if it is the first purchase. From the other side, instead, online companies could be attacked by viruses that could block their business and, as a consequence, lose turnover and customers. Today the risks are certainly much lower than at the beginning of the 21st century, but they are there anyway. This concept

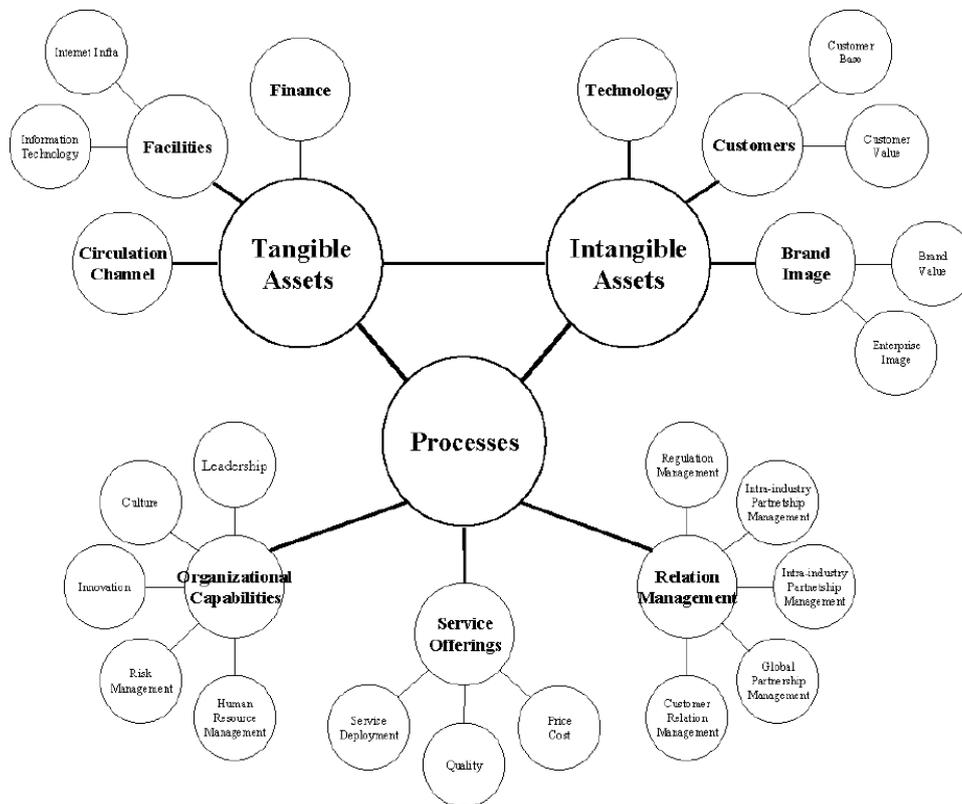
is also linked to another issue, that is, the protection of privacy, as well as the security of personal data requested by the site. Developing an effective and competitive e-commerce, in fact, does not only mean responding in time to customer requests, but being able to not disturb the user during the purchase experience. For example, obligatorily asking to subscribe to newsletters, to leave sensitive data or to register to the site just for navigation purposes, reduce the time of stay on the website for the user.

- **Costs:** Electronic commerce creates value especially when it is able to exploit economies of scale, otherwise it generates many additional costs that do not involve a direct remuneration, risking to decrease the profit of a company until it becomes negative. Such additional costs include, for example, those to ensure the security of transactions or those incurred for the indexation of the site, which do not entail a direct return of the value generated by sales. In addition, the reduction of the space-time limits involves a greater volume of business but represents an advantage only if this volume is adequate to the additional costs that the enterprise has to bear for the management of the service (Gupta, 2014).
- **Know-how:** Although it now seems very easy to use an electronic commerce system, it is necessary to develop a certain know-how in order to obtain the maximum benefit from it. The reason why many companies

have not yet embraced this new type of economic reality, in fact, lies in the absence of the know-how necessary to compete with all those players, who have been on the Internet for a long time and have therefore asserted their position (Ghislandi, 2012). To acquire the right skills would require massive investments that not everyone is willing to make without the certainty of a return in terms of revenues in the short term.

The pros and cons just examined allow to identify the critical success factors (CSFs) and the critical failure factors (CFFs) of the electronic commerce. An interesting model developed by Choi et al. in the work "Key factors for e-commerce business success", suggests considering key success factors of e-commerce corporate as three separate perspectives: tangible asset, intangible asset and processes (see the figure 3.1).

**Figure 3.1 - The key success factors of e-commerce corporate**



**Source:** J.K.Choi, J.S.Park, J.H.Lee, K.S.Ryu (2006), Key factors for e-commerce business success, *ETRI, New Business Strategy Research Team*, p. 7.

In the perspective of **tangible assets**, it is possible to identify:

- **Finance:** it is very important to have adequate financial resources to cope with the threat from competitors or customers;
- **Facilities:** "the acquisition of effective and efficient facilities can give an e-commerce corporate a fundamental source for competitive advantages"

(Choi, 2006, p. 6). In addition to the facilities, the information technology has a crucial role in delivering service to customer. This, when used strategically, maximizes speed and management flexibility;

- **Circulation channel:** a connecting channel between e-commerce corporate and customers is essential to provide products and services.

For **intangible assets**, on the other hand, the following may be recognised:

- **Technology:** it is the most important factor for an e-commerce company that, without a doubt, determines its competitiveness on the market. Companies operating online must take full advantage of the technology concept.
- **Customers:** for an e-commerce company it becomes essential to know the consumer both from a quantitative and qualitative point of view. Having a solid and growing customer base allows companies to take advantage of economies of scale. On the other hand, by tracking customer information, a firm becomes aware of customer preferences and tastes, and also can make targeted efforts in meeting those demands earlier than its competitors (Ganesh et al., 2001).
- **Brand and Image:** in this case it is easy to understand the relevance of the image for a company. In e-commerce contexts it is even more so because

the company has only images to attract the customer to buy. If the site is not effective, visual impact and customized, the company does not sell. It is extremely important that the company is able to be recognized and build a clear picture of what it is and what it wants to do.

The third perspective is that of **process**, it entails:

- **Organizational capabilities:** an e-commerce company needs the same organization capabilities as offline companies. In fact, the type of trade does not preclude the need for leadership figures, a corporate culture, a risk management system, and human resources management. Business structures are fundamental to the sustainability and profitability of the business.
- **Service Offerings:** the services offered by the company determine another important competitive advantage. Consumers compare quality, price and, in e-commerce contexts, service innovation. Innovation means the usability, effectiveness and updating of service systems.
- **Relation management:** in an e-commerce system there is an online relationship between company and customers. There is no "verbal" or "physical" exchange between the parties and building a relationship can seem like a challenge. However, an e-commerce company has a

competitive advantage when it creates an effective connection with customers. Thanks to the concept of CRM, which has been developed as a way of approaching the consumer systematically and efficiently, today companies have countless information contained in company databases.

This concept is the same for suppliers and partners.

Therefore, these three perspectives, and the respective highlighted factors, are linked together and could define the key success factors of an e-commerce company. By applying and researching these elements, the company can gain a competitive advantage in the market over competing companies.

However, considering the drawbacks highlighted above, the e-commerce system also has CFFs. The researchers Hahn and Noh (1999) highlighted 44 variables that, through an empirical study, categorized in 6 CFFs:

- Lower level of data security: the digital world is a world exposed to the risk of seeing its personal data stolen if adequate security systems are not in place;
- Inconvenient use: that is an inappropriate use of an e-commerce system;
- Unstable systems: the e-commerce system, dependent on a wireless network and a series of codes necessary to make everything work, is also unstable and can present bags critical to the success of a company;

- Lack of information mind: the continuous need for updated information could cause a criticality of the e-commerce system;
- Dissatisfied purchasing: the customer buys an image, in the hope that it turns into a product exactly identical and suitable, however this does not always happen. A dissatisfied customer represents the greatest criticality for an e-commerce system because it means that it will not return to buy;
- Social disturbance: an event that can occur when buying online without actually being able to speak directly to the merchant.

The study shows that unstable system, unsatisfied purchasing, and lower level of data security affect satisfaction while unstable systems and lower level of data security affect usage. CFFs that affect users' expectation of EC usefulness are unsatisfied purchasing, social disturbance, and inconvenient use (Sung, 2004).

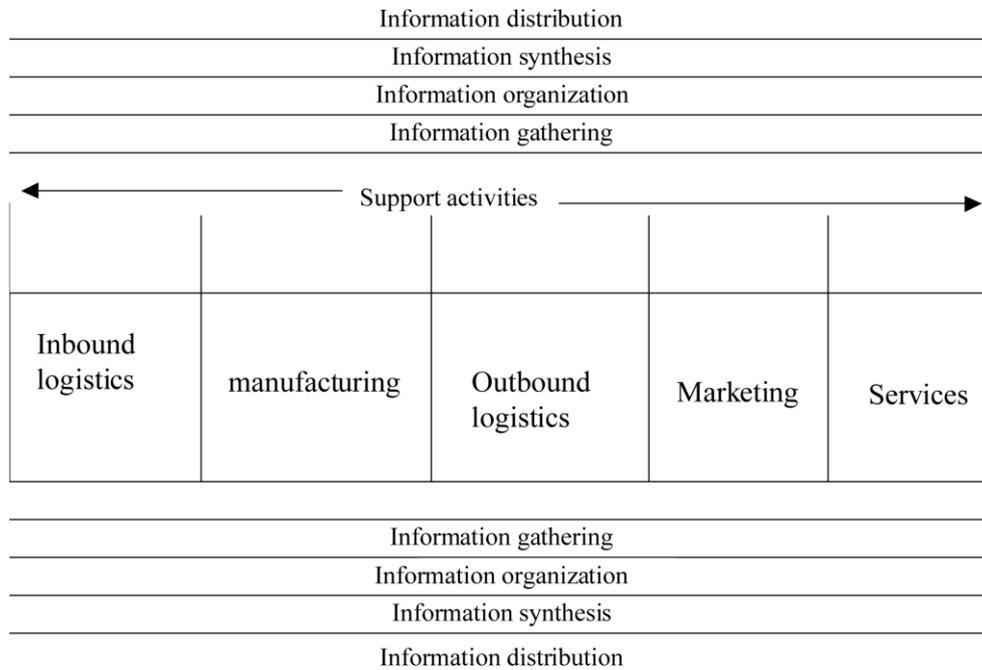
### 3.2.3. **The virtual value chain**

By definition, the value chain reveals the strategically important activities through which a company carries out its business (Porter, 1985). In manufacturing companies, in which the value of activities is mostly concerned with the physical flow of material, the value chain could be described as five key activities: inbound logistics, operations, outbound logistics, marketing and sales, and services; and four support activities: firm infrastructure, human resources management,

technology development, and procurement (Porter, 1985). In e-commerce contexts, instead, the value of activities is given by information that flows along the chain. For example, the extent to which e-commerce will affect the marketing of products and services will depend on the amount and the value of information that flows through the value chain (Ganesh and Emdad, 2001). However, the physical value chain does not recognize the strategic role of information, because it considers information a support function and a by-product of the activities carried out. For this reason, the concept of virtual value chain is born. According to Rayport and Sviokla (1995), a virtual value chain consists of gathering, organizing, selecting, synthesizing, and distributing information.

The virtual value chain integrates into the physical one, which cannot be completely eliminated, because a number of back-end activities are still performed physically (see the figure 3.2). While the virtual value chain activities make most transactions transparent and provide access to customer, supplier and producer information, the physical activities of the value chain allow them to be realised, fulfilling customer orders, and assembling final products and services (Ganesh and Emdad, 2001).

**Figure 3.2 - The virtual value chain**



**Source** - Ganesh D. Bhatt and Ali F. Emdad (2001), An analysis of the virtual value chain in electronic commerce, *Logistics Information Management*, Volume 14 . Number 1/2, p. 80.

The purpose of the virtual value chain is to achieve both maximum customer satisfaction and high profitability for the company (Rayport and Sviokla, 1995). The success of an e-commerce company, therefore, depends on the degree of integration between the activities of both chains. With the new concept of virtual value chain, the enterprises do not bother to reach positive profits in the short term but try to increase the value of the enterprise in the medium-long term and to attract as many customers as possible through the offer of differentiated services to meet the most varied needs of shipping, payment, and product type.

### 3.3. THE APPLICATION OF MANAGERIAL ACCOUNTING IN E-COMMERCE CONTEXTS

The analysis of the economic literature carried out until now allows to conclude that e-commerce creates added value for three different subjects: suppliers<sup>27</sup>, consumers, and companies. For this latter, the introduction of e-commerce has also a direct impact on costs and, as a consequence, on efficiency (Baršauskas, 2008). The efficiency of an online company, as already seen, depends directly on information, the protagonist of its value chain. It is for this reason that managerial accounting, with the aim of providing relevant information to the manager, becomes a fundamental element for e-commerce companies. Moreover, e-commerce contexts, also due to the nature of their business model that requires distributed value creation activities, need a managerial control system even more effective.

Below the thesis work wants to frame the use of managerial accounting in e-commerce contexts, highlighting a new possible cost structure based on a new cost object and proposing cost control tools able to measure the profitability of e-

---

<sup>27</sup> The use of modern technologies allows simplifying the communication with company partners, reducing communication costs (Biro and Messnarz, 2000).

commerce companies. The aim is to demonstrate the cruciality of managerial accounting techniques for Internet-based firm's success.

### 3.3.1. **The challenge of managerial accountants in online enterprises**

Still today, managerial accounting is a theme not entirely understood by companies and very often managerial accountants must be able to make entrepreneurs understand the usefulness of their work, which unfortunately is not immediately perceived. Especially in SMEs (small and medium-sized enterprises) there is a particular resistance from entrepreneurs who often consider management accounting practices as a waste of time and money that diverts attention from more important tasks (Pelz, 2019). However, although the different contexts in which it can be applied, experience has shown that at the basis of a successful managerial accounting, an appropriate mindset is needed. The entrepreneur must accept the change that the MA brings with it and comply with the demands of the managerial accountant in order to provide the information promptly. This is even truer for e-commerce enterprises where information speed, agility and alacrity are essential. In this regard, the following activities represent the main challenges that managerial accounting has to carry out when it is applied to electronic commerce (Gupta and Gunaserkaram, 2004):

- **Staff to line:** in virtual enterprises, where functional boundaries are disappearing quickly, managerial accounting confirms its role as an active partner and no longer as a support function to the business manager.
- **Improved communication skills:** accounting professionals act as a link between the various corporate entities. In an e-commerce company it is necessary to establish a further relationship between the entrepreneur and those who know the computer systems. Thus, managerial accountants have to be able to communicate directly and clearly with other managers within the enterprise who may not have the same level of sophistication in understanding the technicalities.
- **Willingness to benchmark:** as potential customers increase, competitors on the market in e-commerce also grow very quickly. This means that the company, to manage its competitive advantage, must continuously improve through external and internal benchmarking. Managerial accounting, therefore, is also relevant to monitor the surrounding situation and contribute to the improvement of the company to remain competitive.
- **Data to knowledge:** even more incisive becomes the role of managerial accounting to transform data into clear and readable information for the entrepreneurs. The data collected are no longer limited to the company's

financial statements but come from the website and concern further aspects to be considered in the analysis.

- **Reactive to proactive:** the accounting professional have to make a conscious effort to go beyond the lagging mindset to a leading and proactive mindset.
- **Total performance management (TPM):** “performance management can be defined as a systematic process for improving organizational performance by developing the performance of individuals and teams” (M. Armstrong, 2006, p.1). This concept, already used in traditional companies, is a key point of managerial accounting, that establish communication between the various levels of an organization. However, it is also important to reiterate the need for online companies to implement this system. All people in the organization, whether in the presence and remotely, inside or outside the company, are responsible for their performance both individually and collectively.

### 3.3.2. **E-commerce cost structure**

It can be stated that e-commerce adoption has an impact on business cost structure, and, as a consequence, on its efficiency (Baršauskas, 2008). It means that the way costs are allocated plays a key role for online enterprises. It is already

said that decisions a manager has to make are always influenced by costs and at the heart of these decisions is the dichotomy between direct and indirect costs (Gordon and Loeb, 2021). Therefore, the question to ask is whether this division is still valid in e-commerce contexts, where the intangible assets prevail. To answer it is necessary to clarify which are the main costs that occur for an online company.

First of all, costs that affect e-commerce are less related to traditional infrastructure assets, such as buildings, but more on the development and maintenance of computers, specialized software, and intellectual capital. Online companies, in fact, are more concerned with being able to provide their customers with an easy, safe, and fast shopping experience (Gordon and Loeb, 2021).

Moreover, e-commerce companies, to face an increasingly growing and dynamic competitiveness, need to devote substantial resources to attracting customers. To do this one of the most incisive costs is represented by advertising. This can be done both on the Internet and in traditional media. However, companies engaged in e-commerce invest more in online advertising, that is more targeted and effective, thus abandoning completely or partially traditional marketing systems (Gordon and Loeb, 2021).

Even the shipping costs assume a great importance for e-commerce companies that, unlike traditional companies, must manage the distribution of products once purchased. The enterprises that do not have an independent logistic system, rely

on the logistic enterprises, the so-called couriers. However, the costs to be incurred do not concern only shipping rates. Logistics companies can add extra costs such as the fuel costs surcharges, to cover the floating costs of fuel; the restocking fees<sup>28</sup>, which are incurred when a customer decided to return an item, or the NDR (non-delivery reports) costs management<sup>29</sup> (Clickpost, 2020)<sup>30</sup>.

Finally, each order that arrives needs some activities such as picking, packing, and consulting, that is customer service; all these activities result in labour cost (Gordon and Loeb, 2021).

To sum up, the cost structure of e-commerce companies is mainly characterized of four types of costs (Li-ping, 2014; Liu, 2012):

1. **Technology costs:** they are the costs of purchasing, developing, maintaining, and updating of hardware, software, and general equipment;
2. **Marketing costs:** they mainly concern activities such as online and offline advertising, web and user experience design, social media marketing and SEO;

---

<sup>28</sup> Some e-commerce businesses cover this cost by accepting only replacements of goods or withholding a part of the money of the returned item.

<sup>29</sup> Delivery failure reports are the first failed delivery attempts that are notified by the courier and that can significantly increase the costs of the company if poorly managed. In fact, if the cause of non-delivery is not determined, it is likely that the order will be cancelled or that future delivery attempts will also fail as a result.

<sup>30</sup> The information are available at the following link <https://www.clickpost.ai/blog/logistics-costs>

3. **Logistic cost:** those costs related to the relation between the company and a logistic industry;
4. **Labour costs:** substantially the cost of the resources that take care of the processing of the orders, from their arrival in warehouse to their packing. In this group there are also the costs relative to customer services, that is those resources that are in contact with customers in order to answer doubts, curiosity or to resolve problems.

This new structure immediately draws attention to the prevalence of indirect costs, that is to say overheads not directly attributable to a cost object. The distinction between direct and indirect costs, therefore, would no longer appear to be valid. However, what is no longer valid in reality is the focus on the old notion of cost object, that is, the physical product. Indeed, shifting the attention to a new cost object, that is the customer, these costs can be traced directly (Gordon and Loeb, 2021).

For example, marketing costs can be allocated to a customer, in a direct manner. This can be possible through the application of tools, such as the **UTM parameters** (Urchin Tracking Module) that are codes added in the final part of a URL, with the purpose of monitoring the user click. These parameters are able to categorize the traffic of Google Analytics to know exactly the provenance of the visitors and detect important information about the results of investments in

advertising campaigns. In other words, through the UTM a company can trace the advertising content (social, email, banner, cost per click, etc.) that has persuaded a specific customer to place an order on the firm's e-store (Chiericato, 2019). This is very important because it allows the company to allocate the costs of that particular campaign directly to the orders received.

As regards technological costs, instead, while in a non-e-commerce environment they are traditionally considered indirect in relation to the products and services of a company, in e-commerce contexts these become directly traceable. For example, many of the costs of pre- and post-sale services, as well as the costs of services incurred during the actual sale, are linked to the use of computers and/or mobile phones, thus they could be traced to individual customers and treated as direct costs for e-commerce companies<sup>31</sup> (Gordon and Loeb, 2021). For the logistic costs the situation becomes more complex. Generally, in fact, e-commerce companies pay a fixed fee to logistics enterprises and this cannot be traced directly to the cost object of interest. However, there are exceptions. As described above, in fact, the logistic costs do not concern only the cost of delivery of the goods. For example, many logistics societies still charge the handling of the cash on delivery, that is the process of collection of the payment upon delivery of the

---

<sup>31</sup> For example, by dividing the cost of active promotion on a given phone by the minutes of time used to serve a given customer it is possible to find how much the client costs in terms of technology used.

article and the verification of the proof of delivery to the e-commerce company. The company can keep track of the customers that pay with cash on delivery and that therefore generate a greater cost, allocating the logistic costs directly to the cost object.

Of course, this cost structure and a new cost object does not mitigate the importance of knowing the costs of product or service, as well as departments. In fact, for an Internet-based retailer, the costs of products that a customer purchases would be classified as direct costs to the customer. For an Internet-based manufacturing firm, instead, the manufacturing cost of products would represent an intermediate cost objective, and the total cost (including costs which are indirect with respect to products) would be traced directly to the cost object (Gordon and Loeb, 2021).

Costs that cannot be traced in a direct way, such as the costs associated with computer hardware or other overheads, would be treated as indirect costs.

Therefore, although a prevalence of indirect costs that characterize online companies, it is clear that the need to differentiate between direct and indirect costs is as valid today in an e-commerce environment as it is in a traditional environment. Profitability analysis, product-line decisions, and pricing decisions are still significantly affected by the way costs are classified in terms of direct and indirect (Gordon and Loeb, 2021).

### 3.3.3. ABC system as a suitable tool for e-commerce

A new cost object and a different cost structure question the effectiveness of traditional costing and management control systems for companies operating in electronic commerce. Although the distinction between direct and indirect costs remains valid, the attention of managerial accounting in e-commerce contexts moves from the product or service to those activities that make up the company process and that are aimed at satisfying the customer. In general, the key activities in online businesses are (Li-ping, 2014):

- **Ordering activity:** all those activities which constitute the process of purchasing goods;
- **Storage activity:** picking and shelves of goods;
- **Marketing activity:** online or offline promotion and sponsorship of products or services;
- **Customer care and after-sale activity:** a consultancy service made available by companies to customers during and after the purchase;
- **Packaging activity:** the preparation of packages to be sent, from the wrapping of the goods to the printing of the label with the customer's address;

- **Shipping activity:** putting the packaged goods to logistic truck and check in the related information;
- **Logistic activity:** delivering goods from seller to consumer by couriers.

They represent the complexity of an e-commerce company that is no longer able to generate useful information through a traditional costing system. Indeed, in addition not to providing adequate value relevant non-financial information and relying on an inaccurate product costing system, the traditional calculation method overlooks the effects of management complexity and does not take into account the predominance of overhead costs of online companies (Gupta and Gunasekaran, 2004). These are the main reasons that push e-commerce companies to adopt a new cost system: the ABC system. This, in fact, provides cost information with respect to activities, focusing on overhead expenses and tracing them directly to cost object. In addition, this system is able to manage and detect complexity, so as to make the entrepreneur understand that it is often those activities, those products, those services, those customers, and those suppliers that create complexity that cost more (Bubbio, 2002). For all these reasons, ABC system is considered a suitable tool for the allocation of e-commerce costs.

Below is an ABC methodology that was initially developed for SMEs and then implemented by Roztocky (2010) for companies engaged in e-commerce. It is articulated in six major steps:

## **1. Establish Objective and Requirements of the ABC System**

At the beginning of the implementation, the company's management must decide about the main objectives of the costing system. Among these there could be, for example, the will to control the costs, to measure the profit, to establish political of price or to manage inventory. Once the company has clear in mind why it should implement a calculation system, it should decide about the object of analysis, on which it is interested in receiving information, that is, the cost object. Subsequently, it is the turn of the identification of the major overhead expenses that the company has to face. The objective and requirements of the ABC system should be consistent with the overall business strategy of a given company.

## **2. Identify Main Activities**

The second step concerns the identification of the major business activities that make up the business process. The number of main activities identified (and used as a medium to trace overhead) is determined by the level of accuracy and reliability desired. Basically, the more activities are considered and the more accurate the result. These could include website design and maintenance, order processing, product marketing, telephone support, inventory management, product shipment, etc.

### 3. Trace Overhead to Activities using the Expense-Activity-Dependence (EAD) Matrix

In step 3, activities are linked to expenses in order to determine the overhead consumption. To do this it is used the **Expense-Activity-Dependence (EAD)** matrix, a scheme useful to determine the overhead consumption by each activity. The aim is that of calculating the activity costs (see the figure 3.3).

In the figure the columns represent the overhead expense categories while the rows represent the activities. The number placed on the spaces are expressed in percentage and describes the proportion of the expense category caused by a particular activity. If the given activity consumes a given expense, the percentage of its overall expense (ranging from 0 to 100 and represented by a number between 0 and 1) is placed on the intersection. EAD matrix allows the calculation of the activity rate, that is, the total cost of the activity cost pool divided by the total activity measure. Indeed, after all numbers are placed in the matrix, the cost of each activity is calculated by multiplying the percentage by the total expenses. For example, the total cost for the activity “Monitor Quality” would be \$45,000.00 ( $0.1 \times 200 + 0.1 \times 80 + 0.1 \times 150 + 0.1 \times 20$ ). The total activity cost for all activities should be equal to the total expenses for all expense categories.

**Figure 3.3 - EAD Matrix**

| Activity                   | Expense Category           |                    |                 |            |              |                     |               | Total Activity Cost |
|----------------------------|----------------------------|--------------------|-----------------|------------|--------------|---------------------|---------------|---------------------|
|                            | General and Administrative | Rent and Utilities | Office Expenses | Technology | Depreciation | Sales and Marketing | Miscellaneous |                     |
| Market Products            | 0.1                        | 0.1                | 0.4             | 0.1        |              | 0.4                 | 0.1           | 129                 |
| Maintain Web Pages         | 0.1                        | 0.1                | 0.1             | 0.1        | 0.2          | 0.1                 | 0.1           | 74                  |
| Maintain Customer Database |                            |                    |                 | 0.1        | 0.2          |                     | 0.1           | 25                  |
| Manage Payment System      |                            |                    |                 | 0.1        | 0.1          |                     | 0.1           | 21                  |
| Manage Customer Orders     | 0.2                        | 0.1                | 0.1             | 0.1        | 0.1          | 0.2                 | 0.1           | 110                 |
| Manage Customer Inquiries  | 0.1                        | 0.1                | 0.1             | 0.1        | 0.1          | 0.2                 | 0.1           | 88                  |
| Acquire Goods              | 0.2                        | 0.1                | 0.2             | 0.1        | 0.1          | 0.1                 | 0.1           | 95                  |
| Receive and Handle Goods   | 0.1                        | 0.2                | 0.1             | 0.1        | 0.1          |                     | 0.1           | 60                  |
| Monitor Quality            | 0.1                        | 0.1                |                 | 0.1        |              |                     | 0.1           | 45                  |
| Prepare Goods for Shipment | 0.1                        | 0.2                |                 | 0.1        | 0.1          |                     | 0.1           | 57                  |
| <b>Total Expenses</b>      | <b>200</b>                 | <b>80</b>          | <b>30</b>       | <b>150</b> | <b>40</b>    | <b>180</b>          | <b>20</b>     | <b>700</b>          |

**Source** – Roztocki N. (2010), Activity-Based Management for Electronic Commerce: A Structured Implementation Procedure, *Journal of Theoretical and Applied Electronic Commerce Research*, Vol. 5 N.1, p.6.

#### 4. Trace Overhead to Cost Object using the Activity-Product-Dependence (APD) Matrix

In order to assign the overhead from activities to cost object is applied the **Activity-Product-Dependence (APD)** matrix (see the figure 3.4). This latter relates the detected activities to cost object and then allows the identification of the cost object's overhead consumption rate.

**Figure 3.4 - APD Matrix**

| Cost Object<br>(Customers grouped according to length of patronization) | Activity        |                    |                            |                       |                        |                           |               |                          |                 |                            | Total Overhead Cost of each Object Cost |
|---|-----------------|--------------------|----------------------------|-----------------------|------------------------|---------------------------|---------------|--------------------------|-----------------|----------------------------|---|
|   | Market Products | Maintain Web Pages | Maintain Customer Database | Manage Payment System | Manage Customer Orders | Manage Customer Inquiries | Acquire Goods | Receive and Handle Goods | Monitor Quality | Prepare Goods for Shipment |   |
| New   | 0.7             | 0.4                | 0.4                        | 0.4                   | 0.4                    | 0.7                       | 0.25          | 0.25                     | 0.25            | 0.25                       | 307                                     |
| Short-term  | 0.1             | 0.2                | 0.2                        | 0.2                   | 0.2                    | 0.1                       | 0.25          | 0.25                     | 0.25            | 0.25                       | 131                                     |
| Mid-term  | 0.1             | 0.2                | 0.2                        | 0.2                   | 0.2                    | 0.1                       | 0.25          | 0.25                     | 0.25            | 0.25                       | 131                                     |
| Long-term   | 0.1             | 0.2                | 0.2                        | 0.2                   | 0.2                    | 0.1                       | 0.25          | 0.25                     | 0.25            | 0.25                       | 131                                     |
| <b>Total Expenses</b>   | <b>129</b>      | <b>74</b>          | <b>25</b>                  | <b>21</b>             | <b>110</b>             | <b>88</b>                 | <b>95</b>     | <b>60</b>                | <b>45</b>       | <b>57</b>                  | <b>700</b>                              |

**Source** – Roztocki N. (2010), Activity-Based Management for Electronic Commerce: A Structured Implementation Procedure, *Journal of Theoretical and Applied Electronic Commerce Research*, Vol. 5 N.1, p.7.

In the ADP matrix, the columns represent the activities and the rows the cost objects established. If the given cost object triggers the need to carry out the particular activity, a number between 0 and 1 (representing the percentage) is placed on the proper space of the matrix. As in the EAD matrix, this number may be derived from the revision of financial documents or estimation. After all numbers are placed, the overhead consumption for each cost object is calculated by multiplying the percentage by the total expenses. It is the second-stage allocation of the ABC system, already described in chapter 2 of this work, where the activity rate is multiplied by the activity measure of a given cost object in order to calculate the ABC cost.

## 5. Calculate Product Cost of each Cost Object

During this step, in order to obtain the product cost for each cost object, the overhead costs are added to the direct costs. The product cost represents an estimate of the actual expenditure of a company to generate a cost object (see the figure 3.5).

**Figure 5.5 - Estimated Product Cost for Cost Object**

| <b>Cost Object</b> | <b>Direct Cost</b>  | <b>Overhead Cost</b> | <b>Product Cost</b>   |
|--------------------|---------------------|----------------------|-----------------------|
| New                | \$187,000.00        | \$307,000.00         | \$494,000.00          |
| Short-term         | \$166,000.00        | \$131,000.00         | \$297,000.00          |
| Mid-term           | \$165,000.00        | \$131,000.00         | \$296,000.00          |
| Long-term          | \$182,000.00        | \$131,000.00         | \$313,000.00          |
| <b>Total</b>       | <b>\$700,000.00</b> | <b>\$700,000.00</b>  | <b>\$1,400,000.00</b> |

**Source** – Roztocki N. (2010), Activity-Based Management for Electronic Commerce: A Structured Implementation Procedure, *Journal of Theoretical and Applied Electronic Commerce Research*, Vol. 5 N.1, p.7.

## 6. Use the ABC Analysis for Strategic Decision-Making and Improvements

Product cost information as detected in the previous step cannot automatically lead to better business performance. Indeed, it is necessary the integration with the ABC analysis, that allows the computation of the cost object's profitability, in order to make the management ready to interpret the data. It means that product costs are subtracted from revenue and the amount of operating profit for each cost

object is determined. The results can be used for various purposes, for example to assess profitability, make informed pricing decisions, identify cost-saving opportunities, abandon unprofitable product lines, or introduce more promising product lines.

Overall, the ABC system is useful for e-commerce companies to establish a well-founded business strategy and allows managers to rely on reliable cost measures. Since the operations of online companies consist of numerous activities, the ABC method can reflect the cost of goods in e-commerce much more clearly than traditional methods. Thanks to the ABC system, an e-commerce company is able to compare different options regarding the management of customers, production lines or distribution methods. However, there are also some criticisms that need to be highlighted. First of all, the complexity of the calculation process is not indifferent. The larger a company is and wider variety of products or services has, the more difficult it is the definitions of the process activities. Secondly, the detection of the main activities should be reviewed whenever a change is made to the model. In fact, the addition of one activity pool can potentially change the relationships between all existing activity pools and organizational inputs and outputs (Taiwan Institute of Business Administration, 2014).

In conclusion, although the system shows its criticality, ABC remains an advantageous base for online companies that want to analysis their profitability and understand the origin of costs. To fully understand its usefulness and verify

what was said, in the next chapter this will be applied to a real e-commerce company.

## **CHAPTER 4**

### **THE LASHMANIA CASE**

#### **4.1. OVERVIEW OF THE COMPANY: WHEN A NEED BECOMES ENTERPRISE**

The story of Lashmania, an e-commerce company based in San Benedetto del Tronto, began in 2016 thanks to the forward looking of a woman who, passionate about the world of beauty, was able to grasp the growing need for a sector still not well known. Anna Maria Zamelska was born as an entrepreneur of an online clothing import-export company, closed when highly specialized online societies arrived on the market with a much wider catalogue and with the possibility to return the goods even after several days. It was then that she decided to pursue her greatest passion: beauty. She was a lashmaker, a word completely unknown in Italy at that time<sup>32</sup>, and began to collaborate with various beauty salons until she decided to open her own. The profession of a lashmaker consists of several activities, from applying eyelash extensions to eyelash and eyebrow lamination. Being a lashmaker means being a stylist of the eyes who, by applying

---

<sup>32</sup> Still today the profession of lashmaker is not recognized in Italy but considered a branch of the beauty sector. There is no legal protection for those interested in this specific area.

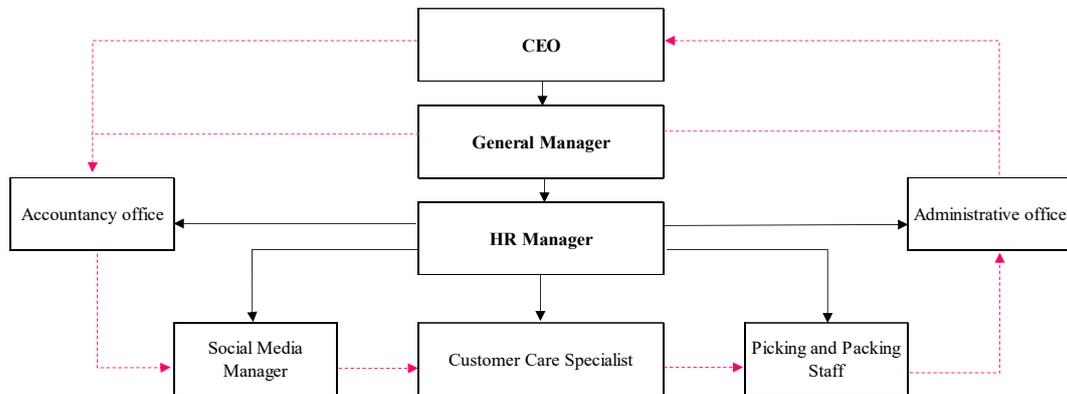
artificial lashes to natural lashes, tries to stylise the gaze by looking for suitable effects and material. The first sites from which she purchased materials were Polish but, unfortunately, they had long delivery times. This aspect, however, is very important for the products of a lashmaker: the glue, for example, if kept in hot places for too long arrives too dense and therefore unusable. For this reason, Anna Maria decided to rely on Italian sites and it was at that time that she understood how much misinformation existed in the matter. Little choice, limited information on the use of products and an uneducated customer care; this was what she found on the Italian market. It is precisely in the light of these facts that she decided to create Lashmania (the corporate name is Lb Consulting S.r.l.): one of the first Italian e-commerce site for lashmakers that was created to facilitate and respond to the needs of this emerging profession. Lashmania is committed to caring for its clients' eyes, educating them on the behaviour of their eyelashes and eyebrows. The main products are eyelash extensions and related accessories, as well as products related to eyelash and eyebrow lamination. The company also sells products related to eyebrows, face and nail care, and has a category of articles that are defined as marketing, through which it helps its customers to sponsor products in the shop. Lashmania, founded as an individual company, now takes the legal form of a limited liability company (LTD), and manages a process of supplying products through digital platforms. The type of business adopted is aimed at creating a direct relationship between the company and professionals, in

this case the beauticians. The model is therefore B2B. However, even private customers can buy from the site, thus creating a B2C relationship. As explained in the previous chapter, the distinction between typologies has a purely academic value because companies can actually choose mixed forms.

The structure of the company today is based on a very important concept: the division of roles. For two years now, the company, in the person of its owner Anna Maria, has been committed to creating a solid internal structure, defining clear tasks, and entrusting them to a precise resource. In addition, another very important aspect is the assignment of responsibilities that allowed the company to coordinate in the conduct of activities and thus achieve a fluid and orderly process.

Today Lashmania has eight employees that are distributed as follows (see the figure 4.1):

**Figure 4.1** – Lashmania’s organizational structure



**Source** – own elaboration.

The general manager takes care of the team management and supervises the operational part, while the HR manager manages the team development through continuous research of new staff and ensuring fruitful interactions between resources. Customer care specialist responds to customer doubts and manages social media, publishing posts and stories with their relative captions. The creation of content, photos, videos and graphics that will then be posted on social media is the task of the social media manager. This actor also prepares the photos of the new products and finalizes the editorial plan that is then presented for approval. Within the administrative office there are two additional resources that deal with processing orders and managing bureaucracy, while accounting and financial choices are the responsibility of the accountancy office. Last but not least, the picking and packing officer who collects the orders received from the

administrative department and proceeds to search the products on the shelves, pack them in the appropriate boxes and then deliver them to the courier. An identifying aspect of this scheme is the relationship established at all levels between each resource present, highlighted with pink arrows. The manager, as well as the CEO, interacts with all employees creating a climate conducive to continuous development and personal growth.

At the heart of Lashmania's strategy there are five KSFs that create significant competitive advantages: speed, wide product selection, organization, customer care and training. The e-commerce company undertakes to prepare and ship orders on the same day of their arrival, mitigating the problem of slow delivery. In addition, a well-organized process also results in service efficiency. The customer care is an aspect on which Lashmania focuses a lot, especially for the limited information available to professionals in the sector. Only a trained person can do so in a short time and the continuous training courses organized for employees create a highly motivated and educated environment, with a growing potential. In addition to these advantages, the company is focused on providing a unique user experience, in fact, Lashmania adopts a customer centre approach, with the aim of tightening direct relationships with customers and create a community among professionals in the industry.

All these aspects make Lashmania a true protagonist of the sector. On the economic front, in fact, the company has experienced an exponential growth in

turnover in the last two years. However, if on the one hand the revenues are increased, on the other the costs have endured an increment. Therefore, cost control becomes a necessary function and with it the introduction of a support figure intended to monitor costs, transfer information at all organizational levels and help the company in identifying growth opportunities. This figure is the managerial accountant.

#### 4.2. RESEARCH METHODOLOGY

The objective of this thesis work is aimed at exploring the levers, the barriers and the peculiarities of MA practices in e-commerce companies and providing a suitable method of calculating profitability in an online context. In order to reach this objective, the authors propose a single case study conducted through an interventionist approach (Lukka, 2005), and focused on Lashmania as case company.

After an analysis of the main costs of the company and of the financial statement ratios, aimed at suggesting the current economic and patrimonial situation of the company, the thesis work wants to highlight the trend of sales in order to study the current position of Lashmania on the market. Subsequently through the analysis of the first contribution margin and the calculation of the cost of order fulfilment, the

aim is to demonstrate the cruciality of an ABC system to calculate the real profitability of customers.

Data for this case study was collected in the form of secondary and primary data. In the first case, a document analysis (Bowen, 2009) was carried out in order to understand the cost structure of the company and analyse its economic-financial position. The financial statement was provided by the accounting department on a month-by-month basis once the first note entries were completed, including the calculation of depreciation and the adjustment voices for the period. This was rebuilt on Excel, assigning a code to each account and proceeding to its reclassification for the years 2020 and 2021. The cost of human resources, for period adjustments, instead, was provided by the labour consultant and then entered into a spreadsheet specifically created to estimate its cost. In addition, a sale and a first margin analysis were conducted. In this regard, data was requested from the Lashmania software house, which provided a statistic containing all lines of sales documents from January 2020 to December 2021. At the same time, together with the company, a database was developed in its operational information system (OIS) to provide a standard purchase cost for each article sold, representative of the cost dynamics for the observed period. To manage the standard cost, a specific purchase price list was created in the OIS. With the help of Access, a program used to extract and transform data, the two databases, in the

form of queries, were cross-referenced. The join made it possible to determine an initial contribution margin for objects of interest, aimed at providing a first picture of the company's profitability. Margin analysis was then conducted through Excel. In these cases, data was collected through *non-participant observation* (Atkinson and Shaffir, 1998). However, at the end of each monthly reclassification, a meeting was held with the company to share the processed data. This allowed the company to monitor the situation, resolve any discrepancies, and suggest possible changes to the plan of accounts in order to give relevance to certain types of costs, explained in detail below.

In the second case, the data were collected through the method of *participant observation*<sup>33</sup> (McKechnie and Lynne, 2008) and used to implement an ABC system for the company relative to the order fulfilment activity. In this case, the data taken into account relate exclusively to the year 2021. Therefore, the acquisition of the information was carried out directly in the company, taking part in first person to the operating process.

From the participating observations, fieldnotes (Bodsky, 2009) were collected to help implement the case study. In fact, descriptive details have been recorded

---

<sup>33</sup> “Participant observation is a method of data collection in which the researcher takes part in everyday activities related to an area of social life in order to study an aspect of that life through the observation of events in their natural contexts. The purpose of participant observation is to gain a deep understanding of a particular topic or situation through the meanings ascribed to it by the individuals who live and experience it” (McKechnie and Lynne, 2008, p. 3).

regarding the resources monitored, and therefore not only the time spent to carry out a determined activity but also the modality employed, and regarding the events happened during the permanence in company. In addition, the fieldnotes recorded reflections on the data that led to adapt the model present in the literature for the company Lashmania. In addition, data was also collected through interviews (Kvale and Brinkmann, 2009). Four interviews were conducted. The first to the CEO of the company, through which it was possible to map all the activities that make up the order management process and learn more about the company, it lasted about one hour. The other three interviews are done in order to obtain information on the role of each resource engaged in the company and to understand the precise activities that they carry out. The interviews lasted about twenty minutes each but did not interest the accounting office and the HR manager. Once the main activities were defined, the execution times were measured, monitoring the resources during working hours. The strategy adopted was to start from the administrative office where the orders arrive, to end up in the warehouse with the picking and packing staff. The statistical sample used was obtained with 4 sessions of 4 hours each. The collected data were then processed in an Excel table in order to calculate the total average cost of each activity aimed at the fulfilment of a single order. The table has been transported on Access, in which has been constructed a new query containing all the meaningful fields for a single order. Subsequently, joining the table of the ABC costs to the query, it has

been possible to associate to every order its cost of fulfilment and to calculate the actual profitability of customers.

#### 4.3. COMPANY COST STRUCTURE AND MANAGERIAL INCOME STATEMENT

Starting from the analysis of the company's income statement, it is possible to identify three main types of costs, that stand out among the others for their amount: marketing, logistic and labour costs.

In the first case, all costs of online advertising are included. These are opposed to offline advertising defined by the account "advertising material", which represent a low amount. The net difference confirms a distinctive feature of e-commerce companies, which invest less and less in paper advertising. Since September, the company relies on a digital agency in order to implement SEO strategy, Google Ads, and contents creation. Thanks to this, it was possible to divide the advertising cost into many different accounts, based on the main marketing activities of Lashmania:

- *Facebook*: to create and sponsor posts. It represents the main investment of the company;
- *Google*: to implement SEO strategy and Google Ads;

- *Mailchimp*: a platform that offers a DEM (direct email marketing) and newsletter service, which represents a significant investment for an e-commerce company that wants to build strong relationships with its customers.
- *Online*: concerning pop-up advertisements and banners, to attract customers to visit the site and buy;
- *Graphics*: for content creation and website management.

Regarding the logistic costs, instead, the attention is placed on the difference between "transports on sales" and "transports on purchases". In general, in offline companies the transport costs on purchases have a higher value than the transport costs on sales and are enclosed in a single account called "transport expenses". However, in this case, 92% of the expenses is represented by the transports on sales and it confirms the importance of the shipping costs that an e-commerce company must face.

Another important value concerns "Wages and Salaries". The structure of the company and the focus on roles requires a high investment in personnel. In addition to labour cost, other operating charges may be considered, such as costs for research and training of resources that may affect the choice of the number of employees.

Technological costs are covered by the software licence and equipment such as computers and telephones, however, in this case, their amount is not very significant.

The typical cost structure of an e-commerce company, already described in the previous chapter, is therefore confirmed. The income statement reclassification scheme was constructed in such a way as to reflect this structure, following the contribution margin criterion (see the figure 4.2).

Figure 4.2 - Lashmania Reclassified Income Statement 2021

|  |   |                |
|--|---|----------------|
| On-line revenue                          |   | 73,30%         |
| Off-line revenue                         |   | 26,70%         |
| <b>Revenues</b>                          |   | <b>100,00%</b> |
| Purchases                                |   | 46,21%         |
| Variation in stock                       |   | 3,99%          |
| <b>COGS</b>                              |   | <b>50,20%</b>  |
| <b>Contribution margin I</b>             | Revenues - COGS                                       | <b>49,80%</b>  |
| Packaging                                |   | 0,66%          |
| Transports on purchases                  |   | 0,79%          |
| Transports on sales                      |   | 10,45%         |
| <b>External Costs</b>                    |   | <b>11,90%</b>  |
| <b>Contribution margin II</b>            | Contribution Margin I - External Costs                | <b>37,90%</b>  |
| Staff costs                              |   | 14,19%         |
| Property                                 |   | 3,11%          |
| Advertising                              |   | 4,33%          |
| Rental                                   |   | 0,75%          |
| Insurances                               |   | 0,61%          |
| Other operating charges                  |   | 7,55%          |
| <b>Operating charges</b>                 |   | <b>30,54%</b>  |
| <b>Gross operating profit</b>            | Contribution Margin II - Operating charges            | <b>7,36%</b>   |
| Depreciations                            |   | 1,66%          |
| <b>Operating profits</b>                 | Gross operating profit - Depreciation                 | <b>5,69%</b>   |
| Bank charges                             |   | 1,73%          |
| Interest expense                         |   | 0,14%          |
| Non-characteristic management            |   | -1,68%         |
| <b>Non operating income and expenses</b> |   | <b>0,19%</b>   |
| <b>Net Income before taxes</b>           | Operating profits - Non operating income and expenses | <b>5,51%</b>   |
| Income tax expenses                      |   | 1,93%          |
| <b>Net Income</b>                        | Net Income before taxes - Taxes                       | <b>3,58%</b>   |

Source – own elaboration

The percentages next to each account represent the incidence of costs on sales revenue (*cost incurred/sales revenue*) in 2021. The sales entries are distinguished in Revenues online and offline. A part of the company's revenues, in fact, precisely 27%, derives from the sale of products that takes place through direct contact with customers, who use the e-commerce site as a point of first contact but make offline orders. However, online sales with 73% represent the main source of income and have an increasing trend over time. Transportation on sales accounts for 10,4% compared to 0.8% transportation on purchases. Advertising weighs a 4,3 % on revenues and personnel costs a 14,16%. As mentioned earlier, these are the key costs of the company. Another interesting data is the cost of packaging, that shows an increasing incidence on the turnover in the 2021 respect to 2020, that registered a value of 0,3%. Surely the need to invest in packaging for an e-commerce is different from that of an offline store. For a company that operates on the web it is important to ensure an intact and aesthetically beautiful package aimed at increasing brand awareness. Lashmania, in the last year, improved the packaging investing in it.

#### 4.4. FINANCIAL STATEMENT ANALYSIS

The construction of the balance sheet (see figure 4.3) follows the financial criterion which, by definition, distinguishes current values (payable and receivable within 12 months) from non-current values (payable and receivable beyond 12 months). The decision to use this criterion rather than functional one is that the company does not have a particularly relevant financial area. The analysis favours demonstrating the firm's ability to meet its commitments in the short term rather than verifying the balance between investments and sources of financing.

Figure 4.3- Lashmania Reclassified Balance Sheet

| <i>ASSETS</i>                     |  | <i>LIABILITIES</i>                              |  |
|-----------------------------------|--|---|--|
| <i>Non Current Assets</i>         |  | <i>Net Capital</i>                              |  |
| Fixed tangible assets             |  | Share Capital                                   |  |
| <b>Tot. Non Current Assets</b>    |  | Reserves  |  |
| <i>Current Assets</i>             |  | Retained profits                                |  |
| Credits                           |  | Operating profits                               |  |
| Inventories                       |  | <b>Tot. Net Capital</b>                         |  |
| <b>Tot. Trade Working Capital</b> |  | <i>Non Current liabilities</i>                  |  |
| Other credits                     |  | Risk and Charges provision                      |  |
| Liquid Funds                      |  | Amounts due to banks after one year             |  |
| Active accruals and Prepayments   |  | Amounts due to other financial institutions     |  |
| <b>Tot. Current Activities</b>    |  | <b>Tot. Non Current Liabilities</b>             |  |
| <b>Tot. Current Assets</b>        |  | <i>Current liabilities</i>                      |  |
| <b>Tot. Assets</b>                |  | Amounts due to banks within one year            |  |
|                                   |  | Payables  |  |
|                                   |  | Other payables                                  |  |
|                                   |  | Amounts payable to tax authorities              |  |
|                                   |  | Amounts payable to social security institutions |  |
|                                   |  | Passive Accruals and Prepayments                |  |
|                                   |  | <b>Tot. Current Liabilities</b>                 |  |
|                                   |  | <b>Tot. Third-party capital</b>                 |  |
|                                   |  | <b>Tot. Liabilities</b>                         |  |

Source – own elaboration

The analysis of a company's financial statements is based primarily on the identification of certain indices which make it possible to represent the financial and economic performance of the company. Once the cost structure has been analysed and the financial statements have been reclassified, the calculation of the ratios makes it possible to assess the current situation of the firm and to investigate its profitability and soundness (see table 4.1).

**Table 4.1** - Financial Statement Ratios

| Ratios                        | 2020   | 2021  |
|-------------------------------|--------|-------|
| Elasticity of current asset   | 0,92   | 0,79  |
| Rigidity of non-current asset | 0,08   | 0,21  |
| Index of financial autonomy   | 0,48   | 0,52  |
| Index of financial dependence | 0,52   | 0,48  |
| Leverage                      | 2,10   | 1,92  |
| Fixed assets coverage ratio   | 5,96   | 2,50  |
| Current ratio                 | 2,24   | 2,48  |
| Quick ratio                   | 1,00   | 1,40  |
| ROT                           | 1,77   | 1,93  |
| Asset turnover ratio          | 1,92   | 2,44  |
| Inventory turnover ratio      | 3,47   | 5,62  |
| Days sales in inventory ratio | 105,22 | 65,00 |
| Duration trade receivables    | 1,71   | 3,40  |

|                      |       |       |
|----------------------|-------|-------|
| Duration trade debts | 13,47 | 16,09 |
| ROE                  | 53%   | 13%   |
| ROI                  | 38%   | 11%   |
| ROS                  | 22%   | 6%    |
| TIGEX                | 65%   | 63%   |

**Source** – own elaboration

Lashmania is a particularly elastic company, with a current asset higher than long-term assets. With respect to financial autonomy, it has an improving data that shows the growth of the company. Leverage is also promising. This index shows how the company manages to finance its investments and in particular whether it is predominantly equity capital or third party capital. Lashmania with a declining value of 1,92 has a good ratio of equity and debt. The fixed assets coverage ratio is still a positive indicator, but to be kept under control as it is decreasing. Analysing the current ratio and the quick ratio, the data that emerge are satisfactory and improving. The company manages to meet its short-term debts by using its short-term liquidity. The ROT, on the other hand, expresses the degree of plant utilization and the company's dynamism on the market, i.e. it tells the company the number of times the invested capital returns in the form of sales in an administrative year. Lashmania presents an increasing figure of 1,93 in 2021, i.e., the invested capital returns in the form of sales 1,93 times over the course of a year (approximately every 6 months). The inventory turnover ratio has increased

and the days sales in inventory ratio has decreased, this is a very positive data for an e-commerce company where the stock must be minimal. Up to here the situation shows an improvement, however moving the attention on the profitability indexes, aimed at measuring the ability of the different management areas to generate a certain return on the capital invested in the company, the situation is getting worse. The ROE drops to 13%, indicating a lower capacity of the company to remunerate the entrepreneur. ROI from a 38% in 2020 drops to an 11% in 2021, while ROS drops to 6%. This last figure, which is very important for the company, shows that only a small part of revenues is still available after covering all the costs inherent to the characteristic management. This situation is mainly due to an internal organizational strengthening in human resources, in view of a strong growth in volumes for the year 2022, and to the costs for the lease of a show room linked to a new business unit (*Beauty Benefit*) born in the lap of Lashmania but which will then have its own legal autonomy.

#### 4.5. PROFITABILITY ANALYSIS

Before beginning with the profitability analysis, it is necessary to make the following premise. The data analysed refer to two very particular years, 2020 and 2021, because marked by the Covid-19 pandemic. The data collected and the considerations developed are therefore significantly influenced by an unstable

economy and an uncertain market. In fact, unlike other e-commerce companies that have benefited from the pandemic, Lashmania has been penalized as engaged in the b2b sector of beauty salons. It is therefore important to remember that the results obtained may be subjected to considerable changes in a different context. However, it is good to keep in mind that this historic moment is not a phase of transition, but a radical change for the Italian and world economy. The results, therefore, should not be treated superficially but as a starting point for the company.

#### 4.5.1. **Sales and a first-level margin analysis**

The financial statement takes a picture of the company and determines its value on the market. In the case of Lashmania, the reclassification and calculation of indexes suggest the growth of the company and its solidity, but a decrease in profitability. However, these two elements alone do not lead to any kind of strategic decision for an e-commerce company with a large number of products and customers. As the company grows and expands, it becomes increasingly necessary to understand its true profitability. For this reason, a sales analysis was first conducted to understand the relationship between sales-products and sales-customers. Subsequently, a first contribution margin (CM) was calculated,

allowing an initial identification of the most profitable products/customers, that is, with the highest margin.

This analysis was made possible by cross-referencing two databases. The first, provided by the software house, includes all sales documents for the biennium 2020-2021 and the following data:

- month and date of the document;
- name, country, province, and region of the buyer;
- code, description and price of the item sold.

The second, constructed with the company, representing the standard cost for each product sold during the 2020 and 2021. The standard cost was determined by the creation of a query that extrapolated all purchase costs from the company's price list. Crossing the two databases it was possible to calculate a first CM, i.e. the difference between turnover (*sales price\*quantity sold*) and cost (*standard cost\*quantity sold*), for products and customers. Thanks to these data, a lot of new information has become available. Below, it is desired to report the results obtained and the main considerations made, but first some points need to be clarified:

- The database contains two types of orders, offline and online. The analysis focuses on the latter;

- The lines of the sales document show the description of the item sold and the discounts. This latter, not being revenue component, has been managed in the database by creating a different line called "*Article Manual*". They are not considered in the analysis;
- Sales also include "*KITS*", created specifically to describe the sale of multiple items in a commercial combination of products;
- CM per customer is net of discounts, while CM per item is not. The latter is therefore to be considered overestimated as the analysis does not consider the discounts applied;
- Sales are analysed by *family*, *subfamily* (components of each family), and *group*<sup>34</sup> (components of each subfamily, with the purpose of detecting product usability) (see the figure 4.4).

---

<sup>34</sup> Not relevant for the analysis as present only in some limited cases.

**Figure 4.4** – Families and subfamilies of Lashmania products

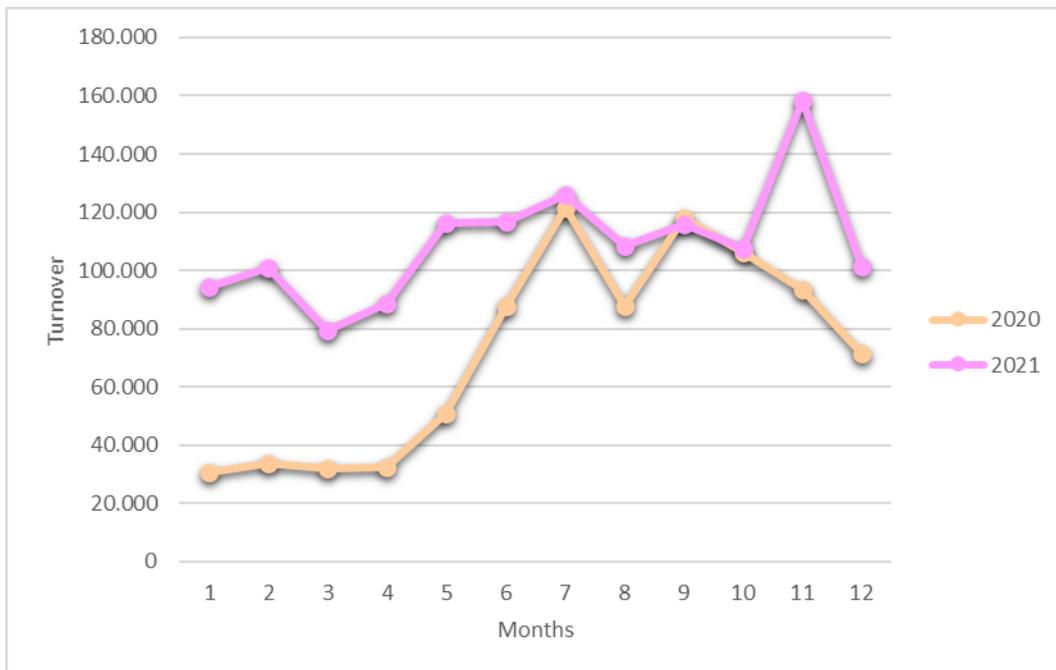
| BEAUTY   | EYEBROWS  |
|--|---|
| Body<br>Cosmetics<br>Eyelashes Care<br>Make up<br>Face masks<br>Peeling  | Accessories<br>Henne<br>Kit<br>Lamination<br>Make up<br>Tint<br>Marketing   |
| NAILS  | EYELASHES   |
| Accessories<br>Based and Top<br>Hand Cream<br>Decorations<br>Gel Nails Colors<br>Gel and Acrigel<br>Nail Files<br>Fluids and Preparatic<br>Oil and Nutrients<br>Brushes<br>Semi-permanent nail<br>polishes | Accessories<br>Glue extensions eyelashes<br>Extensions eyelashes<br>Kit extension eyelashes<br>Lamination<br>Outfit<br>Outlet<br>Pliers<br>Product extension eyelashes<br>Scotch & Patch<br>Marketing |

Source – own elaboration

### **Turnover per month**

A first data of interest is the trend of the monthly turnover of the firm in the two years considered (see figure 4.5).

**Figure 4.5-** Monthly turnover trend



**Source** – own elaboration

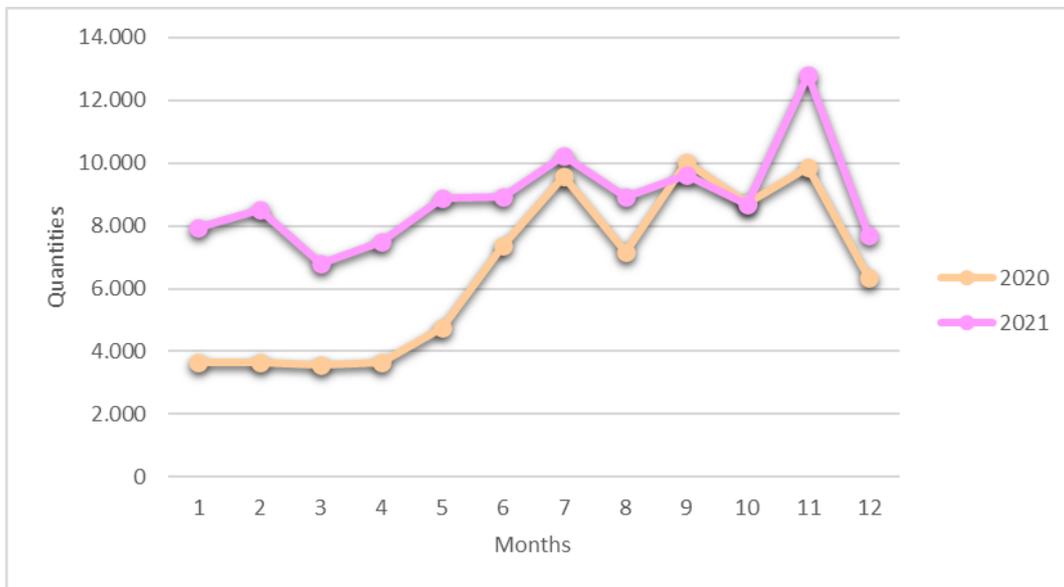
The chart shows a homogenous course in the biennium. This is certainly due to the fact that the business in question follows a seasonal pattern; for example, the drop in sales in August may be due to the closure of many beauty salons for summer holidays. However, a discordance is noted in two months. In the first case, an unattractive result was recorded in the month of September 2021. In fact, considering the previous year, the turnover should have grown. This figure could be attributable to the presence of a hacker who, precisely in September, attacked Facebook, the social channel most used by the company and with the highest number of investments. This could have caused the static sales, confirming the

great incidence of this social media. In the second case, instead, the chart shows a clear difference between November 2020 and 2021. At first, one might expect a decline in sales in the year 2020 due to the arrival of the third wave of Covid-19 that forced businesses to close. However, investigating in more detail, it is possible to notice an increase in the quantity sold but a decrease in the average selling price, especially for beauty products and eyelash extensions. Probably a misguided promotion, which was certainly not repeated a year later.

### **Quantity per month**

Even analysing the quantities sold of the various product families, it is possible to see a similar trend between the two years (see Figure 4.6). The graph shows an increase in the summer months of June and July, which is understandable in this type of business, and a significant positive peak in November. This last value can be traced back to the period before Christmas, where beauty salons begin to buy gifts for their customers, but also to special discounts applied in this month. In fact, by crossing the price of the same item for different times, it is noted that in November the selling price of some products undergoes a reduction and increases the quantity sold. In August, however, a lower quantity sold reflects the closure of many beauty salons and the summer vacations of clients.

**Figure 4.6** - Quantity sold per month

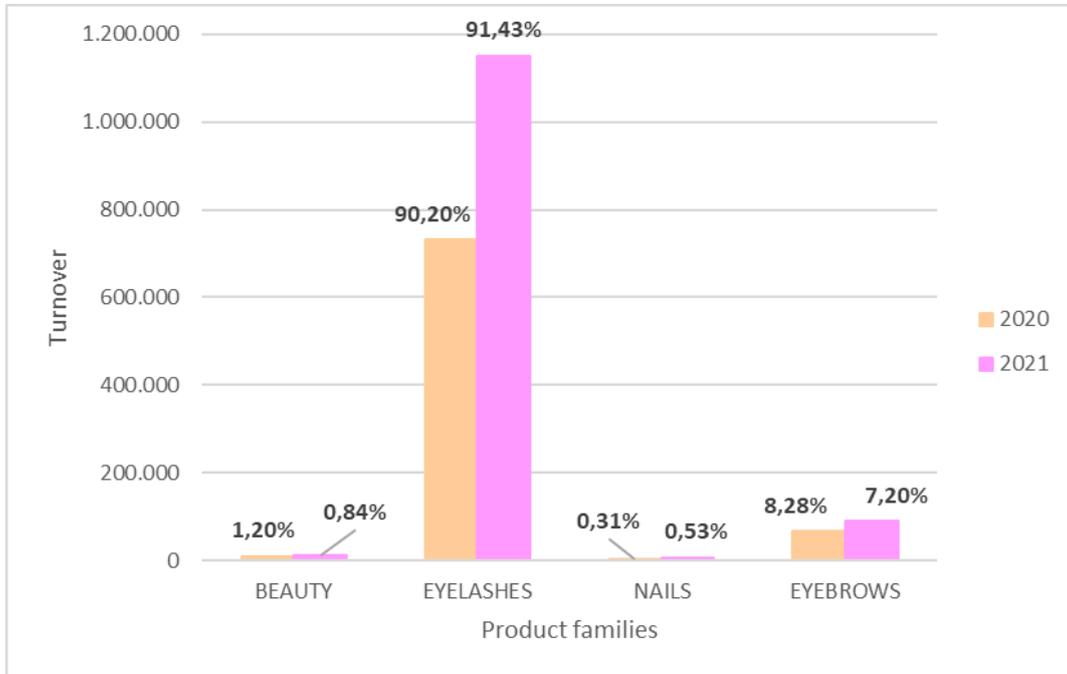


**Source** – own elaboration

### **Analysis by products**

Product sales analysis confirms Lashmania's core business. In fact, as the chart shows (see figure 4.7), the eyelashes family dominates the company's turnover with a 91,43% in 2021. The beauty and nails families, on the contrary, represent a very small portion of the turnover: together they weigh for 1,37%, a lower value than in 2020. Apparently these two categories would not seem to be essential for the company. However, these data do not allow to understand the real profitability of the products, so a margin analysis is necessary.

**Figure 4.7 - Sales by product**



**Source** – own elaboration

Conducting a margin analysis, it is immediately possible to see that all 4 product categories are very profitable for the company (see table 4.2). The beauty family represents the most profitable family, with a 63,64% of CM, followed by nails with a 56,86% and eyebrows with a 54,33%. Last, there are extensions with a minimal difference, also considering the most significant costs incurred.

**Table 4.2** - Product families contribution margin

|                     | <b>Turnover</b>  | <b>Cost</b>    | <b>Margin</b>  | <b>Margin%</b> |
|---------------------|------------------|----------------|----------------|----------------|
| <b>BEAUTY</b>       | 9.978            | 3.571          | 6.350          | 63,64%         |
| <b>NAILS</b>        | 6.441            | 2.770          | 3.662          | 56,86%         |
| <b>EYEBROW</b>      | 84.884           | 38.631         | 46.121         | 54,33%         |
| <b>EYELASHES</b>    | 1.074.004        | 492.072        | 580.789        | 54,08%         |
| <b>Total amount</b> | <b>1.175.308</b> | <b>537.044</b> | <b>636.923</b> | <b>54,19%</b>  |

**Source** – own elaboration

By unpacking each family into a sub-family, it can be observed that no category of product falls below 37%, which still represents a good percentage (see table 4.3).

**Table 4.3** - Product sub-families contribution margin

|                                     | <b>Turnover</b> | <b>Cost</b> | <b>Margin</b> | <b>Margin%</b> |
|-------------------------------------|-----------------|-------------|---------------|----------------|
| <b>MARKETING</b>                    | 3.922,46        | 588         | 3.316         | <b>84,54%</b>  |
| <b>MAKE UP</b>                      | 145,35          | 31          | 114           | <b>78,57%</b>  |
| <b>LAMINATION</b>                   | 549,97          | 169         | 381           | <b>69,36%</b>  |
| <b>TINT</b>                         | 14.939,20       | 4.945       | 9.994         | <b>66,90%</b>  |
| <b>GEL NAILS POLISHES</b>           | 2.684,04        | 916         | 1.768         | <b>65,87%</b>  |
| <b>MASKS</b>                        | 1.300,77        | 404         | 846           | <b>65,07%</b>  |
| <b>EYELASHES CARE</b>               | 7.189,61        | 2.553       | 4.637         | <b>64,49%</b>  |
| <b>MAKE-UP EYEBROWS</b>             | 4.465,65        | 1.607       | 2.859         | <b>64,01%</b>  |
| <b>SCOTCH &amp; PATCH EYELASHES</b> | 36.580,86       | 13.298      | 23.283        | <b>63,65%</b>  |
| <b>KIT EXTENSION</b>                | 12.335,86       | 4.487       | 7.848         | <b>63,62%</b>  |

|                                 |                     |                |                |               |
|---------------------------------|---------------------|----------------|----------------|---------------|
| <b>NAIL FILES</b>               | 263,93              | 98             | 166            | <b>62,72%</b> |
| <b>EXTENSIONS PRODUCT</b>       | 76.270,83           | 28.338         | 47.542         | <b>62,33%</b> |
| <b>ACCESSORIES</b>              | 72.818,48           | 28.804         | 43.604         | <b>59,88%</b> |
| <b>OILS AND NUTRIENTS</b>       | 548,39              | 222            | 326            | <b>59,44%</b> |
| <b>OUTFIT</b>                   | 7.871,70            | 3.071          | 4.654          | <b>59,12%</b> |
| <b>PLIERS</b>                   | 45.314,45           | 18.597         | 26.580         | <b>58,66%</b> |
| <b>BODY</b>                     | 654,72              | 281            | 373            | <b>57,03%</b> |
| <b>COSMETICS</b>                | 472,19              | 201            | 264            | <b>55,99%</b> |
| <b>GLUE EXTENSION</b>           | 197.223,52          | 87.796         | 109.428        | <b>55,48%</b> |
| <b>EXTENSION EYELASHES</b>      | 493.007,56          | 228.095        | 264.912        | <b>53,73%</b> |
| <b>PEELING</b>                  | 215,43              | 100            | 115            | <b>53,46%</b> |
| <b>COLORFUL GEL</b>             | 251,66              | 118            | 134            | <b>53,12%</b> |
| <b>BASED AND TOP</b>            | 1.017,24            | 496            | 521            | <b>51,21%</b> |
| <b>OUTLET</b>                   | 8.686,93            | 4.280          | 4.384          | <b>50,47%</b> |
| <b>HAND CREAMS</b>              | 244,25              | 121            | 123            | <b>50,28%</b> |
| <b>BRUSHES</b>                  | 61,45               | 31             | 31             | <b>49,83%</b> |
| <b>HENNE</b>                    | 48.280,20           | 24.387         | 23.893         | <b>49,49%</b> |
| <b>LIQUIDS AND PREPARATIONS</b> | 490,07              | 260            | 230            | <b>46,95%</b> |
| <b>DECORATIONS</b>              | 257,21              | 137            | 119            | <b>46,45%</b> |
| <b>KIT</b>                      | 7.467,98            | 4.013          | 3.342          | <b>44,75%</b> |
| <b>LAMINATION CIGLIA</b>        | 129.017,06          | 78.147         | 50.826         | <b>39,39%</b> |
| <b>GEL AND ACRIGEL</b>          | 489,77              | 308            | 182            | <b>37,17%</b> |
| <b>Total amount</b>             | <b>1.175.038,79</b> | <b>536.902</b> | <b>636.797</b> | <b>54,19%</b> |

Source – own elaboration

However, for a multi-product distribution company like Lashmania, these data do not allow any strategic choices, because they are not very specific. For this reason,

it is interesting to go into detail on each item and evaluate their profitability as individual components of the sales mix. The sub-family with the highest margin is represented by "*Marketing*<sup>35</sup>", i.e., all those materials to sponsor eyelashes products such as flyers, or to decorate shops like posters or to build customer loyalty, for example appointment cards. This data is very important as it makes the company realize the need to provide information tools of various types. Opening the subfamily, it is possible to see that all articles have a fairly good margin. Posters have the highest margins, around 92%, followed by technical sheets and information flyers. Interesting is the analysis of the article "*Appointment Cards*" which shows a customer preference for personalized cards with writing or a mix of colours, rather than single colour cards. Moreover, the turnover shows a customer preference for 10-piece size cards and the CM confirms their convenience. In fact, 100-piece cards have a CM of 57%, which is below the average. This is due to a fairly high selling price.

In addition, there are some products that present a negative or very low CM value in percentage terms. Among the "accessories" sub-family of the eyebrow family, two products in particular stand out (see table 4.4).

---

<sup>35</sup> This sub-family mainly concerns the products related to the eyelash family, but also contains various accessories such as bags and key rings. However, for simplicity the company preferred to consider them all in one subfamily.

**Table 4.4** – Articles with a negative CM

| <b>Accessories - Eyebrow</b>             | <b>Turnover</b> | <b>Cost</b> | <b>CM</b> | <b>CM%</b> |
|--|-----------------|-------------|-----------|------------|
| <b>WIRE FOR EYEBROW MAPPING</b>          | 172             | 200         | -27       | -15,71%    |
| <b>PLASTICIZED EYEBROW MAPPING RULER</b> | 275             | 353         | -78       | -28,34%    |

**Source** – own elaboration

During 2021, 57 units of the first product were sold at an average price of EUR 3, compared with 26 units of the second at around EUR 10 each. For the first product, the average sales price should increase by more than 0,60 cents in order to deal with an average cost of EUR 200 and obtain a minimum marginality. For the second one, instead, it is a product, which, even in terms of quantities sold, is not very successful. Moreover, a second variant is present in the product catalogue, that is, the ruler for eyebrow mapping of the *henna* line. This article has a CM of 32,31% on a turnover of EUR 255 and a purchase cost of EUR 172. It is therefore suggested to the company to focus primarily on the sale of this product and eliminate its unprofitable variant.

The analysis leads to the assertion, once again, that products with a higher turnover do not always produce more margin, as they are subject to the effect of purchase costs.

## **Analysis by clients**

The analysis was also conducted on a client-by-client basis, with the intention of gaining initial insight into profitable and unprofitable customers.

Given a database of 6007 customers who made at least one online purchase over the course of 2021, it is possible to identify a very dispersed turnover. This is normal for an e-commerce business where there are the so-called "*walk-in customers*" who buy sporadically and try various products from different competitors on the market. Customers with a higher turnover represent about 0.80% of the total value, a very small percentage for a niche B2B business that should focus on the retention of its customers. In this regard, an analysis was conducted over the biennium 2020-2021 to understand the company's customer retention rate (CRR), i.e., the company's ability to retain customers over time. The CRR is calculated through the following formula<sup>36</sup> (Busacca G., 1998):

$$\text{CRR} = \frac{(\text{No. of customers at the end of the period considered} - \text{No. of customers acquired during that period})}{\text{No. of customers at the beginning of the period}}$$

The company data are:

*Customers present at the beginning of the 2020 = 4545*

*Customers acquired during the 2021 = 3957*

*Customers at the end of the 2021 = 6007*

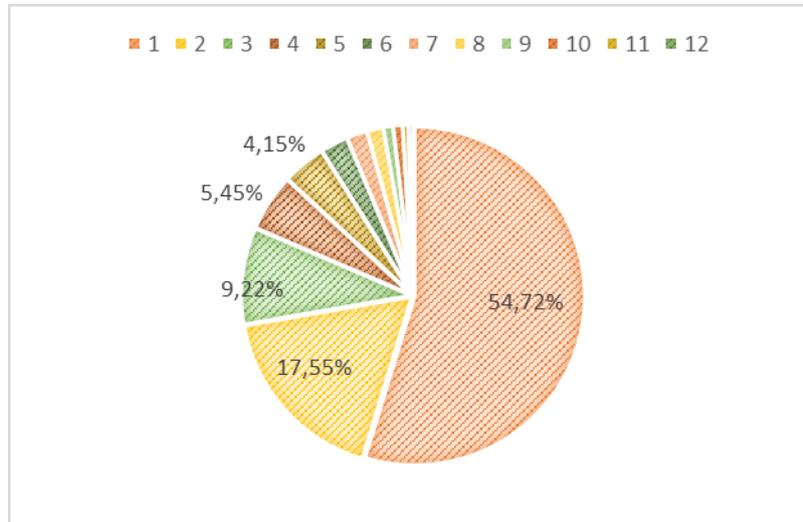
---

<sup>36</sup> <https://www.insidemarketing.it/glossario/definizione/customer-retention/>

$$\text{Lashmania CRR} = \frac{(6007-3957)}{4545} = 45,10\%$$

The result obtained is not at all satisfactory. Just under half of initial customers made a new purchase from one year to year. This value explains a low capacity of the company to retain customers, but a great ability to acquire new ones. However, considering the company's ultimate goal of creating a community that can help the development of this business, looking at the sector it enters and the B2B market it serves, customer retention should become a key step. The 2021 data about customer purchases (see Figure 4.8) shows that out of 6007 customers, 54,72% made a single purchase in a year, with an average value of EUR 65, 17,55% placed 2 orders over a year of EUR 70, 9,22% three and so on. While only 25 customers purchased once a month, goods for an average value of EUR 192 per order (). Therefore, the higher the frequency of purchase, the higher the average value of the order. These data confirm the importance of a high CRR for the health of the company and the necessity to introduce some marketing strategies to increase loyalty.

**Figure 4.8** – Customers purchases in 2021



**Source** – own elaboration

Conducting a margin analysis, it can be confirmed that, again, customers who generate more revenues for the company have lower percentage margins. However, there are no customers with negative margins. Ordering the obtained results for decreasing order it can be noticed that the customers with high margins have made minimal purchases at low cost for the company. For example, *Customer I*<sup>37</sup> has a CM of 94% and purchased only one product in May 2021. A cross-analysis shows that all of the top 60 high CM customers placed maximum two orders during the year, with an average turnover of EUR 70. The CM is definitely a good data, however these customers are not a source of ongoing

---

<sup>37</sup> For privacy reasons, customer names are not revealed but replaced by numbers or letters.

revenue for the company. *Customer61*, on the other hand, represents a very good buyer (see table 4.5). With a CM of 76,62%, this client placed 11 orders during 2021 of an average amount of EUR 166. In addition, the fact that he took advantage of several discounts means that he follows the company constantly on the website or social media.

**Table 4.5 – Customer61**

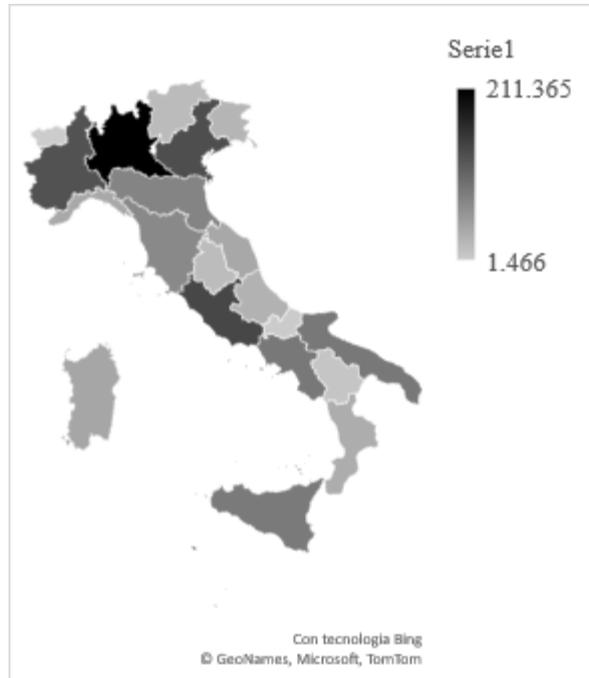
| <b>CUSTOMER61</b>                                     | <b>Turnover</b> | <b>Cost</b>  | <b>Margin</b> | <b>Margin%</b> |
|---|-----------------|--------------|---------------|----------------|
| <b>EYELASHES</b>                                      | <b>1.326</b>    | <b>310,0</b> | <b>1.016</b>  | <b>76,62%</b>  |
| ACCESSORIES   | 0               | 1            | -1            | -              |
| LASH BRUSH - GIFT                                     | 0               | 1            | -1            | -              |
| GLUE EXTENSION<br>EYELASHES                           | 31              | 15           | 16            | 51,72%         |
| TROPICAL GLUE<br>NANOTECHNOLOGY FOR<br>SENSITIVE EYES | 31              | 15           | 16            | 51,72%         |
| EXTENSION EYELASHES                                   | 1.289           | 292          | 996           | 77,32%         |
| 5D FANS READY 0.10 CURVE D<br>11 MM                   | 391             | 89           | 303           | 77,32%         |
| 5D FANS READY 0,10 CURVE D                            | 555             | 126          | 429           | 77,32%         |

|   |              |            |              |               |
|---|--------------|------------|--------------|---------------|
| 12 MM   |              |            |              |               |
| 5D FANS READY I 0,10 CURVE<br>D 13 MM               | 343          | 78         | 265          | 77,32%        |
| SCOTCH & PATCH                                      | 6            | 1          | 5            | 79,08%        |
| SCOTCH SILICONE LIFTING<br>EXTENSION EYELASHES 1 PZ | 6            | 1          | 5            | 79,08%        |
| EYEBROW   | 0            | 0          | 0            | -             |
| HENNE   | 0            | 0          | 0            | -             |
| PEELING EYEBROW FEMME<br>FELINE SACHET 3 ML IN GIFT | 0            | 0          | 0            | -             |
| <b>Total amount</b>                                 | <b>1.326</b> | <b>310</b> | <b>1.016</b> | <b>76,62%</b> |

Source – own elaboration

At last, clustering the customers in base to their region and province, the information turns out to be much interesting (see figure 4.9). Lashmania sells mainly in Italy and the turnover is quite dispersed. However, as it can be imagined, larger regions such as Lombardia and Lazio account for most of the turnover, while smaller regions such as Valle d'Aosta and Molise account just for 0,15%. In this case, the profitability of the regions is homogeneous and no region falls below 50%.

**Figure 4.9** - Margin analysis for region



**Source** – own elaboration

#### 4.5.2. **A second-level margin analysis with ABC system**

The analysis of the first CM is a good starting point to calculate the profitability of the company. However, this data provides incomplete cost information for Lashmania. According to the literature, as already extensively discussed in chapter 3, an ABC system is able to provide more accurate cost information than a traditional costing system and usually in e-commerce companies the customer is considered the main cost object to which costs and revenues are assigned. The customer is also the main cost object with which marginality analyses are

conducted. However, in the Lashmania case, this latter aspect would not have produced any useful results. In fact, analysing the main activities carried out within the company these did not have the customer as the main driver, but the order. This latter, in fact, represents, to all effects, the reason why the company gets going. Its arrival unleashes a value chain not only physical but also virtual. Therefore, it was decided to readjust the theoretical model presented by Roztocky on the basis of a new cost object: **the order fulfilment process**. The attention of the MA shifts from the product or customer to the activities that constitute the process of order fulfilment. As explained in chapter 2, the ABC system is a suitable costing system to identify the actual cost to be incurred by identifying the necessary activities.

Based on the methodology presented in the previous chapter, the following analysis is aimed at the construction of an ABC system with the aim of calculating the actual cost of fulfilment of the order and the consequent profitability of the customer. The aim is to demonstrate that an e-commerce company, using as cost object the product and as calculation method a traditional cost system, loses more information on costs. Adapting to the case study and reshaping on the basis of Lashmania necessities, the main steps identified by Roztocky will be retraced.

- **Establish Objectives and Requirements of the ABC System**

The main objective of the ABC cost system implemented below is to calculate the actual cost of processing an order to determine the real profitability of customers.

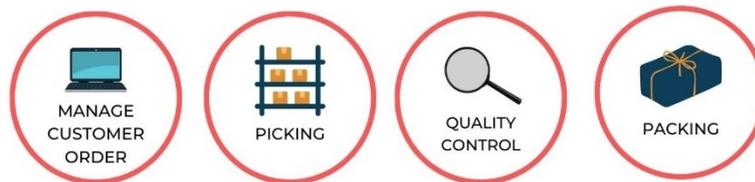
Therefore, the cost object is the order and the expense category identified they are the following ones:

- Administration;
- Customer Care;
- Pc Maintenance;
- Product Shipment;
- Product Packaging.

- **Identify the Main Activities**

The second phase regards the identification of the main activities that compose the process of fulfilment of the order. After a careful reflection, also according to the available data and to the dynamics of the company, it was decided to identify the following 4 activities as the main ones (see figure 4.10):

**Figure 4.10** - Lashmania's key activities



**Source** – own elaboration

*Manage Customer Order (MCO)*: This is the activity that starts the order fulfillment process. The order, in fact, arrives on the company's management software and must be confirmed by the resource in charge. Once the client's address and postal code have been checked, the order goes into processing status and is connected directly with the OIS of the logistics company on which Lashmania relies. At this point, the label to be put on the package and a copy of the order can be printed. These two elements are placed in a tray.

*Picking*: The employee searching for products on the shelves takes the tray complete with the order copy and labeling and goes to the warehouse for picking. The company has two warehouses, a larger one for the most frequently used products and a smaller one for bigger and less frequently purchased products. Once the order is completed, the resource checks that there is a correspondence between the addresses on the labels and those on the order copy. Finally, the tray is placed to one side.

*Quality Control (QC):* Between the research of products and their packaging, there is a control activity. This involves checking that the contents of the tray match the lines on the sales document and no products have been forgotten. In addition, at this stage those products that may be defective and then sent back by customers, such as tweezers to take eyelashes or eyebrows, are checked. The activity deals with testing the product.

*Packing:* The fourth activity is packing. It is very important for an e-commerce company, especially in an industry like this, to create an aesthetically beautiful package. Lashmania invests in this aspect and spends about EUR 1,40 per package. There are 5 types of boxes that are different in size and colour, which are assembled at the beginning of the working day. Each box is then decorated with tissue paper and a personalized card to increase the value of the package. More fragile products are protected by a plastic covering to avoid damage. Stickers, on the other hand, are affixed to gifts to inform customers. When the order is too large for the envelopes provided by the courier, a plastic ribbon and personalized Lashmania tape is used. Finally, each package is placed on the cart for withdrawal.

- **Expense-Activity-Dependence (EAD) Matrix**

In the Lashmania case, the EAD matrix was used as a visualization tool to understand the link between expense categories and activities. The ultimate objective in fact is not to review all the general indirect costs of the company but to calculate a cost of the order given the identified activities. Within the matrix were placed "X" in correspondence of a link between expenses and activities (see table 4.6).

**Table 4.6** - Expense-Activity-Dependence (EAD) Matrix

|            |         | Expense Categories |               |                |                  |                 |
|------------|---------|--------------------|---------------|----------------|------------------|-----------------|
|            |         | Administration     | Customer care | Pc maintenance | Product shipment | Product packing |
| Activities | MCO     | X                  | X             | X              |                  |                 |
|            | Picking |                    | X             |                | X                |                 |
|            | QC      |                    |               |                | X                |                 |
|            | Packing |                    |               |                |                  | X               |

Source – own elaboration

The matrix shows that MCO activity weighs on 3 different categories of expenditures:

- Administration, to be distinguished from the accounting department, which takes care of this phase;
- Customer care, because if the resource in charge of confirming orders needs information on customers, which cannot be found easily on the company's OIS, the customer care help is required;
- Pc maintainance, for computers, software and telephones that are used to complete the activity. However, this last category of expense turns out to be of little value to the company. As the cost structure showed, in fact, the costs of technology are not so relevant. For this reason, it will not be considered in the next steps.

Also the activity of picking weighs on two different category of expense: customer care and product shipment. In fact, the resource assigned to customer care can find itself helping the picking activity to answer to doubts about possible promotions. Quality control and packing, on the other hand, refer respectively to product shipments and product packing.

- **Activity-Product-Dependence (APD) Matrix**

The activities highlighted are linked to the expense categories through the cost of human resources. For this reason, after monitoring the activity times and estimating the hourly cost of each employee at the various stages, the cost of the

activity per minute was calculated. Picking was weighted according to the number of articles into the order because the time spent searching for products is closely correlated to the number of pieces. The MCO, QC and Packing activities, on the other hand, are the result of an average of the times collected. Then, the table below shows the hourly cost of each activity carried out to fulfill a single order.(see table 4.7).

**Table 4.7** - Activity-Product-Dependence (APD) Matrix

|                    | <b>Activities</b> |         |      |         |                   |
|--------------------|-------------------|---------|------|---------|-------------------|
| <b>Cost Object</b> | MCO               | Picking | QC   | Packing | <b>Total Cost</b> |
| <b>Order</b>       | 0,60              | 0,20    | 0,20 | 0,55    | <b>1,55</b>       |

Source – own elaboration

- **Calculate the total Order fulfilment cost**

Once calculated the ABC cost relative to the activities that compose the process of fulfilment of an order, it is the turn of the shipping and packaging expenses. The logistic activity, in fact, is not of competence of the company, which relies on a logistic company for the withdrawal and the delivery of packages. However, this expense, being charged to the company, goes to affect the cost of each order. Therefore, in order to calculate the shipping expenses per order, it has been divided the total transport costs, incurred by the company, by the number of the

evaded orders, obtaining an average cost of EUR 8,40. However, as it is possible to imagine, the company adopts pricing policies based on the value spent by the customer. In fact, for orders over EUR 99, shipping is free. This means that for those whose orders do not reach that amount, shipping costs do not affect the turnover and therefore are recovered by the company. The cost of packaging, that is all the components to create a package, was calculated through the formula *cost of packaging / n° of orders*, which returned an average cost per order around EUR 1,40 (see the table 4.8).

**Table 4.8** – Total Order Fulfilment Cost

| <b>Shipping Costs<br/>(SC)</b> | <b>Packaging Cost<br/>(PC)</b> | <b>ABC Costs</b> | <b>Total Order<br/>fulfilment Cost</b> |
|--------------------------------|--------------------------------|------------------|--|
| <b>8,4</b>                     | 1,4                            | 1,55             | <b>11,35</b>                           |

Source – own elaboration

- **Use the ABC Analysis for Strategic Decision-Making and Improvements**

The sixth phase concerns the analysis of the results obtained in order to guide the strategic choices of the company. To do this, the above costs were placed in a table on Access and crossed with a new query containing all the meaningful fields for a single order. By joining the two databases, it has been possible to associate

to every order its ABC cost, as well as the transport and packaging expenses. The table below shows the scheme elaborated on Excel (see table 4.9).

**Table 4.9** - Margin analysis

| <b>First CM</b>        | <b>Margin after expenses</b>             | <b>Margin after ABC</b>   |
|------------------------|--|---|
| <i>Turnover - Cogs</i> | <i>First CM - PC - SC +<br/>Recovery</i> | <i>Margin after expenses –<br/>(MCO + Picking*q-QC-Packing)</i> |

**Source** – own elaboration

The obtained results show that by associating the cost of order management to its respective customer, the profitability of these drops considerably. If in the previous analysis *customer1* had a margin of 94%, after ABC its profitability drops to 62,89%. *Customer61*, on the other hand, previously defined as a good buyer, shows a margin of 65%. These data demonstrate that, following the implementation of the ABC system, a high turnover does not correspond to a low margin and vice versa. Moreover, while in the previous analysis there were no customers with a negative margin, here it is possible to identify as many as 102 customers that represent a loss rather than a profit. Only 6,4% of clients, instead, have a profitability greater than 50% and none reach 70%. Therefore, it is clear that the accuracy of the ABC system helps an e-commerce company to calculate

the actual profitability of its customers and make strategic decisions about them. Having determined the range of customers with negative CM after ABC, the company's goal becomes to recover profitability by precisely working those customers who represent a loss.

Taking as example *CustomerA*, they present the following data (see table 4.10):

**Table 4.10** - CustomerA

|                     | <b>Total</b>      | <b>Per Order</b>   |
|---------------------|-------------------|--------------------|
| <b>N° of Orders</b> | 4                 | 1                  |
| <b>Turnover</b>     | 80,9016393        | 20,22540984        |
| <b>Cogs</b>         | 68,07             | 17,0175            |
| <b>First CM</b>     | 12,8316393        | 3,207909836        |
| <b>First CM%</b>    | 15,86%            | 15,86%             |
| <b>PC</b>           | 5,6               | 1,4                |
| <b>SC</b>           | 24,1              | 6,025              |
| <b>ABC</b>          | 11,6              | 2,9                |
| <b>CM after ABC</b> | <b>-28,468361</b> | <b>-7,11709016</b> |

Source – own elaboration

Although the first CM recorded a positive value, the costs of order management significantly reduce the customer's profitability making it negative. Currently, *CustomerA* costs Lashmania approximately EUR 7 per order. Therefore, the company must implement a series of pricing and marketing policies aimed at recovering customer profitability. By calculating the breakeven point (BEP) of the minimum order value given the CM or the CM given the average order, more precise considerations can be developed. Indeed, given the formula of the BEP ( $Fixed\ Cost/CM$ ) and considering PC, SC and ABC as fixed costs with reference to the order, for an equal CM the minimum average order that the *CustomerA* should make is equal to:

$$(1,4 + 6,025 + 2,9)/15,86\% = \mathbf{65,10}$$

In the 2021 the *CustomerA* made 4 orders of an average value of EUR 20,23, that have brought to a negative CM. Through this analysis it is possible to affirm that *CustomerA* to be profitable for Lashmania should do an order of a minimum value of EUR 65,10. The necessary increase in the average order is certainly very high. Lashmania could work on two fronts to achieve this goal:

- Changing the product mix;
- Changing the threshold of the minimum amount to make a purchase.

In the first case, since *CustomerA* is buying only low margin products, Lashmania should push the customer to buy those products with a higher margin, such as articles related to beauty or marketing. Through discounts, pop-up advertisements

and a targeted customer experience on the site, the company can influence purchasing choices. In this phase customer profiling becomes fundamental for the company as this information can be used to produce targeted marketing campaigns and online advertising. In the second case, instead, it is about raising the minimum threshold to place an order. This practice is very risky as it would cause many potential customers to give up on making the purchase, however alternative strategies can be put in place. For example, by granting a discount on reaching a certain amount with the aim of pushing the customer to spend a greater total.

Thanks to this system, the company is able to identify the range of customers on which to work to recover profitability. In this case the *CustomerA* represents a limit situation, but the company can also decide to focus on those customers with a low but positive CM with the intent to increase their profitability, so excluding customers with a negative margin.

Finally, to monitor the profitability of customers and calculate the intensity of absorption of activities by them, the company could introduce a new KPI: *the coefficient of absorption of activities*. This indicator takes into account gross and net margins, that is, the weight of activities and is calculated using the following formula: *Margin after ABC/First Margin*. The lower the ratio, the more intense the activity, that is to say, the client absorbs the costs of the activities. Those customers where this index is particularly negative, or at least close to 0, are

objects of attention and analysis by the company. The maximum value of the indicator is 1, although it does not represent an achievable number. Applying the KPI to *CustomerA*, the result of -2,21 shows that the customer has a very high absorption of the activities, that it reduces its profitability. A good client, on the other hand, shows a coefficient of 0,95 and a minimal reduction in profitability, in fact the first CM equals 52% and order management absorbs only 3%, reducing the CM after ABC to 49%. Its denomination allows the customer to be profiled as a beauty salon and, again, this information turns out to be crucial. In fact, this customer purchased products belonging to the eyelash and eyebrow family that are used for the processes of lamination and attachment of extensions and then purchased again. The customer placed only one order in October 2021, and it is on customers like this that the company should work, through targeted marketing policies, in order to retain them.

The ABC system allows, as already seen, a clearer and more accurate analysis to guide not only the company Lashmania in its strategic management but also all the parties that collaborate with it, such as the web agency which must base its marketing strategy on these results.

## CONCLUSIONS

The objective of this thesis work was to explore the peculiarities and the challenges of designing and implementing managerial accounting tools in companies that operate within an e-commerce environment. In order to achieve this aim, a theoretical and an empirical analysis, through a case study, have been carried out.

From a theoretical point of view, the literature analysis has led to the identification and examination of some of the main challenges that could arise when it comes to applying managerial accounting tools in e-commerce companies:

- Staff to line;
- Improved communication skills;
- Willingness to benchmark;
- Data to knowledge;
- Reactive to proactive;
- Total performance management (TPM).

The most important challenge is determined by what is defined as staff to line. This term means that managerial accountant goes from being a support figure for the business manager to an active partner of the company. Communication skills

need to be improved, as it is no longer a question of connecting only the various internal organisational levels but also the external stakeholders of the company. The third point concerns the challenge of willingness to benchmark, which defines the managerial accounting as a practice capable of contributing to the development of the company by studying the market of competitors. It is an important element for online companies that have to face a worldwide competition and therefore no longer only local. As far as data to knowledge is concerned, it is intuitive to understand that even more incisive becomes the role of managerial accounting to transform data into clear and readable information for the entrepreneurs. Reactive to proactive signals the need for a proactive and innovative mindset, which has to keep up with the changes dictated by the digital market. Finally, TPM, which is already present for offline companies, concerns the awareness that managerial accounting must have regarding the role that resources assume in the company.

Additional considerations also emerged from the literature. First of all, the adoption of an e-commerce has an impact on the cost structure of a company and, as a consequence, on its efficiency (Baršauskas, 2008). The main identifiable costs are technological, logistics, marketing and labour costs. This information is essential to build an efficient cost system. A second aspect concerns an interesting difference between companies operating online and offline, that is, the value chain. In e-commerce contexts the literature talks about a virtual value chain,

which consists of gathering, organizing, selecting, synthesizing, and distributing information. The physical chain, studied by Porter in 1985, is integrated with a new virtual chain driven by the flow of information. The latter no longer represents a support or a by-product of the activities, but the success of a business process. With the new concept of virtual value chain, the online enterprises do not bother to reach positive profits in the short term but try to increase the value of the enterprise in the medium-long term. Moreover, the literature analysis has shown that usually in e-commerce companies the customer is considered the main cost object to which costs and revenues are assigned. The customer is also the main cost object with which marginality analysis are conducted.

Concerning the empirical analysis, the thesis has explored the case of Lashmania, an Italian company that works in the field of beauty, more precisely in the sector of eyelashes and eyebrows care. In particular, a two-level margin analysis model has been implemented at the case company. Crossing the sales documents with the price list generated by the company containing all the standard purchase costs for each article sold, it was possible to calculate a first contribution margin, defined in the text as First CM. This was analyzed for families, sub-families and individual articles, as well as for customers and countries. Subsequently, the model developed an ABC costing system, focused on activities, and aimed at determining the profitability of the company's customers. The main steps regarded the identification of the cost object and the main activities carried out inside the

company with reference to it. Once traced, the activities were monitored by calculating the time spent by resources to carry them out. By multiplying the time spent by the hourly cost of the resource, the ABC cost per cost object was determined. The total cost per cost object was calculated by adding the previous result to the indirect costs identified. Finally, by inserting these costs within a query and cross-referencing it with the sales report provided by the software house, the second contribution margin per customer was determined.

The case study confirms what literature has already shown, but it also introduces some innovations. For example, with regard to the challenges that may arise when applying managerial accounting tools, the challenge of *data to knowledge* no longer refers to the mere transformation and communication of the data collected but presupposes that the managerial accountant is aware about the main issues relating to e-commerce and able to transfer the most technical information in a clear and readable way to those who must use it. In other words, the managerial accountant must know that behind a web page there is a huge amount of data to elaborate and, in a sense, he/she should become a kind of “digital partner” of the manager or entrepreneur. In this regard, the challenge of *reactive to proactive* becomes fundamental. The managerial accountant in an e-commerce context must not only know how to interpret data but also how to prepare them in the most appropriate way to facilitate a sound analysis. A proactive mind is therefore necessary in order to work with constantly changing data and information.

Finally, with reference to *staff to line*, the managerial accountant from active partner becomes a business and digital partner, that is, a figure involved at 360 degrees in the dynamics of the company and able to facilitate the connection with the external market and therefore with other commercial realities that could represent an opportunity.

From the empirical analysis many interesting results have emerged, which, although partially confirming the literature studied, create new ideas for the future.

Important and significant are the results obtained from the development and subsequent application of an ABC system for the allocation of costs. From the theoretical point of view, although the literature is scarce, the application of an ABC costing system has been studied for e-commerce companies with reference to the customer, the main cost object. According to some scholars, an ABC system is more adequate than a traditional costing system, because, by focusing on activities, it provides more accurate cost information. The case study confirms this theory, but differs, and at the same time innovates, in a fundamental aspect: the cost object. The main activities of Lashmania, in fact, do not refer to the customer, but to the order which triggers the company's value chain and the order fulfilment process. This latter becomes the new cost object for e-commerce companies. The Lashmania's case confirms that by focusing on the order fulfilment process and by applying an ABC system, information cost to determine

the customer's profitability are more accurate. In other words, the study conducted shows that associating to each customer the cost of managing an order, the profitability of the customer itself decreases significantly. An ABC analysis highlights the impact of the activities that are to be considered key for an e-commerce company and allows, through the results, to make strategic decisions oriented to increasing profitability.

Concerning practical contribution, the two-level margin analysis system provides the case company with a proper managerial accounting tool to analyse the profitability and take corrective actions to improve it.

Lashmania presents a list of 102 customers with negative margins, on which it should put the focus to recover profitability. To do this, two possible calculations have been highlighted: the minimum order with the same CM and the ideal CM with the same order (in terms of value). The advice for the company is to exploit the potential of the web agency, on which it relies since September, for a marketing strategy aimed at improving the profitability of these customers. Advertising and discounts, for example, could facilitate the right match of product-customer, raising the average order of an unprofitable customer. Moreover, the application of the ABC costing system, leads to a further interesting result: in general, the customers more profitable for Lashmania, that is with higher CM, are those that carry out more purchases in the course of a year. The analysis, in fact, demonstrates that the so-called "walk-in customers", do not

represent a source of gain for the company. Consumers who buy from a B2C perspective, thus for themselves and not for their business, make minimal purchases and absorb the entire cost of activities. Lashmania should focus more on a B2B market, and therefore on customers who have a beauty centre or a similar business. To do this, a profiling activity is absolutely necessary to determine the category of clients. The CRR study, which means Lashmania's ability to retain customers, has shown that the company must work on customer loyalty. This is vital for an industry like it, because building a trusting relationship means generating secure and ongoing revenue. Unfortunately, as is often happened in B2B companies, Lashmania allocates much of its marketing budget to lead generation, putting the responsibility for retention on customer care. The company could adopt new marketing strategies, such as the use of a loyalty card for beauticians in the industry, customized messages based on purchasing habits, and the creation of a community where professionals can exchange ideas and opinions, encouraging each other to buy the company's products.

However, the developed system is not exempt from limitations. The monitoring of activities takes a long time to collect a sufficiently large sample. In this case, the sample, obtained with 4 sessions of 4 hours each, was not collected homogeneously among the various activities and created some internal problems, in particular for the picking activity. A disadvantage of ABC, in fact, is precisely that of collecting untruthful data, due to employees who during the surveys tend to

highlight the maximum use of their time, taking less time than they actually use. As already specified in the theoretical part, control tools such as these can only bear fruit when the ultimate goal is understood by the entire organization and the activity carried out coherently and realistically.

Overall, the objectives set have been achieved, however, further improvements to the model need to be put in place to achieve even more significant results:

- **Advertising Cost:** One important innovation that can be deployed by Lashmania involves marketing cost tracking. Through the web agency on which Lashmania relies, it could be traced directly to the investment in advertising incurred by the company to fulfil a given order. As theoretically described in chapter 3, marketing costs can be allocated directly to an order through UTM (Urchin Tracking Module) parameters, which categorize online traffic and provide data on clicks on banner ads that led the customer to place an order on the site. This would lead to an even more meaningful CM after ABC and more truthful customer profitability;
- **Customer Care Activity:** In addition to marketing activity, customer care activity should also be monitored more closely to understand whether it should actually be included as an activity in the order fulfilment process or not;

- **ABC system at global level:** The activity of monitoring could moreover be extended to all the organization, considering also additional activities and various cost drivers, with the objective to understand if the organization structure applied by the company is suitable, balanced and above all respected. Moreover, completing the margin analysis of channels in order to consider also orders carried out offline could turn out an interesting insight;
- **Profiling Activity:** Finally, essential for the Lashmania is to initiate profiling of its customers in order to obtain information such as the industry they come from and the size of the company. Above all, this would allow to innovate the business model and make strategic choices suitable for the company's development. In this regard the section of the website where customers provide personal data could be improved since currently it requires only username, password, and email. Moreover, in order to avoid that the beauty centre, the target of the company, fill out its form as a private person, it could be proposed discounts available only to companies with VAT, such as loyalty card.

In conclusion, it is possible to state that managerial accounting assumes a key role for online companies and that the ABC system is more suitable, than traditional costing systems, to calculate the profitability of e-commerce companies.

However, the digital world is constantly evolving and this relationship between MA and e-commerce is still little explored by the literature. It is important to remember that the e-commerce phenomenon is not transitory but destined to take root and remain. There is no doubt, this topic deserves attention in further research regarding not only peculiarities and challenges of implementing managerial accounting tools in e-commerce contexts, but also concerning the levers and enabling factors able to address those challenges.

## **BIBLIOGRAPHIC REFERENCES**

Adel E. A. Abobaker E. (2014), Management Accounting in the New Economy, *University Bulletin*, Vol. (2) ISSUE No.16, pp. 131-151.

AL-Abrow H., Alnoow A. (2021), Encountering Covid-19 and perceived stress and the role of a health climate among medical workers. *Current Psychology, Jordan Journal of Business Administration*, pp. 1-14.

Al-Abrow H., and Alnoor A. (2017). The Impact of Locus of Control and Relationship Quality in Counterproductive Work Behavior Through Trust in the Leader and Psychological Empowerment: An Empirical Study on Workers in Public Hospitals in Basra. *Jordan Journal of Business Administration*, vol 13 N. 2, p.201-231.

Anthony R. N (1965), *Planning and Control Systems*, Sage, Harvard.

Atkinson A.A., Shaffir W. (1998), Standards for field research in management accounting, *Journal of Management Accounting Research*, vol. 10, pp. 41-68.

Barsauskas P., Sarapovas T., Cvilikas A. (2008), The evaluation of e-commerce impact on business efficiency, *Baltic Journal of Management*, Vol. 3 No. 1, pp. 71-91.

Berisha V., Asllanaj R. (2017), Historical Evolution of Managerial Accounting Theories and Practice Development: Evidence from Kosovo, *International Journal of Economic Perspectives*, Vol. 11, Issue 3, pp. 287-303.

Bhatt D. G., Emdad F. A. (2001), An analysis of the virtual value chain in electronic commerce, *Logistics Information Management*, Volume 14 . Number 1/2, pp. 78-84.

Bilcan F., Oncioiu I., Alexandru D., Stanciu A. (2019), Digital Transformation of Managerial Accounting - Trends in the New Economic Environment, contribution presented at *the 14th Edition of the International Conference Europeran Integration Realities and Perspectives*, Danubius University, May 17-18, 2019.

Bowen, G. A. 2009. Document Analysis as a Qualitative Research Method, *Qualitative Research Journal*, vol 9 N.2, p. 27–40.

Brodsky E. A. (2008), *Encyclopedia of Qualitative Research Methods*, Sage, Aalborg Universitet

Brown L. J., Howard R. L. (1986), *Managerial Accounting and Finance*, Sage, London.

Bubbio A., Bianchi C. (2002), *Advanced Management Accounting: Gli strumenti del controllo di gestione*, Sage, 1th edition, Italy.

Bubbio A. (2005), *Calcolo dei costi per attività*, Sage, 2nd edition, Italy.

Busacca G. 1998, *Costruire la fedeltà*, Sage, Il Sole 24 Ore, Milano.

Charifzadeh M., Taschner A. (2017), *Management Accounting and Control: Tools and Concepts in a Central European Context*, Sage, Germany.

Choi J.K., Park J.S., Lee J.H.Lee, Ryu K.S. (2006), Key factors for e-commerce business success, ETRI, *New Business Strategy Research Team*, pp. 1664-1672.

Cinquini L. (2013), *Strumenti per l'analisi dei costi*, Sage, Italy.

Colla E., Lapoule P. (2012), E-commerce: exploring the critical success factors, *International Journal of Retail & Distribution Management*, Vol. 40 No. 11, pp. 842-864.

Cussatt M., Huang L., Pollard J T. (2018), Accounting quality under US GAAP versus IFRS: the case of Germany, *Journal of International Accounting Research*, vol. 17, n. 13, pp. 21-41.

D'Alessio R., Antonelli V. (2004), *Guida operativa alla contabilità direzionale*, Sole24ore, Sage, Italy.

D'Alessio R., Antonelli V. (2012), *Analisi e contabilità dei costi: manuale operativo*, Sage, Italy.

Davila A., Foster G. and Jia N. (2015), The valuation of management control systems in start-up companies: international field-based evidence, *European Accounting Review*, vol 24, pp. 207–239.

Dragan C. (2015), The importance of managerial accounting in managerial accounting system, *Constanta Maritime University Annals*, Vol. 21, pp. 173-177.

Edwards D. J. (1958), This New Costing Concept-Direct Costing?, *The Accounting Review*, Vol. 33, No. 4, pp. 561-567.

Everaert P., Sarens G., Levant Y. (2008), Cost Modeling in Logistics Using Time-drive ABC: Experiences from a Wholesaler, *International Journal of Physical Distribution & Logistics Management*, Vol. 38 N. 3, pp. 172-191.

Foster G., Davila A. (2007), Management Control Systems in Early-Stage Startup Companies, *The Accounting Review*, Vol. 82 N. 4, pp. 907-937.

Garrison, R. H., Noreen, E. W., & Brewer, P. C. (2011), *Managerial accounting for managers*, 2nd edition, Boston, McGraw-Hill/Irwin.

Garrison, R. H., Noreen, E. W., & Brewer, P. C. (2017), *Managerial accounting for managers*, 16th edition, Boston, McGraw-Hill/Irwin.

Ghandour D. (2021), Analytical Review of The Current and Future Directions of Management Accounting and Control Systems, *European Journal of Accounting, Auditing and Finance Research*, Vol.9, No. 3, pp.42-73.

Ghislandi R. (2012), *Il manuale dell'e-commerce*, Sage, Italy.

Greene F.J., Hopp C. (2017). Are formal planners more likely to achieve new venture viability? a counterfactual model and analysis, *Strategic Entrepreneurship Journal*, vol 1, pp. 27–47.

Gunasekaran A., Gupta K. M. (2005), Costing in new enterprise environment A challenge for managerial accounting researchers and practitioners, *Managerial Auditing Journal*, Vol. 20 No. 4, pp. 337-353.

Gupta A. (2014), E-COMMERCE: ROLE OF E-COMMERCE IN TODAY'S BUSINESS, *International Journal of Computing and Corporate Research*, Volume 4 Issue 1, pp. 1-8.

Guzman L.S., Van den Abbeele A., Vandewalle J., Verhaaren H., Cattrysse D. (2013), Recent Evolutions in Costing Systems: a Literature Review Of Time-Driven Activity-Based Costing, *Review of Business and Economic Literature*, vol. 58 N. 1, pp. 34–64.

Hahn H., Noh M., (1999) Critical failure factors that discourage electronic commerce growth, *International Journal of Electronic Commerce*, vol 2 N.2, p. 25-44.

Hilton W. R. (2010), *Managerial Accounting - Creating Value in a dynamic business environment*, 9th edition, New York.

Kamal S. (2015), Historical Evolution of Management Accounting, *The Cost and Management*, vol.43, N. 4, pp. 12-19.

Kaplan R. S., Steven R. Anderson (2007), Time-Driven Activity-Based Costing: A Simpler and More Powerful Path to Higher Profits, *Boston: Harvard Business School Press*.

Kaplan S. R., Anderson R. S. (2007), The Innovation of Time-Driven Activity-Based Costing, *Harvard Business School*, vol 21, no. 2, pp. 5–15.

Kvale S., Brinkmann S. (2009), *Interviews: Learning the Craft of Qualitative Research Interviewing*, Sage Publications, Los Angeles, CA.

Li-ping X., Zhe L. (2014), The Application of Activity-Based Costing in E-commerce Enterprises, *Advanced Materials Research*, Vols. 926-930, pp 3992-3995

Lukka K. (2005), "Approaches to case research in management accounting: the nature of empirical intervention and theory linkage", in Jnsson S., Mouritsen J. (edite by), *Accounting in Scandinavia – The northern lights*, Liber & Copenhagen *Business School Press*, Malm , pp. 375-399.

Maher W. M., Stickney P. C., Weil L. R. (2008), *Managerial Accounting an Introduction to Concepts, Methods and Uses*, Student Edition, USA.

Michael S. C. (2014), Managing ICT costs in e-commerce organizations with the time-driven activity-based costing model: a note, *Academy of Taiwan business management review*, vol. 10, no. 3, pp. 147-155.

Neilsen O. (1954), Direct Costing-The Case "For", *The Accounting Review*, Vol. 29, No. 1, pp. 89-93.

OECD (2000), Realising the Potential Of Electronic Commerce For SMEs in the Global Economy, contribution presented at the *Conference for Ministers responsible for SMEs and Industry Ministers*, Bologna, Italy, 14-15 June 2000.

Pelz M. (2019), Can Management Accounting Be Helpful for Young and Small Companies Systematic Review of a Paradox, *International Journal of Management Reviews*, Vol. 21, pp. 256–274.

Quattrone P. (2016), Management accounting goes digital: Will the move make it wiser?, *Journal of Management Accounting Research*, Elsevier.

Roztock N. (2010), Activity-Based Management for Electronic Commerce: A Structured Implementation Procedure, *Journal of Theoretical and Applied Electronic Commerce*, vol 5, ISSUE 1, pp. 1-10.

Shank J., Govindarajan V., edited by Toscano G., introductory essay Bubbio A., (1991), *L'analisi dei costi per la gestione strategica. Verso una nuova contabilità direzionale*, Edizioni Angelo Guerini e Associati s.r.l, 1th edition, Italy.

Shrestha K.S, Gautan R., Gyawali A., Bishwakarnia R.G., Subedi P.P., (2018), *A Special Issue of International Conference on Emerging Trend and Issues in Management*, Nepal.

Socea A.D. (2012), Managerial decision-making and financial accounting information, contribution presented at *the 8th International Strategic Management Conference*, Barcelona, June 21-23, 2012

Sunarni C. W., Management Accounting Practices at Hospitality Business in Yogyakarta (2014), *Review of Integrative Business & Economics Research*, Vol 4(1), pp. 380-397.

Sung K. T. (2006), E-commerce critical success factors: East vs. West, *Technological Forecasting & Social Change*, vol.73, pp. 1161–1177

Taher G. (2021), E-Commerce: Advantages and Limitations, *International Journal of Academic Research in Accounting, Finance and Management Sciences*, vol 11 N.1, pp. 153-165.

"The Institute of Cost Accountants of India (ICAI) (2019), *Cost & Management Accounting and Financial Management*, 3rd edition, Kolkata.

Tse M., Gong M. (2009), Recognition of Idle Resources in Time-Driven Activity-Based Costing and Resource Consumption Accounting Models, *Journal of Applied Management Accounting Research*, vol 7 N. 2, p. 41-54.

Tse, M. S. C., & Gong, M. Z. (2009). Recognition of idle resources in time-driven activity-based costing and resource consumption accounting models, *Journal of Applied Management Accounting Research*, 7(2), 41–54.

Zhang C.S. (2012), Cost Analysis for E-Commerce Enterprises, *Advanced Materials Research*, vol. 433-440, p. 1701-1704.

Zhou H., Yu Y., Li R. (2014), Data Operation of Management Accounting in E-commerce Enterprises, *Advanced Materials Research*, Vols 1061-1062, pp 1275-1278.

Afaq (2016), Management Accounting, available at the following link:  
<https://commercemates.com/importance-management-accounting/>

Bratton, W. W., & Cunningham, L. A., Treatment Differences and Political Realities in the GAAP-IFRS Debate, available at the following link:  
[https://scholarship.law.upenn.edu/cgi/viewcontent.cgi?article=1858&context=faculty\\_scholarship](https://scholarship.law.upenn.edu/cgi/viewcontent.cgi?article=1858&context=faculty_scholarship)

Briciu, S., & Căpușneanu, S. "Effective Cost Analysis Tools Of The Activity-based Costing (abc) Method ". *Annales Universitatis Apulensis Series Oeconomica*, 1(12), 25–35. available at the following link:  
<https://doi.org/10.29302/OECONOMICA.2010.12.1.2>

Casaleggio Associati (2021), E-commerce in Italia, available at the following link:  
[https://www.casaleggio.it/wp-content/uploads/2020/12/CA-E-commerce-2021-report-ITA\\_WEB.pdf](https://www.casaleggio.it/wp-content/uploads/2020/12/CA-E-commerce-2021-report-ITA_WEB.pdf)

Chiericato E. (2019), Parametri UTM: Guida Completa, available at the following link: <https://webmarketing.academy/parametri-utm/>

Demeere N., Stouthuysen K., Roodhooft F. (2009), Time-driven activity-based costing in an outpatient clinic environment: development, relevance and managerial impact, available at the following link:  
10.1016/j.healthpol.2009.05.003

Gatti M. (2016), Calcolare il costo dei prodotti, available at the following link:  
[https://www.studiobarale.it/risorse/1\\_Metodologie\\_Calcolo\\_Costi\\_Prodotti-direct-costing.pdf](https://www.studiobarale.it/risorse/1_Metodologie_Calcolo_Costi_Prodotti-direct-costing.pdf)

Gliaubicas D. (2012), THE RESEARCH OF MANAGEMENT ACCOUNTING EVOLUTION IN THE CONTEXT OF ECONOMIC CHANGES, available at the following link: <http://dx.doi.org/10.5755/j01.em.17.1.2247>

Herzog S. (2021), Comparability of IFRS and GAAP [University of Iowa], available at the following link: [https://iro.uiowa.edu/discovery/fulldisplay/alma9984112117902771/01IOWA\\_IN\\_ST:ResearchRepository](https://iro.uiowa.edu/discovery/fulldisplay/alma9984112117902771/01IOWA_IN_ST:ResearchRepository)

"Institute of Management Accountants (IMA) (2008), Definition of Management Accounting, available at the following link: [www.imanet.org](http://www.imanet.org)"

Institute of Management Accountants (IMA) (2019), Management Accounting Competencies: Fit for Purpose in a Digital Age?, available at the following link: [www.imanet.org/thought\\_leadership](http://www.imanet.org/thought_leadership)

Lawrence A. Gordon, Ph.D., Martin P. Loeb, Ph.D. (2001), Distinguishing Between Direct and Indirect Costs is crucial for Internet companies, available at the following link: <https://www.imanet.org>

Statista (2022), Global retail e-commerce sales 2014-2025, available at the following link: <https://www.statista.com/statistics/379046/worldwide-retail-e-commerce-sales/>

Web Project (2020), Storia dell'e-commerce, come e quando sono nati i negozi online? available at the following link: <https://www.webprojectgroup.it/storia-ecommerce/>