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**Managerial accounting tools for brand  
profitability analysis: the case of Giano s.r.l.**

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## **ABSTRACT**

Nell'attuale contesto competitivo, caratterizzato da forti instabilità e discontinuità, le variabili chiave da tenere sotto controllo sono sempre più numerose e mutevoli.

Una delle condizioni imprescindibili per poter “navigare” in tale contesto è disporre di un adeguato sistema di controllo di gestione in grado di fornire informazioni a supporto del processo decisionale manageriale e guidare il management delle aziende verso il raggiungimento degli obiettivi prefissati.

Più in particolare, per le aziende diventa fondamentale avere a disposizione un insieme di strumenti che consentano, da una parte, di programmare gli obiettivi da raggiungere e dall'altra, di controllare a consuntivo, o ancora meglio, in itinere, il livello con cui gli obiettivi programmati si sono trasformati o si stanno trasformando in reali traguardi conseguiti.

Da tali considerazioni emerge l'importanza di uno degli strumenti principali del controllo di gestione, ossia quello del cost accounting. Il cost accounting nasce per soddisfare le esigenze conoscitive dei managers circa le informazioni di costo dei prodotti da cui dipendono numerose considerazioni su aspetti quali la fissazione del prezzo, la scelta del mix di prodotti da realizzare e vendere, la valutazione della redditività delle diverse linee di prodotto e la misurazione dell'efficienza e dell'efficacia del processo produttivo e dei canali distributivi. Le attività di cost accounting non si limitano alla registrazione delle informazioni di costo nei

sistemi informativi aziendali ma prevedono anche la loro pianificazione e controllo, allineandole con gli obiettivi aziendali e contribuendo al loro raggiungimento. Vista la rilevanza di tale strumento, l'obiettivo del presente lavoro è analizzare funzioni e caratteristiche nonché benefici e criticità dei sistemi di cost accounting sia attraverso una disamina teorica dello strumento sia, soprattutto, attraverso lo studio della progettazione e dell'implementazione di tale strumento in una specifica realtà aziendale operante nel settore della produzione di calzature, la Giano s.r.l.

Il lavoro, pertanto, si articola in quattro capitoli, i cui tratti salienti sono di seguito descritti.

Nel primo capitolo vengono analizzati il sistema di controllo di gestione e il ruolo che questo svolge a supporto delle attività manageriali di programmazione, decision-making e controllo. Il focus è rivolto all'importanza di tale sistema grazie a cui è possibile ricavare informazioni utili al management per compiere scelte appropriate sia nel breve che nel lungo periodo.

Il secondo capitolo, invece, approfondisce gli strumenti relativi al cost accounting. Partendo dalla presentazione del concetto di costo, vengono esaminate le principali classificazioni di costo utilizzate in ambito teorico ed operativo, ossia la classificazione in costi diretti e indiretti a seconda dell'attribuzione ad un oggetto di costo; in fissi e variabili per descriverne il comportamento rispetto ad un fattore determinante; nelle aziende manifatturiere in costi industriali, commerciali e

amministrativi; per la redazione del bilancio in costi di periodo e di prodotto; e infine per supportare le decisioni manageriali in costi differenziali, costi opportunità e costi irrecuperabili.

Il terzo capitolo analizza due sistemi di calcolo del costo comunemente utilizzati, ossia il variable costing e l'absorption costing mettendone in evidenza le principali differenze nonché i relativi benefici e criticità. Con riferimento all'absorption costing, vengono poi affrontati e confrontati i metodi tradizionali di allocazione dei costi indiretti (full costing a base unica e multipla) e l'Activity-Based Costing.

Il quarto capitolo analizza il sistema di cost accounting progettato e implementato in Giano s.r.l. In particolare, la prima parte del capitolo è dedicata all'analisi del contesto aziendale di riferimento e dei mercati in cui l'azienda opera. La seconda parte, invece, segue il processo di progettazione e implementazione del sistema di cost accounting aziendale volto ad analizzare la redditività dei tre brand di cui l'azienda è licenziataria. In particolare, viene analizzato tutto il processo con cui costi e ricavi sono stati attribuiti agli oggetti di costo prescelti e la relativa costruzione del conto economico gestionale e delle informazioni chiave che esso contiene.

Infine, nelle conclusioni dell'elaborato vengono messi in evidenza le peculiarità riscontrate nel sistema di cost accounting adottato in Giano s.r.l., dovute sia al settore in cui l'azienda opera sia alle caratteristiche operative dell'azienda stessa.

Inoltre, la sezione in questione comprende un'analisi dei punti di forza e di debolezza del sistema di cost accounting implementato, anche con riferimento alla disamina teorica offerta nei capitoli due e tre, nonché l'identificazione di possibili miglioramenti da apportare in futuro.



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## **INTRODUCTION**

The variable context in which many companies are operating today makes necessary to continuously monitor key performance variables that are more and more numerous. In light of the framework described, to cope with uncertainty companies must have an appropriate managerial accounting system that helps managers to make informed decisions thank to the support of accurate information.

Precisely, companies have to endow themselves with managerial accounting tools that, on one hand allow to plan objectives and on the other to control their degree of achievement at the end of the period, or better, when the business management is still ongoing.

From these considerations, we introduce a particular managerial accounting tool that is cost accounting. It was created to satisfy the necessities of managers of knowing and controlling the costs related primary to products, and then to other cost objects like distribution channels, customers or geographical areas that inform several arguments such as the choice of products mix to produce and sell, the profitability analysis of different product lines, the measurement of the effectiveness and efficiency of the manufacturing process or the selling activities. Nevertheless, not only cost accounting does not coincide with costs collection and storing in managerial accounting information systems but involves a broader set

of activities that comprise cost planning and cost control under a strategic perspective. Therefore, cost accounting has to be aligned with organizational objectives and contribute to their achievement. Given the relevance of such a tool, this composition aims at presenting the function of cost accounting, its features, strengths and weaknesses by providing an analysis of the existent literature and by presenting the results of the implementation of this tool in Giano s.r.l, a SME operating in the footwear industry.

Hence, the work is composed of four chapters organized as follows.

The first chapter is dedicated to the description of the role of managerial accounting function within the company and its relevance for managerial activities given the characteristics of the current context. Managerial accounting and its tools help manager in three fundamental activities, planning, controlling and decision-making, with the aim of creating value and assuring company profitability in both short and long-term.

In contrast, the second chapter has a focus on cost accounting. After having provided the cost concepts, we propose the main cost classifications useful to understand the cost structure such as the classification in direct or indirect to understand the relationship with the cost object; in variable and fixed to explain cost behavior; in manufacturing and nonmanufacturing for companies involved in manufacturing process; in period and product for the elaboration of financial

statements and finally, in differential, opportunity and sunk to support decision-making.

The third chapter has the focus on two different costing methods that are variable costing and absorption costing. We compare and contrast the two methods highlighting which type of information we obtain from both and which managerial decisions they inform. Finally, with reference to absorption costing, a comparison between traditional costing systems and the more sophisticated Activity-Based Costing will be presented.

Finally, the fourth chapter is intended to present the results obtained from the implementation of managerial accounting tools in Giano s.r.l. In order to show our work, first, we present the company and the context in which it operates and the scope of the analysis; second, we define the approach implemented to conduct the analysis to know the profitability of three brands which Giano s.r.l. is licensee and motivate our choice. In particular, we focus on how costs and revenues have been traced, or allocated, to the cost objects to obtain the managerial income statement in which key information are presented. Finally, in the conclusions we illustrate and discuss the results obtained highlighting the features found in our analysis in Giano s.r.l. considering the industry in which the company operates and the current organization of the company. Moreover, we identify strengths and weaknesses of the cost accounting system implemented with reference to the

existent literature presented in chapters two and three as well as suggest possible improvements.

## **CHAPTER 1: FUNDAMENTAL CONCEPTS IN MANAGERIAL ACCOUNTING**

### **1.1 MANAGERIAL ACCOUNTING: AN OVERVIEW**

The aim of this first chapter is to present the organizational function of managerial accounting, its main features and explain why it is so relevant for managers today. Achieving competitive advantage is the ultimate goal of every company. This objective is pursued by creating value for company's stakeholder that are all the subjects who establish a relation with the company and hence develop interests in its activity (Doyle, 2006).

However, activities carried out to pursue company's objectives generate costs that determine the effectiveness of business management. Moreover, the challenges of the last years have demonstrated the impossibility of acting on the level of profit, in particular managers can neither rely on debts, as it was typical in the 80's, nor increase prices, as in the 90's, to react to the pressures coming from the external environment such as increasing international competition, changes in consumption preferences, greater focus on the customer and technological evolution (Doyle, 2006). Managers need to make effective decisions while taking cost under control ensuring profitable growth and business optimization. In fact, managers should not respond exclusively to shareholders but should consider how

to create value for the company's stakeholders as well. The creation of value that ensure continuity in the business activity is not measured in terms of equity returns anymore but rather in terms of value added for customers and stakeholders in general (Wall and Greiling, 2011). Consequently, the old control mechanism is not effective anymore (Bogni and Solbiati, 2007). It was aimed at controlling efficiency and resource employment in the short term and was questioned in the 70's when the internationalization challenged the businesses which were forced to think about managerial accounting from a strategic perspective (Marasca *et al.*, 2013). As a consequence, managerial accounting practices have received enhanced attention from top managers who began to consider them as a support for their job (Davila and Foster, 2009).

In the light of these considerations, managerial accounting can be defined as the use of knowledge, skills and tools that is concerned with providing information to managers to assist them in taking effective decisions (Garrison *et al.*, 2017). In fact, today management accountants combine two roles: they perform the activity of scorekeeping and controlling, and they serve managers problem-solving (Emsley, 2005) and act as consultants to managers (Rikhardsson and Yigitbasioglu, 2018).

Managerial accounting systems have the objectives of collecting and storing information ensuring their reliability and accuracy to be employed in many activities including budgeting, forecasting, planning, reporting, profitability



analysis and cost management (Bogni and Solbiati, 2007). Therefore, data is the foundation of managerial accounting practices (Knauer *et al.*, 2020). It has been proved that as the competition intensifies, companies endow themselves with more sophisticated information systems that act as factors for effective managerial decision-making (Holm and Ax, 2020). The same results are observed in highly uncertain contexts in which managers require more information, and make use of managerial accounting system to face these situations (Chong, 1996).

Following along these lines, it can be said that managerial accounting is a branch of accounting concerned with recording, estimating, organizing and summarizing both financial and operational data on which managers plan, coordinate and lead their activities within the company (Garrison *et al.*, 2017). Accounting systems have the objective of providing managers with useful information that encompasses every activity of a company making managerial accounting a cross-functional discipline (Horngren *et al.*, 2015). Nevertheless, it has been proved that when managerial accountants work together with the business unit manager rather than when they have a functional role within the company, the diffusion of the use of managerial accounting tools increases (Emsley, 2005).

We can distinguish two types of accounting: financial accounting and managerial accounting. They differ in many points.

First, the former focuses on reporting to organizational stakeholders and external parties in the form of financial statements following authoritative guidelines

called accounting principles whereas the latter provides tailored information to be used in decision-making within the organization without following any legal requirement (Brusa, 2009). The only requirement is that data should be recorded logically in order to serve as a support for decision-making (Horngren *et al.*, 2015). As a consequence, having a managerial accounting system is not mandatory whereas financial statements are required by law (Garrison *et al.*, 2017).

Second, the peculiarity of managerial accounting is the specificity of the information. In fact, managers can obtain different types of information according to their necessities. For instance, we can acquire information divided by department, segment, territory, product or customer while in financial accounting the information concerns the company as a whole (Brusa, 2009). As a consequence, the internal users of the information vary across many levels of the organization: from the CEO to the CFO and from middle management to workers (Horngren *et al.*, 2015). In contrast, financial accounting outcomes are financial statements that involve the company as a whole (Garrison *et al.*, 2017).

Third, managerial accounting and financial accounting differ in the type of information provided. Actually, although balance sheet, income statement and cash flow statement are common documents, managerial accounting records, organizes and reports non-financial information and operational data as well. For instance, even though many decisions are made on the basis of a cost-benefit

analysis reported in monetary terms, the evaluation of benefits cannot rely solely on financial measures since it is better measured by non-financial measures rather than financial ones (Horngren *et al.*, 2015). Moreover, the fact that managerial accounting systems are built to satisfy internal needs makes the information more subjective whereas the outputs of financial accounting are necessarily objective and verifiable (Horngren *et al.*, 2015). While precision and verifiability characterize financial accounting, what characterizes managerial accounting information are relevance and timeliness. Indeed, managerial accounting systems are designed to provide managers with additional information that is not found in financial statements. Therefore, information has to be valuable, relevant and delivered promptly to internal users (Garrison *et al.*, 2017). However, managerial accounting takes the analytical approach that allows to demonstrate thanks to figures the projections of the management (Aaltola, 2019).

Finally, financial accounting has the focus on reporting financial performance, which is based on the past activities. On the contrary, managerial accounting is a future-oriented function involved with the production of information for future strategic or operational use. For instance, the budget is an example of managerial accounting tool that is based on estimates rather than on historical data. However, they both influence the behavior of managers. In one hand financial performance is used as an indicator on which usually managers' actions are evaluated, on the other managerial accounting is intended to drive managerial decisions and aims at

developing, communicating and implementing the strategy (Garrison *et al.*, 2017). Therefore, managerial accounting produces information on how organizational processes and activities work, on profitability of the desired cost object (Bogni and Solbiati, 2007), on how resources are acquired and consumed, on revenues (Cinquini, 2008) as well as on customer satisfaction (Bogni and Solbiati, 2007).

In conclusion, the characteristics of the business environment have changed and so did the preferences of the consumers. Time, innovations and marketing activities play a relevant role. Collecting information from managerial accounting systems helps to support decision-making in such a complex context. Managerial accounting provides insights on which area focus the attention. This allows to better understand the functioning of the organizational structure and learn how to manage it (Vitali, 2009). We can say that managerial accounting, by providing information, is able to cope with the uncertainty of the external environment and support managerial activities concerned with running a company (Pavlatos and Kostakis, 2018). Given that the effectiveness of managerial decisions will impact on the overall functioning of the company, today managerial accounting plays a significant role in managers' lives as it is a necessity for business success. Time and resources spent by managers during the decision-making process can significantly reduce if they can trust management accountant's information (Emsley, 2005).

## **1.2 KEY FUNCTIONS OF MANAGERIAL ACCOUNTING: PLANNING, CONTROLLING AND DECISION MAKING**

In the previous paragraph we stated that managerial accounting is a source of essential information on which managers perform different activities that result in decisions. Although today manufacturing processes are highly automated and technological advancement allows to machine-based decision-making without any requirement of human intervention, managers' knowledge, experience and instinct cannot be replaced. Indeed, managerial accounting provides theoretical models to assist managers (Walther and Skousen, 2010).

The three main activities in which managerial accounting supports managers are planning, controlling and decision-making (Garrison *et al.*, 2017).

These three activities, related to each other, are the basis on which managers lead the business of a company. This results in a circular process. First, objectives are set and translated into plans of action; afterward, plans are executed and produce results; finally, results are measured against objectives set in the initial phase to assess the degree of achievement and take corrective actions if needed. Therefore, managerial accounting is systemic and integrated into the ordinary management of a company with the aim of ensuring that the decisions of managers are effective and in line with strategic objectives (Gatti and Chiucchi, 2018).

Not only does managerial accounting help to define strategies, identify problems and methods that should be followed to solve these problems, but also it ensures

that the actions of individuals will be consistent with the strategy (Malmi and Brown, 2008). Its primary goal is helping to plan the strategy by individuating the key performance drivers. Reasons are because today managerial accounting takes a more holistic approach that connects it to the strategy (Chenhall, 2009). Then, ensuring efficient procurement and employment of resources consistent with the strategy planned is another objective and finally, it aims at transmitting crucial information for decision-making (Bogni and Solbiati, 2007).

In other words, it helps to coordinate the behavior of every actor in the company such that their actions will be orientated toward the same direction (Leitner and Wall, 2015). When managerial accounting information serves as a mean of coordination and motivation it has a decision-influencing role (Sprinkle and Williamson, 2007). Nevertheless, it is the mean thanks to which we can understand the relationship between strategy and control (Ahrens and Chapman, 2007).

In particular, managerial accounting assists managers in formulating strategies at every level and making both strategic and operational decisions, supports the controlling function ensuring efficiency in the allocation of resources and measures and reports both financial and nonfinancial performance (Horngren *et al.*, 2015). Moreover, it ensures continuous improvement and benchmarking (Garrison *et al.*, 2017). Due to the recent technological advancements, we have to say that business intelligence and analytics positively affect several management

accounting tasks. These innovations opened up to the possibility of improving cost forecasting, product or customer profitability analysis and the evaluation of the financial impact of production changes (Rikhardsson and Yigitbasioglu, 2018).

Furthermore, it includes a specialized branch based on cost information and concerned with cost planning and cost control that is cost management (Blocher *et al.*, 2010). In effect, costs are the object which behavior and predictions are the most relevant to decision makers since a lack in cost information can generate serious problems or even loss to a company that is not able to keep track of how key resources are employed within the organizational activities (Vitali, 2009). It helps managers to orientate the long-term growth focusing the attention on how value is created. Recent researches proved that in time of crisis due to external factors, such as the 2008 crisis, managerial activities focused on managerial accounting practices, namely strategic management accounting and budgeting (Pavlatos and Kostakis, 2018) and that the rate of implementation of managerial accounting practices has grown in those companies operating in fast-moving environments (Davila and Foster, 2009).

In order to obtain value, managerial accounting system must be integrated with the shared vision of the company from managers and shareholders perspectives and the company itself. Having a unified source of information helps to understand the organizational performance (Bogni and Solbiati, 2007).

### **1.3 PLANNING**

Planning is the managerial activity of formulating a plan of action to achieve an end (Garrison *et al.*, 2017). The planning function consists in determining organizational objectives, defining the strategy to achieve them and deciding how resources will be assigned (Bogni and Solbiati, 2007). Nevertheless, the plan must be in written form and communicated to the entire organization so that every activity is coordinated (Horngren *et al.*, 2015).

Managerial accounting operates in this function because it provides information for the formulation of strategies and plans for the future. Planning involves many levels of the organization. Usually, top management defines a corporate business strategy, the mission statement, that refers to long term objectives and the strategic path to achieve them (Gatti and Chiucchi, 2018), the core values that drive how activities are performed within the company and the positioning toward competitors (Walther and Skousen, 2010).

If on one hand, managerial accounting information is needed at corporate level to manage the strategy, on the other it is used at operational level as well (Aaltola, 2019). Strategic planning, which usually covers a five years period, must be translated into short term objectives in order to be executed. This enable tactical plans to be aligned with the long-term strategy. Planning serves the coordination



function as well. In fact, the output of the planning process are strategic goals and guidelines that should inspire the actions of every actors of the company in order that everyone will make the required level of effort to achieve the desired result (Gatti and Chiucchi, 2018).

While the strategic planning involves the definition of the overall organizational purpose and direction, the operational planning concerns budgeting (Walther and Skousen, 2010). Indeed, from a managerial accounting perspective, the output of the planning process is the budget, defined as the quantitative expression of a proposed plan of action used to implement a plan (Garrison *et al.*, 2017). It is a tool that helps managers to coordinate their actions when they execute a plan as well as clarifies the level of effort and behavior expected from organization members. The characteristic of the budget is that it refers to a short period of time, usually a year, and translates into actions specific objectives. Given this feature, the budget forces managers to foresee problems, identify methods to solve them considering financial constraints and find alternatives resulting in business optimization (Garrison *et al.*, 2017). Therefore, the budget provides a framework for judging the performance and facilitating the learning. Budgets are future oriented and overcomes limitations arising from judging the performance based on historical results. Indeed, past results might be subjected to errors resulting in biased evaluation from a year to another. The downside of budgeting is that incentives for setting low targets that are easily achievable. We refer to this

practice as budgetary slacks and consist in overestimating costs or underestimating revenues. They are used by low-level managers when they are evaluated on the basis of their performance so that they assure a margin against unexpected events. As a consequence, top management cannot rely on budgetary information provided causing inefficient use of resources (Horngren *et al.*, 2015).

Many types of budgets can be developed within the company. We can have the budget of the resources needed. It involves the requirements of workforce in order to carry out company's activities and the costs associated with it (Marasca *et al.*, 2013). These types of budgets are included in the master budget together with sales and production budgets. The former shows a detailed schedule of sales expected over the budgeted period whereas the latter refers to the cost budget of direct labor, direct materials and manufacturing overheads needed in production. The master budget results in the budgeted income statement where we can find the budget of nonmanufacturing expenses as well (Garrison *et al.*, 2017). Then, we have financial budgets which plan financial requirements and how financial resources will be acquired and used (Walther and Skousen, 2010).

In contrast, the capital budget concerns budgeting activities for capital investments like the purchase of new equipment that will be subjected to depreciations (Walther and Skousen, 2010). It differentiates from the others because it relates to the long-term growth of the company and is motivated by strategical factors rather than economic variables (Marasca *et al.*, 2013).

### **1.3 CONTROLLING**

Controlling is performed at the plan implementation stage. It is the activity of monitoring that the plan has been executed as intended and take corrective actions when necessary (Garrison *et al.*, 2017). The controlling function can be operated at several levels, as it happens for the planning. In fact, strategic control aims at controlling the achievement of long-term objectives and measures the efficiency of organizational processes that create value. In contrast, operational control is operated on short-term objectives planned and provides information about the efficiency of operational activities (Bogni and Solbiati, 2007).

Controlling is crucial because managers need to know if short term results are coherent with what planned in the previous phase minimizing any variance (Gatti and Chiucchi, 2018). It involves the evaluation of how resources have been employed in a given period. We deduce that control is usually a feedback mechanism thanks to which we control the variances between objectives planned and actual results (Cinquini, 2008). The feedback mechanism results in the evaluation of the degree of achievement of the objectives and efficiency and consists in the continuous comparison between what the company has planned and results observed. We deduce that the control function is necessarily linked to the planning function and to the strategy implementation phase. In effect, results

monitoring aims at understanding whether the company is going toward the direction planned and in case of any variance take corrective actions (Gupta and King, 1997). In the feedback mechanism control is operated at the end of a certain period. If in one hand it allows to have a complete view on results obtained, in the other the control can be performed only at the end of the period making it impossible to act promptly if corrective actions are needed (Marasca *et al.*, 2013). A possible solution could be intervening more frequently for instance by comparing monthly budgets and monthly results measurements. In order to intervene immediately, the feed-forward mechanism has been introduced. It is a future oriented mechanism that draws projections on what result will be at the end of the period relying on intermediate forecasted results. It enables to determine whether any variance would incur in forecasted results and act immediately or even before the incurrence of the variance. However, this model has many pitfalls. It relies on statistical forecasts that is funded on data and information stored in the managerial accounting system. Therefore, the reliability of the feed-forward mechanism depends on the accuracy of data on which predictions are calculated. In addition, carrying out this type of analysis is resource consuming and managers have to consider if it is cost convenient to introduce this mechanism (Marasca *et al.*, 2013).

The control results in two measures: the effectiveness and the efficiency. The former refers to the relationship between results obtained and objectives planned

and it measures the degree of achievement of a given objective with respect to the expectation. The latter is about the resource optimization (Bogni and Solbiati, 2007). The efficiency is referred to as the capacity of obtaining a certain level of output minimizing the input. It evaluates how resources have been employed to reach the objectives and is an appraisal of the overall efficiency of the company. As a consequence, managerial accounting is interested in knowing in which proportion a certain cost object consumes resources. As it will be deepened later, there are some limitations to the assignment of resources to the cost object that concern the objectivity in the cost allocation (Cinquini, 2008).

It is important to highlight that the control function is not mere control, but it comprises taking actions that implement the planned decisions, deciding how to evaluate performance and providing feedback. Moreover, controlling serves as learning for future decision-making (Horngren *et al.*, 2015). Controlling is used to coordinate the behavior of individuals thanks to assessment of roles, responsibilities, rules and routines within the firm (Cinquini, 2008) and to motivate people. In fact, controlling is about influencing behaviors to drive toward the same organizational objectives (Marasca *et al.*, 2013). This characteristic opened up to a sociology-based researches on informal control mechanism related to managerial accounting control (Davila and Foster, 2009).

With reference to the budget, it can also be seen as a control tool if it is used as a benchmark against which actual performance is compared. In fact, the budget

provides the performance standards to be achieved in relation to the objectives (Horngren *et al.*, 2015). Generally, results are collected, analyzed and summarized in performance reports where we find the comparison between budgeted objectives and actual results. Firstly, this information helps managers to identify the degree of achievement of the objectives and then to learn both in case of positive and unsatisfactory performance. In particular, when actual results are not aligned with the budget, managers should act in order to eliminate sources of variance. They can base future decisions on what results from the controlling or even operate changes in the initial phase by modifying the objectives (Garrison *et al.*, 2017).

What is relevant is the effectiveness of the controlling in terms of reliability of the information provided. Therefore, control should be as frequent as possible, or constant, so that managers can make effective decisions, intervene quickly or rather in advance and avoid wasting resources (Gatti and Chiucchi, 2018).

Although the traditional approach to control analyzes past financial results, managers need to monitor nonfinancial performance of the company as well if it contributes to value generation. In fact, financial measurements present some disadvantages. First, they are presented in aggregated terms and fail in reflecting the cause of the performance and second, they are usually based on historical data (Cinquini, 2008).

Preferably, a company should employ different type of control, other than financial measures, in order to better understand the driver of the performance (Chenhall, 2009). For instance, the most relevant non-financial measures that impact on performance concern the degree of innovation, customer satisfaction, time and quality (Cinquini, 2008). These dimensions can be better measured by scores (Walther and Skousen, 2010).

As a result, today many companies have developed new control methods inspired by the theory of Kaplan and Norton who introduced in 1992 the concept of the Balanced Scorecard (Kaplan, 2009). It is a performance report that considers factors that may have contributed to successful performance other than the financial ones such as customer satisfaction, efficiency and effectiveness of internal processes and learning and growth of the company (Malmi and Brown, 2008). It is a tool that thanks to a series of indicators allows the measurement of the strategy implementation overcoming the limitation of traditional measurement systems. In particular, the Balanced Scorecard enables to grasp the value generated by intangible assets of the firm such as employee's knowledge, business relations with customers and suppliers, organizational culture and favor long-term value creation (Ittner and Larcker, 2009).

Nevertheless, control can assume different forms since its function does not merely support decision-making but serves as coordination to lead the behaviors of every individual inside the company as well (Malmi and Brown, 2008).

Controlling, in this regard, can be intended as the process of influencing the behavior of people inside the company to drive their actions toward desired objectives (Bogni and Solbiati, 2007). For instance, the organizational culture can influence the behavior of employees that will act consistently to organizational values and social norms in order to achieve company's goals (Malmi and Brown, 2008). When the controlling function is integrated and supported by a managerial accounting system, which gathers both financial and nonfinancial information, we talk about corporate performance management, which is used to understand firm-specific governance characteristics (Arena *et al.*, 2020).

#### **1.4 DECISION-MAKING**

Managerial accounting information is used following two different approaches in decision-making. One is actor-based and the other is analytical decision-making. While the former studies the decision-making following a sociological approach based on interactions, we will focus on the latter, referred to as calculative and rational (Saukkonen *et al.*, 2018) according to which the quality of the decision-making depends on the quality of the information on decision variables (Leitner, 2014).

Decision-making involves selecting a course of action from competing alternatives, which are funded on information provided by managerial accounting



system (Garrison *et al.*, 2017). The necessity of managing internal processes in effective way in order to cope with external pressures lead to focusing the attention on managerial accounting information. Having a good information system eases the decision-making when these decisions have an impact on the overall performance (Wall and Greiling, 2011), when the context in which the company operates is complex and when decisions are required in short time (Bogni and Solbiati, 2007). In this case, the role of managerial accounting information is a decision-facilitating role (Sprinkle and Williamson, 2007).

Nevertheless, we remind that the globalization process results in a decentralized decision-making that requires a system of control able to satisfy the needs of local managers as well as provide information to upper management (Haka and Heitger, 2004). Therefore, decision-making is a complex function and information is the tool that ensures that good decisions are made and drive managers' actions (Vitali, 2009).

Decision-making is not a subsequent activity of planning and controlling. In fact, decision-making occurs across every activity of the company: managers make decisions in the planning stage, for instance when they evaluate the feasibility of a plan; during the execution phase, when they evaluate and choose among different alternatives, and in the control phase, when they analyze feedback and take corrective actions for the future (Gatti and Chiucchi, 2018).

Nevertheless, the most important decisions in a company can be summarized by answering key questions involving corporate strategy such as what should the company sell, who should be the customers and among them who are the most important and how should the strategy be executed and whether funds are available (Garrison *et al.*, 2017). These decisions may have a long-term impact on the company itself and on the market (Cinquini, 2008).

Through decisions managers enable the execution of the strategy set in the earlier phase. Despite the presence of multiple sources from which managers can gain information, for instance direct observations or informal reports, decisions cannot rely solely on the instinct of managers and be subjective. As a consequence, managerial accounting is preferred because first, it provides a quantitative perspective of business activities, second it is a common language to different business units, and third it presents the company from a broader perspective (Hall, 2010). Accounting information contributes to the construction of a world-picture of the firm supporting many managerial activities such as the strategy setting, understanding company resources and its overall functioning (Aaltola, 2019).

The managerial accounting approach to decision-making consists in differential analysis. Differential analysis can be applied to support several choices such as price setting, evaluation of product line dismissal, comparison of the profitability of different lines of product, distribution channels or business units and make or buy decisions. In these situations, cost and revenues information do not always

provide complete framework and decision-making has to be supported following the differential approach (Cinquini, 2008). It consists in comparing costs and benefits of different alternatives. Managers should only consider costs or revenues that change when an alternative is chosen over another. We refer to them as differential costs or revenues (Garrison *et al.*, 2017).

Managerial accounting provides theoretical models that ease the decision-making. An example that will be deepened further is the CVP model which is a visual tool that allows to make predictions on the change in profits given changes in selling price, cost, or volume. If in one hand the actual situation is too complex and the reality needs to be simplified by a model in order to be handled by managers, on the other hand, simplistic models may suggest solutions that are not relevant in practice. In some cases, using models that simplify the reality can provides little information. The trade-off is between the need for the information and the rationality of the analysis of the situation resulting in a gap between theory and practice observed in companies (Vitali, 2009).

Every managerial decision result in value creation. Being interrelated, a wrong decision in one function influence the creation of value in others (Walther and Skousen, 2010). We deduce that the effectiveness of managers' decisions depends on the quality of the information they obtain (Horngren *et al.*, 2015).

Quality decisions occur if information is accurate and reliable (Leitner, 2014). These characteristics establish the degree of acceptability of the information.

Information has to be integrated so that homogeneity is assured. For instance, information must be recorded in a univocal way in the managerial accounting system (Marasca *et al.*, 2013). Furthermore, information has to integrate different sources of information coming from both lower levels and higher levels of the organization (Davila and Wouters, 2007) and different areas (Knauer *et al.*, 2020). Then information must satisfy the requirements of different users. In this sense, the managerial accounting system should be flexible enough to provide both financial accounting and managerial accounting information resulting in relevant data that can be used and effectively help managers (Wall and Greiling, 2011). In addition, information must be prompt so that it can be immediately accessed when required. Finally, information must be verifiable in the sense that there must be a trace from which the information has arisen. Usually, we find it in accounting documents (Marasca *et al.*, 2013). Therefore, what is relevant for managers is timely, quality and reliable information that are drivers of decisions.

This introduces a reflection concerning the recent issue of business intelligence and analytics intended as technologies and methodologies that allow to collect, prepare, present and analyze data (Rikhardsson and Yigitbasioglu, 2018). Among these technologies we find Big Data defined as high-volume, high-velocity and high-variety information. In fact, managerial accounting employs data sets to inform managers' decisions but, if in one hand, this can be seen as an opportunity to obtain more information, both in quantitative and qualitative terms, on the other

managers should not think at these new information processing forms as rational answers giver. In fact, Big data changed how knowledge is gained but should not change how decisions are made since decision-making needs to evaluate the information obtained, to balance different alternatives and finally an act of communication rather than employing given data in order to make decisions (Quattrone, 2016).

## **CHAPTER 2: COST ACCOUNTING**

### **2.1 A SPECIALISED BRANCH OF MANAGERIAL ACCOUNTING: COST ACCOUNTING**

In the previous chapter we presented the advantages of implementing managerial accounting tools and, among these, we mentioned a particular branch that is cost management. Cost management is the term used to describe those actions involved in cost planning and cost controlling with aim of informing managers to support their managerial activities (Blocher *et al.*, 2010).

Cost accounting definition has changed during the years and while in the 80's and '90s it was focused on calculating costs, today it represents a broader set of activities (Bogni and Solbiati, 2007). Due to intense global competition, companies have shifted from a mass marketing paradigm to a relationship marketing paradigm that has the focus on serving individual customers. The impacts of such changes can be observed in the increase in manufacturing complexity (Holm and Ax, 2020). Nowadays companies have to cope with challenges coming from the external environment and cost accounting is necessary to elaborate a response to external pressures, including not only cost collection and cost assignment to calculate the cost of products or services (Horngren *et al.*, 2015) but also cost planning, cost control and cost monitoring

under a strategic perspective. Therefore, managerial accounting practices shifted toward cost management (Diefenbach *et al.*, 2018). Cost information consists of both financial information and non-financial information. The former refers to costs and revenues and the latter to measures concerned with customer retention, productivity and quality (Blocher *et al.*, 2010).

This is also supported by researches that show that there are two different perspectives from which we can define the purpose of cost management: the first refers to cost management as a tool thanks to which managers gain information for managerial purposes making cost accounting a support for decision-making, the second defines it as the mean that provides insights on the cost structure of a firm (Diefenbach *et al.*, 2018).

With reference to this last point, it is important to highlight that every company must know its cost information concerning products or services, inventory, distribution channels, customer service and administrative department in order to make the most suitable decisions to achieve strategic goals. Cost management aims at aligning the cost structure to organizational strategy and encompasses the value chain involving activities from product development to customer relations and to supplier relations (Anderson S. W., 2007). Usually, cost management involves controlling the efficiency in the production, analyzing the profitability of different product lines and finally setting the price (Marasca *et al.*, 2013) to know if it is coherent with costs (Bogni and Solbiati, 2007). We refer to the activity of

measuring cost performance as executional cost management (Anderson S. W., 2007). In addition, cost management facilitates improvements and changes since the company is able to know what impact will be modifying the production process, the price or the marketing methods on costs (Blocher *et al.*, 2010). Finally, we have to consider that today the competitive advantage is built on differentiation and quality of the product rather than on efficiency in production. However, having accurate cost information remains imperative in every companies even though their competitive strategy is not cost leadership (Vitali, 2009).

Cost management systems can positively affect the performance of the company and help to develop and maintain a competitive advantage provided that the management considers it as integrated in the organization. In this case, it takes the name of structural cost management (Anderson S. W., 2007) and concerns five elements: the strategy, which must contain cost objectives in accordance with company's vision and mission, the structure of the organization in terms of roles and responsibilities, the methods implemented by the company, the organizational culture and the information since it is the base on which managers plan, control and decide (Diefenbach *et al.*, 2018). Therefore, cost information, just like managerial accounting information, has to satisfy some requirements. In particular, it has to be accurate, that is without any error or not biased, prompt and



settle the trade-off between costs of gathering the information and benefits of gaining that information (Blocher *et al.*, 2010).

In conclusion, today managerial accounting systems are not dedicated exclusively to cost calculation but rather to cost management with the aim of highlighting the activities that generate costs or provide added value. This shift is the consequence of Contribution margin reduction and decreasing profit levels that have caught the attention of managers pushing them to compare the profitability of different product lines (Bogni and Solbiati, 2007). Cost management information is used, other than to set the price, to support many other managerial choices. For instance, to choose the optimal number of products or services to be provided, to perform the controlling function measuring the efficiency of the production process or assessing the overall level of performance (Atrill and McLaney, 2009) and to cut costs effectively (Doyle, 2006).

Thanks to cost information we are able to understand the causes behind the profitability and assess the degree of sustainability of that cost strategy for a specific product or service (Bogni and Solbiati, 2007).

## **2.2 AN INTRODUCTION TO COST CONCEPTS**

Every manager must understand the cost structure of the company he/she is leading to make effective decisions (Horngren *et al.*, 2015). In order to succeed in

this, managerial accountants have to understand the cost concepts. We have to say that an objective definition of cost does not exist but rather varies according to the context in which cost is analyzed (Cinquini, 2008).

For the purposes of managerial accounting a cost is defined as a resource sacrificed or forgone to achieve a specific objective and is usually measured as the monetary amount that must be paid to acquire goods or services (Garrison *et al.*, 2017). In fact, cost information is expressed in quantitative and monetary terms (Cinquini, 2008). We can have different process of determination of the cost. We can measure in an objective way total cost knowing the unitary cost and the volume of resource acquired or we can formulate conjectures as it happens for the allocation of common costs incurred for more than one item. Managerial accounting is interested in determining the production cost given by the sum of the values of the factors employed or consumed in order to achieve organizational objectives (Cinquini, 2008).

Cost information is gathered and organized in the managerial accounting system. Costs are grouped in what we define as cost pools. Each cost pool is homogenous because groups costs that are associated with a cost driver. The cost driver is any factor that determines the incurrence of the cost (Blocher *et al.*, 2010). We can distinguish two type of cost drivers: activity-based cost drivers and volume-base cost drivers. In order to determine how costs change according to the variations of the cost driver, the former are concerned with changes in the level of the activity,

which is an event, task, or the aggregation of simple homogenous operations (Marasca *et al.*, 2013) with a specified purpose, performed to manufacture and deliver a product and the latter measure the change in cost as the volume of output produced varies (Blocher *et al.*, 2010). Activity-based cost drivers are able to explain the complexity of the processes as well (Banker and Johnston, 2007).

A cost driver can be defined as such provided that the level of activity or volume and the change incurred in cost are linked by a cause-and-effect relationship (Horngren *et al.*, 2015). The study of cost drivers is fundamental for cost containment purposes. In fact, even when a company finds inconvenient to build a sophisticated cost management system, knowing the factors the incurrence of which creates a cost is important to understand how the costs associated with a cost object respond to variations (Doyle, 2006).

Then cost pools are assigned to cost objects. A cost object is anything for which a measurement of costs is desired (Horngren *et al.*, 2015), either it is a product or service, a particular customer, an activity within the company or finally a business unit (Blocher *et al.*, 2010).

The process of assigning costs first to cost pools and second to cost object is called cost assignment from which we obtain two different information: we are able to determine the cost driver and we are able to explain cost behavior. The costing method is chosen by the managers and depends on many factors among which we mention the industry, the characteristics of the product or the

production process and finally the trade-off between costs and benefits obtained from cost information (Blocher *et al.*, 2010).

### **2.3 COST CLASSIFICATIONS**

This paragraph will be dedicated to presenting a detailed description of costs and featuring how cost information is classified in order to support different managerial activities.

The characteristics of managerial accounting make possible to tailor the information to the specific need of the users (Ponisciakova *et al.*, 2015). In this case, we analyze how cost information is elaborated to meet different requirements. This process is called cost classification and varies according to which cost information managers want to obtain (Oberholzer and Ziemerink, 2004). In fact, in addition to the classification of the costs by nature, typically used in financial accounting, we have different types of classifications that enable to obtain information coherent with different necessities (Brusa, 2009).

Therefore, the result of cost classification is a construction (Walther and Skousen, 2009). Cost classification only involves those costs associated with the activity that characterizes the company. Therefore, costs related to extraordinary activities that are considered in financial accounting are not by managerial accounting (Cinquini, 2008).

2.3.1 According to the relationship with cost object: direct costs and indirect costs

This first type of classification considers the cause-and-effect relationship that connects the cost with the cost object. In fact, in order to be assigned to a cost object a cost must be caused by the cost driver associated with that cost object. Given the definition of cost object as anything for which managers want to know and measure costs, we assign costs to a particular cost object when that cost can be easily and conveniently traced to it (Garrison *et al.*, 2017). We define direct costs those costs for which is convenient to be traced to a cost object and those that recurred exclusively for a particular cost object (Horngren *et al.*, 2015). We can also calculate in an objective way the amount of resources associated to a direct cost consumed by the cost object. The consumption of direct materials is an example because usually we can easily find the materials requirements and the relative unitary cost in the bill of materials (Marasca *et al.*, 2013). The difference between direct and indirect cost is in possibility of tracing the cost in an economically feasible way so that the costs of carrying out direct tracing should not exceed the benefits obtained from that information (Hansen and Mowen, 2007).

As a consequence, all the costs that cannot be conveniently traced to a cost object are defined as indirect costs (Cinquini, 2008).

Considering the economic convenience, the choice of treating a cost as direct or indirect is influenced by several factors among which we mention: the materiality of the cost, the availability of an accounting information system and the design of the operations. In fact, when the amount of the cost is small, the gain in information obtained about a cost object is not worth the resources required, in terms of time as well, for the direct tracing. Despite the improvements in information technology, which allow to gather more cost data than in the past, not all companies have the possibility to employ advanced methods of cost registering as the bar code or serial numbers, reducing the possibility of direct tracing. Finally, it is easier to trace directly costs if a company's facility is designed such that it will be exclusively dedicated to the production of a particular cost object (Horngren *et al.*, 2015).

Moreover, a particular cost may be classified as direct or indirect depending on the cost object. The wider the cost object, the more direct costs can be traced. For instance, the salary of factory manager of a multiproduct company is considered as indirect cost if we take a single product line as the cost object, while is direct if the object for which cost is measured is the manufacturing division (Garrison *et al.*, 2017). Finally, when we consider the entire company as cost object all costs incurred are direct costs (Marasca *et al.*, 2013).

While the process of assigning direct cost to cost object is called cost tracing, the process of assigning indirect costs is referred to as cost allocation (Blocher *et al.*, 2010). In this case, to avoid misallocation managers should choose allocation bases coherent to the cost object such that the cost allocation will reflect the real consumption of resources (Marasca *et al.*, 2013).

### 2.3.2 According to cost behavior: variable costs and fixed costs

This type of classification analyzes the behavior of costs when the cost driver changes (Marasca *et al.*, 2013). Earlier in this chapter, we provided the definition of cost driver presenting the categories of activity-based cost drivers and volume-based cost drivers to which now we add some others among the most common used by managerial accountants such as number of setups, number of clients served and number of orders processed. The cost driver should be chosen to reflect the complexity of company's operations and to understand the behavior of costs. Since traditionally the most used are volume-based cost drivers and activity-based cost drivers, we will focus the attention on these two categories assuming that the analysis holds for all of them (Marasca *et al.*, 2013).

Considering a given period of time, costs can change in proportion to changes in the level of the activity, or volume, or they remain fixed regardless these

variations. The first cost behavior reflects variable costs and the second reflects fixed cost (Hansen and Mowen, 2007).

However, we have to specify that in reality costs do not behave as described above. In fact, costs are described by a non-linear relationship resulting in difficult interpretation and understanding of cost information (Garrison *et al.*, 2017). Probably, costs are better described by curves due to the possibility of exploiting economies of scale when high levels of output are produced (Atrill and McLaney, 2009). As a consequence, cost behavior is subjected to simplifications that consider it linear in the relevant range. The relevant range is the range of normal activity at which the company usually operates in a given period of time and in which the assumption of linearity of cost behaviors holds (Garrison *et al.*, 2017). Therefore, the variability of the cost depends on the period of time that we consider in the analysis resulting in costs that can be variable if analyzed in a multiyear span of time or fixed if analyzed in the short term (Marasca *et al.*, 2013).

Variable costs change proportionally to the level of the activity or volume so that total variable cost is zero if either the activity or the output level are zero (Brusa, 2009). The example of direct materials shows how variable cost associated with the consumption of resources increase proportionally to the number of items processed or is zero if the production process does not operate (Blocher *et al.*, 2010). In fact, total variable cost is obtained multiplying the unit variable cost by



the volume of activity (Marasca *et al.*, 2013). In this case as well, the behavior of variable costs is subjected to limitations. In fact, companies usually benefit from buying in bulk discounts larger quantity of raw materials. Therefore, the change in variable cost is not proportionate to the volume (Liu *et al.*, 2019).

On the contrary fixed costs remain constant despite the changes in the level of production (Garrison *et al.*, 2017), supposing that the assumption on the relevant range holds. Examples of fixed costs are rent, insurances and staff salaries. Although labor costs are often assumed variable costs, in practice they behave as fixed because managers are not able to change the workforce size according to the volume of output produced. Moreover, considering the labor legislation, it is difficult to dismiss workers in the short-term (Atrill and McLaney, 2009).

The distinction between variable and fixed is helpful to know on which costs managers can act. Variable costs can be modified in the short-term while fixed costs remain constant (Blocher *et al.*, 2010). However, considering a different length of the time horizon also fixed costs can change. We distinguish between discretionary fixed costs and committed costs. The former refers to cost arising from annual decisions, usually concerning advertising or R&D, on which managers can act in the short-term. The latter refers to costs connected to multiyear planning concerning capacity requirements that cannot be modified in the short-term.

The behavior of fixed costs is subjected to limitations as well. In fact, usually fixed costs behave as stepped costs. Stepped costs are those costs that are fixed within a certain level of activity and sudden increase once that level of activity is reached (Oberholzer and Ziemerink, 2004). Think about the amount paid for the rent of the factory. If the volume produced increases, an additional space will be rented resulting in a stepped increase in cost rather than a proportional increase. Moreover, costs are mixed. Those costs that contain a fixed part and a variable part are referred to mixed costs. Examples are costs related to utilities such as electricity consumption, heating and lighting which cost is given by a fixed part and a variable proportion that changes according to the level of activity (Marasca *et al.*, 2013). Mixed costs are hard to be evaluated because they do not respond exclusively to the level of activity, but neither can be treated as fixed (Walther and Skousen, 2009).

### 2.3.3 For manufacturing companies: manufacturing costs and nonmanufacturing costs

Cost accounting is particularly important in manufacturing companies that have to consider, among others, costs arising from the production process. Manufacturing companies are involved in the process of transforming of raw materials into finished goods (Walther and Skousen, 2009) and find convenient to classify costs

into two categories: manufacturing costs and nonmanufacturing costs. The first category is strictly correlated to the cost caused by the activities of the production function and the second relates to administrative and selling expenses (Hansen and Mowen, 2007).

Deeping the analysis, manufacturing costs can be divided into three categories: direct materials, direct labor and manufacturing overhead. The first two refer to manufacturing costs that can be traced directly in a cost-effective way to the final product, whereas the third refers to all manufacturing costs that either are common to the production of several goods or cannot be trace directly for economic convenience reasons (Walther and Skousen, 2009). Direct materials include raw materials that will be transformed to obtain the final goods, finished products that are used as an input and every material employed in the production process provided that it can be conveniently traced to the final product (Garrison *et al.*, 2017). In addition, this category comprises also the cost of acquiring direct materials including transportation costs, sales taxes and custom duties (Horngren *et al.*, 2015).

Direct labor refers to labor costs of workers directly employed in the production process (Garrison *et al.*, 2017).

Finally, manufacturing overhead costs are those costs that occurred during the production process but cannot be conveniently traced to a product, so they are considered indirect manufacturing costs. This category is residual and comprises

all manufacturing costs that are neither included in direct materials nor in direct labor. For instance, in this category we include costs for those materials used to produce more than a product for which, despite being variable, it is costly to trace to a single product. Another example are common costs concerning the production facilities such as heating, energy, light, maintenance and depreciation of common machinery and indirect labor costs such as supervision, inspection and quality control (Blocher *et al.*, 2010).

The category of nonmanufacturing costs comprises all those costs not involved in the production process which are represented by selling and administrative expenses. Selling costs refer to costs caused by the activity of selling, from order procurement to delivering the product including advertising, sales commission and cost of inventory. Administrative costs refer to general management costs (Garrison *et al.*, 2017).

It is worth noting that nowadays the share of manufacturing overheads has grown faster than direct materials or direct labor costs due to increase in complexity of the manufacturing process (Davila and Wouters, 2007). In particular, product diversity has been designated as the most relevant driver of manufacturing process complexity (Abernethy *et al.*, 2001). Equally, the marketing function has received enhanced attention increasing costs related to after-sales service, logistics and general administration (Doyle, 2006).

#### 2.3.4 For financial statements: product costs and period costs

This type of classification is functional to the preparation of financial statements and is particularly relevant for manufacturing companies. Product costs are costs incurred to produce the final good and coincide with the definition of manufacturing costs that was proposed in the previous paragraph. Since these costs are attached to the product they should not be registered in the P&L immediately but only when the product will be sold. Product costs first became an asset registered in the balance sheet under the inventory and then are registered in the income statement as cost of goods sold when products are sold and leave the warehouse (Garrison *et al.*, 2017). The logic of this classification follows the accrual principle according to which the cost arose to generate a revenue is recognized as an expense and registered in the income statement only when the benefit from the cost is realized, that is when the product is sold and generates a sale revenue (Pong and Mitchell, 2006). We deduce that manufacturing companies have to cope with different type of inventory costs. In particular, we find raw materials inventory, for inputs that have not been used yet, work-in-progress inventory, for products that have not completed the production process yet and finally completed products inventory that comprises finished goods waiting to be sold. Given this characteristic, product costs are also called inventoriable costs (Horngren *et al.*, 2015).

On the contrary, period costs are expensed in the income statement in the period in which they incurred. Usually, in manufacturing companies they correspond to nonmanufacturing cost like selling and administrative expenses (Garrison *et al.*, 2017).

### 2.3.5 For decision-making: differential costs, opportunity costs and sunk costs

In the first chapter we stated that the aim of managerial accounting is to provide managers with information to support them in decision-making. Decision-making involves selecting among competing alternatives that entail different costs and benefits (Garrison *et al.*, 2017). Therefore, the decision process presupposes the comparison between the variations of costs and revenues that arise when an alternative is preferred over another. This type of classification enables managers to individuate costs and revenues incurred for two different alternatives and provides the information to choose the most suitable one (Cinquini, 2008).

Costs that are relevant to decision-making are differential costs. Differential costs are either incremental or decremental costs that varies between alternatives (Coller and Collini, 2015). This definition hold for revenues as well. In fact, for the purpose of decision-making both differential costs and revenues must be considered (Garrison *et al.*, 2017). The differential analysis involves both variable and fixed costs provided that they vary between two alternatives (Cinquini, 2008).

Therefore, costs that have been already sustained and will not change if the actual situation changes are irrelevant to the decision-making. They are called sunk costs because they cannot be recovered in any alternatives (Garrison *et al.*, 2017). Examples of sunk costs are costs sustained to acquire production capacity. In fact, these costs will remain regardless of whether production will effectively start or not (Cinquini, 2008).

In addition, managers must take into consideration opportunity cost. Opportunity cost is the potential benefit that is given up when one alternative is selected over another and, contrary to differential costs and revenues, it is not found in financial records since it is not expressed in monetary quantitative terms. It is the worth of a missed opportunity and must be considered when evaluating two alternatives (Hansen and Mowen, 2007). Opportunity costs are considered only by managerial accounting because they do not have any financial transaction. In fact, they represent the revenues that would have been missed if the company had employed its resources in alternative way (Cinquini, 2008).

Examples of differential analysis applied to support managers in the comparison between the current situation and the alternative involve decisions on whether to discontinue a product line or not, whether it is convenient to substitute the equipment or not, whether to accept a special order or not and whether to buy a product from an outside supplier or to make it internally (Cinquini, 2008).

## CHAPTER 3: VARIABLE COSTING AND ABSORPTION COSTING

### 3.1 VARIABLE COSTING

Variable costing is intended to overcome the limitations of traditional income statement with the aim of assisting managers in decision-making. In fact, traditional income statement is thought for external reporting and provides little insight for internal purposes. As a consequence, the variable costing was developed because it narrows the scope of the analysis to cost objects which information is needed. The variable costing approach classifies costs according to their behavior distinguishing in variable or fixed (Gersil and Kayal, 2016). Variable costs include direct materials, direct labor, the variable portion of manufacturing overhead if it is traced conveniently and variable nonmanufacturing costs. They are treated as product costs. On the contrary fixed cost, both manufacturing and nonmanufacturing are treated as period costs. Thanks to this costing approach, crucial information is emphasized, in particular costs associated with a cost objects and an important measure of profitability that is the Contribution margin. Given that the cost of production is composed exclusively by variable costs that can easily be traced to the cost object, variable costing is referred to as direct costing (Horngren *et al.*, 2015).



### 3.1.1 The concept of Contribution margin

The elaboration of costs for internal purposes following the variable costing approach results in the Contribution margin. It is a conceptual number mostly used by managers to support their decision-making. The Contribution margin is defined as a source of sale revenues available to cover fixed costs and generate profit (Cinquini, 2008). In fact, it is the amount remaining after all variable expenses, both variable manufacturing costs and variable selling and administrative expenses, have been deducted from revenues of the product sold and is calculated as total revenues minus total variable costs (Walther and Skousen, 2009).

Although the Contribution margin may seem meaningless to external parties, it is a profitability indicator that expresses the capability of each product of covering common fixed costs and contributing to profit generation. It is particularly useful to analyze short-term decisions because in the short-term fixed costs are not modifiable and the creation of profit relates solely to the Contribution margin such that the highest the Contribution margin of a product line, the highest the profit it generates (Marasca *et al.*, 2013). At this level, the allocation of fixed costs to different product lines is not relevant to decision-making since the attention is

focused on how the Contribution margin of each line will contribute to cover the total fixed costs (Cinquini, 2008).

Therefore, the evaluation of the economic convenience should be based on the value of the Contribution margin because its maximization reflects the maximization of the profit obtainable in the period analyzed. Having a positive Contribution margin is the essential condition that pushes the manager to continue producing that product line. In fact, if the Contribution margin was negative, producing and selling that item would contribute to the losses of the firm (Cinquini, 2008).

However, managers may find convenient to distinguish between traceable fixed costs and common fixed costs. The former are fixed costs that are direct to the segment. They are subtracted from the Contribution margin to obtain the Segment margin. The segmented income statement highlights the profitability of a segment, either it is a product, a division or a geographical area. The latter are not assigned and evaluated in their entirety (Garrison *et al.*, 2017).

### 3.1.2 Unit Contribution margin and Contribution margin ratio

The Contribution margin can be calculated for each unit of product. The measure that emerges from the difference between unit price and unit variable cost is called Unit Contribution margin (Walther and Skousen, 2009). As the Contribution

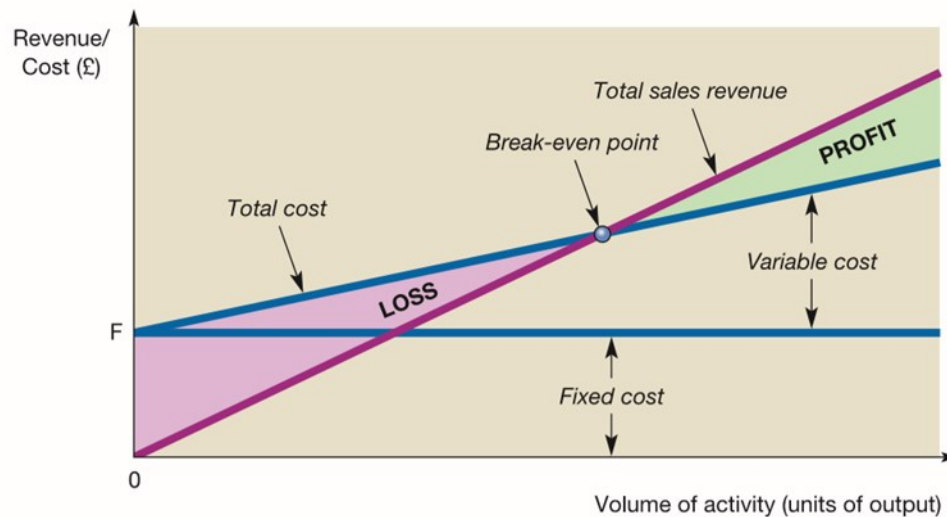
margin, the Unit Contribution margin expresses in unitary terms the residual amount, after unit variable cost has been deducted from the price, that first contributes to cover fixed costs and finally to generate profit (Cinquini, 2008).

The Unit Contribution margin provides further information such as the impact on the operating profit for a unit increase in sales.

On the contrary, the Contribution margin ratio is given by the ratio of the Unit Contribution margin and the unit price and measures the increase, or decrease, in profits caused by a given increase, or decrease, in sales dollars (Blocher *et al.*, 2010). It is the percentage expression of the Contribution margin obtained per dollar of sales and highlights how the profit will be affected by change in total sales (Horngren *et al.*, 2015). It is particularly useful when we need to compare the profitability of two products to know which one provides the greatest Contribution margin per of dollar sales. In this case, it is recommended pushing the production and selling of the product that generates the highest Contribution margin ratio (Garrison *et al.*, 2017).

The Unit Contribution margin can be employed to perform a Cost-Volume-Profit analysis to obtain the break-even point of a specific product (Walther and Skousen, 2009), as shown in figure 3.1.

**Figure 3.1-** Break-even chart



**Source** - Atrill P., McLaney E., *Management Accounting for decision makers*, cit., p. 62.

CVP analysis is a method for analysing the relationship between costs, volume and profitability considering unit variable cost, total fixed costs, unit selling price, the output volume and the sales mix. The model predicts how costs will behave when a change in one of the factors mentioned above occurs (Blocher *et al.*, 2010). This type of analysis that builds different what-if scenarios is referred to as sensitive analysis and studies the impact of different conditions on profit. The graphical expression of CVP analysis is helpful to visualize different scenarios. In particular, when the curve of total costs and the curve of total revenues cross, we reach the break-even point. The break-even point is given by the ratio between fixed costs and Unit Contribution margin. Graphically it highlights the profit area

where total revenues are greater than total costs as well as the loss area and indicates the optimal volume to be produced (Hansen and Mowen, 2007).

Thanks to CVP analysis not only can we obtain the optimal level of output to break-even but also the optimal volume to reach a target profit. In fact, managers usually prefer to have information on target profit rather than on output level. Graphically the steepness of curve of the total costs is represented by the Unit Contribution margin. The highest the Unit Contribution margin, the steepest the curve. The CVP determines also the degree of risk of the activity depending on the how the profit is influence by variations in the volume produced (Cinquini, 2008).

However, CVP analysis is subjected to several limitations. First, it is based on the assumption that the volume of output is the driver of total cost so that changes in the levels of revenues and costs will occur only due to changes in the number of units sold. Second, it divides total costs into variable and fixed that are assumed to be linear in the relevant range and during the period analyzed (Horngren *et al.*, 2015). We already explained that the linearity of costs is a construction that simplifies the reality. For instance, fixed costs are better represented by stepped variations (Walther and Skousen, 2009). Moreover, it is a static model in which selling price, unit variable cost and total fixed costs are known and constant, the sales mix does not change, and the units produced equals the units sold (Horngren *et al.*, 2015).

In addition, companies usually realize more than one product and CVP analysis provides little insight on how the production and selling of more products affect each other. In particular, it rises the problem of how common fixed costs incurred regardless of the production can be identified and assigned to each product (Walther and Skousen, 2009).

Finally, it is valid only to evaluate short-term scenarios (Cinquini, 2008).

Despite the limitations of the CVP analysis, it is often used by managerial accountants who found it understandable. Moreover, it is reasonable for those companies that operated within the relevant range (Atrill and McLaney, 2009).

### 3.1.3 Contribution margin as a support for short term decisions

In the short term, given the impossibility of modifying the production capacity or changing fixed costs, managers' decisions are supported by the information provided by the Contribution margin. We remind that costs relevant for decision-making are those costs that vary. Since fixed costs are constant in the short-term, they are irrelevant and hence not included in the analysis. The Contribution margin emphasizes only variable costs (Cinquini, 2008). On the contrary, if any decision implies a change in the capacity requirement, that is a long-term choice, Contribution margin is not a valid tool anymore because in this case the evaluation relies on financial factors rather on costs and revenues (Marasca *et al.*,

2013). Thanks to Contribution margin we can perform profitability analysis (Atrill and McLaney, 2009). Employing the concept of Contribution margin and Unit Contribution margin from which total fixed cost are subtracted, managerial accountants define the most profitable products as the ones characterized by the highest Contribution margin, or Unit Contribution margin. Consequently, they make informed decisions on price, volume of production and sales mix that entail the greatest profit to the company (Marasca *et al.*, 2013). As mentioned earlier, managers should prefer products that generate the highest Unit Contribution margin because they better contribute to the generation of the profit. In particular, the optimal sales mix, which is the best combination of different lines of products, cannot be found thanks to a CVP analysis (Hansen and Mowen, 2007). Therefore, the management is able to know where to focus the resources maximizing the total Contribution margin resulting in product mix optimization (Marasca *et al.*, 2013).

The variable costing approach inform closing or continuation decision. This type of analysis compares the profitability of different lines and investigate the possible causes of underperformance driving dropping or continuing the production of a product line (Atrill and McLaney, 2009).

It influences outsourcing decisions. Making it internally or subcontract the work to external suppliers have a great impact on the overall profitability of the company. Finally, whether accepting or not a special order. In this case, managers

should evaluate whether committing the capacity of the plant or leaving it spare and the consequences of entering another market.

Obviously, the Contribution margin is not the only value to be considered. Opportunity costs must be considered as well (Atrill and McLaney, 2009).

Finally, we remind managers should evaluate the strategic consequences of such decisions (Marasca *et al.*, 2013). In particular, when dropping a product line, the impact of such a decision on the brand and on the image of the company should be taken into consideration. Moreover, the product can complete a range of products and is used to attract customers to other products (Cinquini, 2008).

#### 3.1.4 Contribution margin in the case of a constrained resource

The Theory of Constraint is focused on time optimization so that the company can transform inputs into outputs at the pace of the market ensuring sale revenues (Vitali, 2009). Therefore, managers often concentrate on improving efficiency and speed of the manufacturing process even though they should focus on improving just the activities that are constrained (Blocher *et al.*, 2010). The so-called bottlenecks generate from a shortage in any factor of production and are usually responsible for slowing down the entire process (Atrill and McLaney, 2009). It may involve the production capacity of a plant or of a worker, a strict procedure that must be followed and a constrained access to inputs due to the procurement



process or the impossibility of hiring workforce (Vitali, 2009). Given the constrained resource, managerial accountants have to decide which product should be preferred in production (Atrill and McLaney, 2009).

The Contribution margin in the case of a constrained resource takes into consideration the Unit Contribution margin in the light of the constrained resource. Generally, the products with the highest Unit Contribution margin should be emphasized in production since they better contribute to cover fixed costs. However, in the case of a constrained resource this evaluation does not hold. In this case, the Contribution margin is a tool used to understand how to optimize the production and maximize the contribution of the product realized under the constrained resource (Blocher *et al.*, 2010).

Once the constraint has been identified, we determine the most profitable product mix given the constraint. It is the product that has the highest Unit Contribution margin in relation to the constrained resource.

However, we have to say that these considerations hold in the case there is one constraint. In fact, when there are multiple constraints more sophisticated system must be used (Marasca *et al.*, 2013).

Managers should also consider long-term investment to cope with constrained resource such as adding capacity to the constraint acquiring new machinery or redesign the manufacturing process to make it flexible (Blocher *et al.*, 2010).

### 3.1.5 Contribution margin income statement

While the traditional income statement focuses the attention of the distinction between manufacturing and nonmanufacturing costs, the Contribution margin income statement focuses on the distinction between variable and fixed costs.

The traditional income statement format does not distinguish the costs in variable or fixed but classifies them as period or product costs. Consequently, it provides little insight for planning, controlling and decision-making. The Contribution margin income statement is an internal tool employed to support internal necessities (Garrison *et al.*, 2017).

While the conventional income statement distinguishes costs according to their nature, the Contribution margin income statement focuses the attention on cost behavior separating variable costs and fixed costs. Its design aims at highlighting total Contribution margin rather than gross margin (Blocher *et al.*, 2010), as shown in figure 3.2.

**Figure 3.1-** *Contribution margin income statement*

Sales revenues
(Variable costs)
Manufacturing variable costs
Selling variable costs
<hr/>
Contribution margin
(Traceable fixed costs)
<hr/>
Segment margin
(Common fixed costs)
<hr/>
Net operating income

**Source-** Garrison *et al.*, *Managerial Accounting*, cit., p. 44.

Moreover, this configuration enables to obtain the Segment margin. It is given by the difference between the Contribution margin and fixed costs that are exclusively incurred for the cost object analyzed and expresses how much each segment contributes to cover general fixed costs incurred to sustain the entire production and subsequently to generate profit.

The objective of calculating several levels of Contribution margin is to determine the profitability of the cost objects in the most transparent and objective way possible (Marasca *et al.*, 2013)

### 3.1.6 Advantages and disadvantages of variable costing approach

Variable costing approach focuses on variable costs and on the Contribution margin while fixed costs are treated as common. In fact, fixed costs are incurred to sustain the entire structure of the company and it would be incorrect to consider them linked to products by a cause-and-effect relationship. Thanks to the variable costing approach, we reduce the bias and mistakes due to allocation of indirect costs. It requires simple calculations and it is easy to understand (Cinquini, 2008). Moreover, it enables CVP analysis (Garrison *et al.*, 2017).

The advantages of the variable costing are also its limitations. The model is too simplistic and fails in reflecting the reality. We saw that costs that cannot be effectively directly traced to a cost object should be treated as fixed. Therefore,

distinguishing in an objective way variable and fixed costs may be difficult (Gersil and Kayal, 2016).

Moreover, direct materials are assumed to be variable but in practice they do not always vary in proportion to the volume produced. In fact, the acquisition cost decreases when raw materials are bought in bulk. Another example is the consumption of utilities that usually have both a variable and fixed cost component (Cinquini, 2008). As a consequence, in order to better reflect the reality, managers have developed the super variable costing model. It is a variation in which the variable part of manufacturing overheads is assumed to be too small to be conveniently traced and is treated as a fixed cost. Moreover, direct labor costs are assumed to be fixed. In fact, due to strict labor legislation managers are actually limited in the possibility of adjusting the size of the workforce making labor costs indirect (Garrison *et al.*, 2017).

However, variable costing is found on economic theory and is relevant because the Contribution margin provides disaggregated information for decision-making, in particular supporting short-term decisions (Vitali, 2009).

The Contribution margin income statement format simplifies the control of costs and enables managers to know in advance which products better contributes to generate profit and push their production. In fact, while profit or loss results only at the end of the period, the Contribution margin, as well as the CVP analysis, can be calculated considering budgeted values (Cinquini, 2008).

### **3.2 ABSORPTION COSTING**

Managers want complete cost information when they have to make decisions. The absorption costing is particularly effective because it provides information to support decision-making usually involving pricing decisions, controlling and assessing the relative efficiency. Managers may find convenient to compare the cost of manufacturing a certain product to the cost of another in the range of available products (Gersil and Kayal, 2016). Finally, it is helpful to assess the overall business performance regarding the product sold. When the units produced are nearly identical or the company realizes a single product, the full costing approach coincides with process costing. On the contrary, when the company is a multi-product business, costs will not be identical for each unit produced and it is reasonable to investigate how much different cost objects absorb resources (Atrill and McLaney, 2009).

For this reason, it is referred to as absorption costing because it assumes that units of product fully absorb manufacturing costs. It distinguishes costs by nature dividing manufacturing costs and selling and administrative expenses, both fixed and variable. Manufacturing costs, whether fixed or variable, are allocated to the product and contribute to the formation of the unit cost. Variable costing and

absorption costing differ from how they treat nonmanufacturing variable costs and manufacturing overhead (Horngren *et al.*, 2015).

Absorption costing treats all manufacturing costs as product costs. Because all manufacturing costs, whether variable or fixed, are allocated to product, the absorption costing method is also known as full costing.

As in the variable costing, in the absorption costing as well, nonmanufacturing costs, whether variable or fixed, are treated as period costs and are never assigned. The manufacturing costs assigned are also known as cost of goods sold (Garrison *et al.*, 2017).

### 3.2.1 Description of the absorption costing approach

The logic of the absorption costing considers the entire cost of running a particular facility and takes into account all the resources sacrificed to achieve that objective. While nonmanufacturing costs are treated as period costs regardless of whether they are fixed or variable, fixed manufacturing costs need to be assigned to each product manufactured in order to determine the cost of goods sold (Gersil and Kayal, 2016).

However, it is difficult to measure the reasonable share of indirect costs assigned to each product without leading to arbitrary cost allocation. One possibility could be dividing the overheads by the number of products realized in a given period

thus assigning equally the indirect costs. However, this method may not reflect the real absorption of costs by each product. The most common used allocation base is direct labor hours. In effect, time spent working on each product can be a good driver of the overhead costs. However, as we will explain later, due to changes in the manufacturing process direct labor hours is not a correct driver anymore (Atrill and McLaney, 2009).

Indeed, variable manufacturing costs, namely direct materials and direct labor, incur in the determination of the cost of goods since they are product costs. The information on direct material can be found in the bill of materials. It is a document in which the direct materials requirement for each unit of product is indicated (Garrison *et al.*, 2017).

The absorption costing approach particularly highlights how to determine the full cost of a unit of product. The sum of cost values that can provide useful information to decision-making is referred to as cost configuration. The sum of direct materials, direct labors and other manufacturing direct costs like subcontracted work, is the prime cost. This cost configuration is useful to analyze beginning and ending inventory of finished products. When we add the share of manufacturing overheads to the prime cost, we obtain the product cost. In addition, the sum of direct labor and the share of indirect manufacturing costs is the conversion cost and expresses the cost of the manufacturing process. It is used when comparing the efficiency of two different production processes. Finally,

adding to product cost the period costs, including interest expenses, we obtain the full cost (Cinquini, 2008). As a result, absorption costing is the most employed costing method to support pricing decisions since it enables the full recovery of all costs of the product (Coller and Collini, 2015).

The absorption costing can concern cost objects other than product lines. The full cost of a department is referred to as cost centre. Where cost determination is dealt with departmentally, each department is known as a cost centre (Atrill and McLaney, 2009).

### 3.2.2 The concept of gross margin

The absorption costing divides costs into two categories: cost of goods sold and period costs. The former are product costs, the latter are selling and administrative expenses. The gross margin should not be confused with the Contribution margin. While Contribution margin is the difference between sale revenues and variable costs, the gross margin is the difference between sales revenues and cost of goods sold (Garrison *et al.*, 2017). It is a number used mainly for external reporting and gives information on the costs of manufacturing a product (Walther and Skousen, 2009).

The cost of goods sold is the full cost of a unit of product. It is the sum of direct manufacturing costs, mainly direct materials and direct labor, and the reasonable



share of indirect manufacturing costs (Atrill and McLaney, 2009). However, we have to consider that in manufacturing companies the units produced do not correspond to units sold but usually are greater creating inventories. The cost of goods sold is calculated as the difference between the cost of goods available for sales and the value of ending inventory (Garrison *et al.*, 2017).

The Gross margin income statement is presented in figure 3.3.

**Figure 3.3-** *Gross margin income statement*

Sales revenues
(Cost of goods sold)
Direct material
Direct labor
Share of manufacturing overhead
<hr/>
Gross margin
(Selling and administrative expenses)
Variable sg&a expenses
Fixed sg&a expenses
<hr/>
Net operating income

**Source-** Garrison *et al.*, *Managerial Accounting*, cit., p. 44.

Especially in manufacturing companies there is the need of highlighting the cost of goods sold following the absorption costing approach. However, if the company is a multi-product business, managerial accountants have to cope with indirect costs allocation. Therefore, the profit is dependent on the cost allocation. Even though the gross margin income statement is more useful for external

purposes, it contains details from which it is possible to deduce the production process and should not be published (Walther and Skousen, 2009).

### 3.2.3 Traditional costing systems

Cost information in the P&L statement provides little useful insights to managers for their internal necessities. Moreover, both variable and absorption costing described, despite being useful for internal decision-making, have some limitations. In particular, both do not assign fixed costs to cost objects (Doyle, 2006). However, usually managers prefer to have complete information on cost objects analyzed and hence allocate indirect costs. If in one hand the indirect cost allocation process allows to have more information, in the other cost allocation is not always a good solution. In fact, as it will be deepened in the following paragraphs, it provides correct information only if the allocation base chosen actually drives the costs otherwise managers may obtain misleading information and on which wrong decisions are made (Horngren *et al.*, 2015).

#### 3.2.3.1 Cost drivers and the process of cost allocation

After having chosen the cost object of which information is desired, the process of cost allocation continues with the classification of costs into two categories: direct and indirect costs. Direct costs will be directly traced to the cost object while

indirect costs will be the object of the allocation. Whenever possible it is preferable to segment the overheads directly assigning the traceable fixed costs (Atrill and McLaney, 2009).

Traditional costing methods identify a direct relationship between the resources consumed and the cost object according to which it is the cost object that determines the requirement and the consumption of resources (Marasca *et al.*, 2013). Therefore, traditional costing envisages two stages in the allocation process, the cost accumulation and the cost allocation (Ponisciakova *et al.*, 2015). First costs driven by the same cost driver are grouped into homogenous cost pools and then are allocated to the cost object in proportion to their contribution to the formation of the cost (Atrill and McLaney, 2009). It has been proved that errors in these two stages negatively impact on the quality of the information (Leitner and Wall, 2015). In order to be allocated, an allocation base must be chosen. The choice should be influenced by the cause-and-effect relationship between the cost pool and the cost object such that the allocation base drives the cost pool. The nature of the indirect costs should influence that choice as well. For instance, if the production process is highly automated, machine-based cost drivers, such as machine hours, should be preferred as the basis of charging the manufacturing overheads instead of direct labor hours (Atrill and McLaney, 2009). The allocation base can be expressed in monetary terms, like total cost of direct labor, or in quantitative terms, as number of hours of direct labor (Cinquini, 2008).

The allocation rate is the ratio between the amount of the cost pool we want to allocate and the total value of the allocation base chosen. It reflects the consumption of the resources by the cost object. If we multiply the allocation rate by value of allocation base for each cost object, we determine the reasonable fraction of indirect cost to be allocated to that cost object (Marasca *et al.*, 2013).

We remind that there is no correct way of charging overheads since the final decision depends on the judgement of the manager. However, there are some criteria to be respected such as the cause-and-effect relationship that we have already mentioned above. Managers have to identify the factors that determine the consumption of resources rather than choosing subjectively the allocation base. This evaluation identifies those factors that consume common costs on which managers can act on to improve efficiency (Cinquini, 2008). We also remind that direct labor is a declining factor of total organizational costs while support manufacturing activities and marketing costs are growing. Therefore, using direct labor costs or direct labor hours may not be effective anymore (Doyle, 2006).

Nevertheless, the trade-off between costs and benefits of the allocation process has to be considered. Finally, the fairness in the allocation since the output of the allocation will be the basis on which managers set the price and make other decisions (Cinquini, 2008). The choice of the allocation base is a trade-off between the necessities of the managers and the respect of these criteria (Atrill and McLaney, 2009).

### 3.2.3.2 Single allocation base and multiple allocation base

Traditional costing methods define two approaches of allocating fixed costs between cost objects.

In the single allocation base approach, managers accumulate all indirect costs into a single cost pool that is driven by a single allocation base (Horngren *et al.*, 2015). The single cost pool comprises all indirect costs whether they are manufacturing or nonmanufacturing (Marasca *et al.*, 2013). The process follows as described earlier by computing the single allocation rate and assigning costs to cost objects. In spite of the simplicity of the calculations, grouping indirect costs with different nature in the same cost pool may lead to irrational cost allocation. In fact, when cost pools contain inhomogeneous costs, it is difficult to select a cost driver that is able to explain the cause-and-effect relationship that link cost pool and cost driver (Horngren *et al.*, 2015). Even though today this type of allocation is considered to be too simplistic and leads to unreliable cost allocation, it was used in the past when, due to the characteristics of the production process, the share of indirect costs was not so relevant (Marasca *et al.*, 2013). If the cost allocation is meant to be coherent with the cause-and-effect relationship, it does not reflect the real contribution of factors of production to the realization of the final product in the modern companies. The more diverse the factors are, the more they cannot be

grouped in a unique cost pool (Cinquini, 2008). This problem is partially solved by using the multiple allocation base approach. In the multiple allocation base approach more than one cost pool is selected and for each of them a different cost allocation base is chosen ensuring both homogeneity of each cost pool and consistency between cost and cost driver (Horngren *et al.*, 2015). Different cost pools should be created to reflect different costing purposes. It is recommended distinguishing indirect costs into manufacturing and selling and administrative expenses (Marasca *et al.*, 2013) and to use the same cost driver for each cost pool to allocate costs to different cost objects in order to assign the total amount of overheads (Atrill and McLaney, 2009).

#### 3.2.3.3 Limitations of traditional costing methods

One of the problems arising from implementing a traditional costing method is the over costing or under costing of the product. The former incurs when a product consumes a low level of resources but is reported to have a high cost per unit, the latter incurs when a product consumes a high level of resources but is reported to have a low cost per unit. This misallocation is caused by the use of volume-based cost drivers resulting in considerable fraction of indirect costs assigned to those products produced in greater quantity despite of their real consumption of resources (Vitali, 2009). To compensate managers set a higher price that does not

reflect the real value of the product. In fact, complex products that absorb more resources are produced in small quantities but usually carry the greater value. This problem is called product-cost cross-subsidization and not only may generate misunderstanding of the reality and drive wrong decisions when fixing the price but also may lead managers' attention to the wrong products. Distorted information leads to ineffective decisions which have consequences on company competitiveness in the market (Banker and Johnston, 2007).

Therefore, the evaluation of the reliability of the costing system should be done before managers take harmful decisions. In order to solve these limitations managers should collect as many cost information as possible, in particular trying to allocate as many direct costs as possible provided that it is economically convenient (Horngren *et al.*, 2015).

In addition, managers should try to group costs into homogenous cost pools and whenever possible choose the cost-driver that best reflects the causality relationship between costs and cost objects. Managers should focus the attention of this relationship rather than on the allocation itself. The choice of the allocation base is often arbitrary (Atrill and McLaney, 2009) is a subjective choice of the manager which serves his/her need for particular information (Marasca *et al.*, 2013).

A new business environment, characterized by highly automated production processes, growing demand for customized products and intense competition, has

led companies to focus on their cost structure highlighting the limitations of traditional costing methods when coping with increasing indirect costs. The advancements in technology made possible machine-intensive production that caused an increase in manufacturing overheads represented by depreciation, servicing and power costs or maintenance (Atrill and McLaney, 2009). In addition, managing this complex technology requires several support functions, such as production scheduling, product and process design and engineering that represent indirect costs and that cannot be allocated using traditional allocation bases like direct labor measures anymore.

However, we have to say that if overheads are driven by volume-based cost drivers, the traditional approach is still a valid support for managerial decision-making (Horngren *et al.*, 2015).

Finally, traditional costing methods compare period costs and product costs to the revenues of the period. However, employing a volume-base cost driver does not reflect the impact of activities on the product. For instance, some costs considered to be period costs such as administrative costs involved with the procurement of raw materials should be assigned to the cost of the product but actually are not. On the other hand, costs for security guards are considered as manufacturing overhead costs and treated as period costs but they do not contribute to the finished products (Walther and Skousen, 2009).



#### 3.2.4 Activity-Based Costing

In the 1980s companies started to experience problems with traditional costing systems and managerial accounting practices recognized new variables to explain cost behaviors (Banker and Johnston, 2007). Until then, managers used costing systems designed at the beginning of the XX century aimed at satisfying the necessities of the companies in that period and based on a cost structure characterized by labor intensive work and a limited range of products offered. Due to improvements in technology enabling automated work, the share of indirect costs grew progressively, and managers faced the problem of overheads allocation. Traditional costing methods did not provide an effective solution and started lacking relevance (Lebas, 1999).

Furthermore, customers required customized offerings that resulted in increased manufacturing complexity (Davila and Wouters, 2007).

First presented by Cooper and Kaplan in 1988, Activity-based costing is a full costing technique that considers that the costs are caused by the activities people actually do to achieve company's objectives and involve not only production but also logistics, marketing, financial administration and general administration (Cooper and Kaplan, 1988). Earlier in this chapter we defined an activity as an event, task, or unit of work with a specified purpose. Activity-based costing systems identify all the activities performed along the value chain of a company assuming that they require resources and cause the incurrence of costs (Lere,

2000). Contrary to the traditional costing methods in which there is a direct relationship between costs and cost objects, ABC considers that resources are consumed by activities necessary to realize the cost object (Marasca *et al.*, 2013). The logic of ABC recognizes that a cost may vary with some other measure and not only with volume-base cost drivers. In traditional costing, in fact, a cost is classified according to its behavior as either variable or fixed depending on how it changes to variations in the volume produced. ABC considers non-volume related cost drivers as well that better reflects the complexity of the processes carried out by the company (Lere, 2000). Research results suggest that environmental conditions, namely complexity and competition, are factors of successful ABC implementation to support managerial decision-making (Cagwin and Bouwman, 2002).

ABC approach is based on the assumption that, in order to achieve organizational objectives, people inside the company carry out activities that are not exclusively involved in manufacturing. In fact, today the main sources of competitive advantage are in differentiation and marketing related activities that have nothing to do with the activities involved in production (Marasca *et al.*, 2013).

For instance, ABC better allocates costs connected to flexible manufacturing or product customization that on one hand contribute to add value to the customers offering but on the other increase the complexity of the manufacturing process (Abernethy *et al.*, 2001).

ABC is a cross-functional approach that analyze the entire company from the factory to the administrative office (Marasca *et al.*, 2013) and is a proactive costing system (Vitali, 2009). In fact, the incurrence of the overheads is not driven by volume anymore but rather by organizational transactions such as logistics, quality control and engineering change orders to meet customer requirements (Gosselin, 2007).

Virtually, every cost incurred to manufacture the product should be treated as a product cost. However, volume-based allocation bases distort this information when more than one product is realized (Banker and Johnston, 2007).

ABC solves the problem of misallocation of indirect costs that frequently happens in traditional costing systems by trying to trace real costs (Lebas, 1999). This requires the observation of each business unit or function operates to know where resources are actually employed and how products generate profit. The outcome should be more complete than the simple distinction into direct/indirect and variable/fixed and nevertheless it should be more precise and objective than the allocation of indirect costs in traditional costing methods (Doyle, 2006).

Moreover, the diversification and increase in number of products offered challenge managers who need more cost information. However, the problem of gathering, storing and analyzing cost data has been overcome thanks to the improvement in technology that have lowered the cost of information (Lebas, 1999).

Nevertheless, the way in which ABC can support managers is not limited to indirect cost allocation but include the evaluation of which activities are valuable for the company. We can analyze company's activities from two perspectives: one is the so-called organizational engineering approach that investigates the organizational processes to know whether they provide added value or not and the other studies if activities are managed effectively managing the causality of the costs. This may lead to a reorganization of firm's processes (Lebas, 1999). In the same manner, ABC helps to determine which activities provide the most value along the value chain related to product development, distribution channels and finally to product mix which is a support information in managerial decisions of make or buy (Banker and Johnston, 2007). The company should focus on those activities that provide competitive advantage, called core activities, and outsource the others. At the same time, it provides information on which activities the manager can change to be more competitive (Lere, 2000).

ABC involves strategic considerations as well. Knowing the activities and the processes results in better knowledge of the functioning of the company and quality of the control (Doyle, 2006). Therefore, improved cost information enables better decision-making that result in improved financial performance (Cagwin and Bouwman, 2002) and long-term profitability, higher customer service and inventory levels (Leitner and Wall, 2015).

Even though ABC was presented as an innovative costing method, it became a tool used to identify source of profitability and create value (Banker and Johnston, 2007). In fact, researches show that ABC diffusion is the cause of the shift from cost accounting to cost management (Gosselin, 2007).

Managerial decision supported by ABC systems are part of the so-called ABC management. With this term we refer to all strategic decisions concerning price setting, product mix selection, cost reduction, process and product improvement based on the information provided by ABC systems (Horngren *et al.*, 2015).

#### 3.2.4.1 Process of allocation of costs based on activities

The process of cost allocation following the ABC method is a two-stage allocation process (Gosselin, 2007). It begins with the cross-functional analysis of the company with the objective of identifying which resources, tasks and activities are needed to produce and sell the product or service (Doyle, 2006). The output of the value chain analysis is a list of activities that, at a reasonable depth, describes the fundamental activities that consume overhead costs (Lere, 2000). Contrary to traditional costing methods, in which the allocation bases are artificially created, ABC allocation bases considers the activities that are effectively performed by the company. Activities do not correspond to organizational business units but to elementary operations. Usually in manufacturing companies we can identify five

different levels of activities (Davila and Wouters, 2007). The unit-level activities are performed for each unit of product manufactured so that the cost associated with these activities grows proportionally each time a unit is processed. Since there is a direct relationship between these activities and the cost, they behave as variable costs and we can use volume-base cost drivers such as the number of units produced to allocate them.

The batch-level activities are performed each time a batch is processed, regardless of the number of units in each batch. The cost caused by these activities is driven by the number of batches, so number of set-ups or orders are consistent activity drivers. The product-level activities are related to the realization of specific product lines and examples of possible cost drivers are designing or advertising incurred for a single product line. Customer-level activities concern all the activities carried out to serve a particular customer. Finally, facility-level activities are those activities incurred to support the entire organization. The costs associated with this last category of activities are treated as common fixed costs and should not be allocated (Marasca *et al.*, 2013). However, under ABC this amount should be smaller compared to what results from traditional costing systems because ABC provides more information on costs (Lere, 2000). Indeed, complexity in manufacturing is a relevant driver of indirect costs that has to be managed through ABC (Davila and Wouters, 2007). The differentiation in five

levels helps managers to choose the best allocation base according to the type of activity (Marasca *et al.*, 2013).

Once, activities are defined and grouped in homogenous activity cost pools we assign an activity cost driver to each cost pool. We remind that the activity and the cost pool must be connected by a cause-and-effect relationship and that the activity drivers are factors that cause the demand of activity.

At this point, we measure the consumption of resources of each activity cost pool in order to know the total cost of the activity. We compute the activity rate as the ratio between the total cost of the activity and the total volume of the activity cost driver and we assign the cost to the cost object in proportion to their consumption (Marasca *et al.*, 2013).

#### 3.2.4.2 Limitations of activity-based costing

Probably, the fallacy of ABC is its complexity that pushed managers to question its usefulness, relevance and practicality (Cagwin and Bouwman, 2002).

After the initial interest of managers in ABC, the implementation projects were abandoned in mid-1990s due to the difficulties encountered.

The pitfall of ABC is that it requires cost information to be classified in activities. Usually managerial accounting systems do not take a cross-functional approach in cost recording (Gosselin, 2007).

Moreover, although managers should accurately select the activities, they should avoid focusing on every single observable activity. In fact, choosing too many activity drivers would increase the difficulties of understanding the results of the ABC analysis (Lere, 2000). However, it is not always possible to find the most suitable cost driver pushing managers to choose another allocation base that might mislead the evaluation (Horngren *et al.*, 2015).

In addition, the more complex the allocation process is, the more costly. If in one hand ABC provides more information, both in quantitative and qualitative terms, in the other it requires organizational commitment of time and resources. Therefore, before implementing ABC, managers should address the trade-off between costs and benefits. Specifically, the degree of accuracy of the information should be balanced to the feasibility of executing ABC bearing in mind that reducing the number of activities analyzed will affect the reliability of the information (Vitali, 2009). However, a comparative research on the degree of adoption of ABC and more sophisticated costing methods shows a slight increase in their diffusion over ten years. Reasons are to be investigated in the changes of the companies that became more and more large and internationalized, hence, necessitate cost information for different purpose (Cinquini *et al.*, 2015).

Another limitation is that ABC systems require many calculations and measurements that have to be done constantly. If ABC is implemented in companies which accounting systems are poorly structured, cost information may be not



updated resulting in uncomplete and unreliable information (Doyle, 2006). Moreover, even though ABC is more precise than traditional costing systems, it does not provide a true cost (Vitali, 2009). For instance, it is still impossible to allocate certain common costs incurred to support the activity of the entire company. The so-called facility-sustaining activities cannot be allocated in an objective way, although the degree of detail of ABC systems. In fact, the choice of the activity driver or activity cost pool is still subjective and may lead to mistakes in the evaluation or in the grouping of homogenous activities (Marasca *et al.*, 2013).

Finally, ABC fails in those companies that prefer short-term results. In fact, the implementation of ABC system is seen as a long-term investment and the advantages cannot be immediately appreciated (Gagwin, 2002). That is why deciding to modify the cost structure can encounter the opposition from the employees. Moreover, since ABC studies the activities of the company from a cross-functional perspective, managers from different departments must collaborate to provide information on their activities (Doyle, 2006). Another limitation is that traditional costing methods, specifically the absorption costing, are used also for external reports since they divide into product costs and period costs. Companies may find inconvenient to waste time and resources in an additional costing system (Walther and Skousen, 2009).

That is why ABC is not so diffused in practice and hybrid costing models have been better embraced by managers. They are tailored to the characteristics of the company and the industry in which the company operates without following strictly schemes of academic finding resulting that are not always applicable in practice (Vitali, 2009).

### 3.2.5. Advantages and disadvantages of absorption costing approach

Absorption costing provides full cost information that is particularly helpful in manufacturing companies (Atrill and McLaney, 2009). Full costing provides more information than variable costing even though it is arbitrary and does not reflect the reality. On one hand absorption costing assigns all manufacturing costs to the cost object providing complete cost information to managers. In contrast, cost information is affected by subjectivity due to the allocation process and the choice of the allocation bases (Coller and Collini, 2015). For instance, manufacturing overheads are assigned using a predetermined overhead rate calculated on the basis of direct labor hour, machine hour or the number of products that do not always reflect the real consumption (Vitali, 2009).

Not only cost configurations are used to decision-making but also to evaluate degree of achievement of the objectives set (Vitali, 2009). In fact, the gross margin is a better indicator of company's competitiveness (Horngren *et al.*, 2015).

Moreover, it focuses the attention on manufacturing costs, both direct manufacturing costs and the reasonable share of the manufacturing overheads. Therefore, the problem of misallocation is not solved (Coller and Collini, 2015).

In variable costing, fixed costs, whether manufacturing or selling and administrative, are treated as period costs while cost items that are variable attach to the unit of product.

Absorption costing is criticized because it is based on historical cost data and does not consider future cost behavior, as variable costing does. Variable costing is a more prudent costing method that highlight only variable costs relevant for decision-making purposes (Coller and Collini, 2015).

However, it is mandatory to evaluate inventory at full cost (Gersil and Kayal, 2016). Therefore, the choice of an approach rather than another is crucial for determining the Net operating profit. If the fixed costs are constant and the inventory level is the same, the result of the two approaches will coincide. When inventory levels fluctuate, they will differ (Pong and Mitchell, 2006).

In particular, if units produced are greater than units sold, the Net operating income under resulting from the absorption costing is higher than the Net operating income under the variable costing. Conversely, when the level of inventory decreases, that is when units produced are lower than units sold, the Net operating income will be higher under the variable costing approach (Atrill and McLaney, 2009). However, the practice of increasing the level of inventory under

the absorption costing in order to increase profits has been criticized (Pong and Mitchell, 2006).

The gap between literature that shows a preference toward variable costing and real practice, in which absorption costing is a widespread used costing method among managers, is known as reality gap (Coller and Collini, 2015).

## **CHAPTER 4: BRAND PROFITABILITY ANALYSIS IN GIANO s.r.l.**

### **4.1 GIANO s.r.l.: COMPANY OVERVIEW**

The origins of Giano s.r.l. are found in Torre San Patrizio, in the South of Le Marche region, where Umberto Intorbida founded a shoes craft laboratory in 1946.

In the first years, the production was completely handmade by Mr. Intorbida and his family following the traditions of the footwear district.

Thanks to the economic growth after the WWII, the footwear sector flourished leading to an increase in national shoes production from 73 million in 1960 to 270 million in 1970 (Paoletti, 1996). This national growth was accompanied by an increase in the exports as well mainly towards Germany and US.

However, an intense competition, most of all from emerging countries, was threatening the industry. In particular, the impossibility of exploiting low cost workforce has challenged the competitiveness of the sector resulting in a reduction in the number of shoe factories. Italy is still the first footwear manufacturer in the EU and employs 70 thousand workers. Although the number of pairs produced diminished during the years and so did the number of manufacturers, the value of the production was stable reflecting the value added of Made in Italy production. Product and process innovation, the quality of the

products and the craftsmanship are appreciated (Giano s.r.l balance sheet report, 2018).

Consequently, Giano s.r.l. had to identify new strategies in order to continue its business.

The company witnessed a turnaround in the early 2000s, when Enrico Paniccià, the grandson of Mr. Intorbida, became CEO. Given that the brand under which the company was producing and selling its products was not so strong, Mr. Paniccià decided to change the business model, opting for a license contract production. This breakthrough would have allowed to gain more bargaining power and stronger network of customers. Giano s.r.l. is licensee of three well-known brands: LaMartina, Harmont&Blaine and Woolrich. The collaboration with LaMartina started more than ten years ago, in 2006, followed by the licensing of Harmont&Blaine in 2008. Recently, in 2017 the company established a joint venture with Woolrich Europe S.p.A. to produce Woolrich footwear.

The characteristics of Giano s.r.l. reflect the values of the brands that decided to become its partners. What differentiate the company since the beginning are the attention to the client and the quality of their products in line with the traditions of the district. Giano s.r.l. is devoted to innovation as well. It is involved in several R&D projects with the aim of optimizing its processes and innovating the range of products.

The company has been constantly growing, in line with the positive trend of the sector, both in the national market and abroad. Giano s.r.l. production is mainly addressed to Italian market where the 57% of the turnover is concentrated. In addition, 24% of the turnover is represented by exports toward EU countries and 19% toward extra-EU countries (Giano s.r.l. balance sheet report, 2018). This growth is demonstrated by the level of turnover and, overall, of the profit for the period analyzed as well as by the number of pair produced internally, as shown in table 4.1.

**Table 4.1-** *Evolution of sales revenues, profit and pairs produced in the period analyzed*

	2017	2018	2019 <sup>1</sup>
Sales revenues	€ 9.910.000	€ 11.860.000	€ 10.870.000
Profit	€ 180.000	€ 303.000	€ 685.000
Pairs produced	22.000	18.000	23.000

**Source** – Giano s.r.l profitability analysis, 2020.

Today, Giano s.r.l. employs 30 direct employees and 150 indirect employees among which we find agents and distributors.

Giano s.r.l. has to cope with the pace of fashion industry as well. As a consequence, the production is usually concentrated in two different periods of the year. In April we find the production of the fall/winter collection and in October the spring/summer collection. On the contrary, advertising and orders collection is

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<sup>1</sup> Data for 2019 are provisional.

carried out in February for the fall/winter collection and in July for the spring/summer collection preceded by the selling of the samples.

Giano s.r.l. target market is defined considering two dimensions: price and style. It is represented by customers interested in quality, high-end and stylish footwear. As a result, Giano's competitors are represented by brands which offering is characterized by a medium-high price and modern style such as Saucony, Ralph Lauren, Diadora and Atlantis Stars.

Nowadays, the production is dedicated to both the woman and man market segment but in 2017 and 2018 Giano s.r.l. served the kid market segment as well.

#### **4.2 BRANDS AS A COST OBJECT**

Giano s.r.l. is licensee of three brands: Harmont&Blaine, LaMartina and Woolrich. Given that its activities involve the manufacturing and selling of footwear production, the company is interested in assessing the profitability of each brand. The aim of our analysis is to identify costs associated with each brand in order to know how they consume resources and how they contribute to profit generation.

This type of analysis provides us with several information that can be useful for the decision-making. First, we can identify which brand is the most profitable;



second, in which activity the company underperformed and discern the causes and finally determine how to optimize the production.

For each brand Giano s.r.l. produces several products and is engaged in advertising and selling. For the purpose of our analysis, we collected cost data for each brand considering the limit of the convenience of gathering the information.

Giano s.r.l. is neither provided with any managerial accounting system nor there is a controller that performs constantly the internal control function. This is probably given by the fact the company is a SME and time dedicated to the controlling function is residual. In fact, this activity is carried out by administrative staff.

In order to promote innovation and ideas dissemination Giano s.r.l. establishes collaborations with universities. Indeed, the analysis has been carried out during a traineeship, which lasted four months from March to June, during which we had the opportunity to understand the functioning of the company. We gathered all relevant information for the years object of the analysis. We aimed at determining and understanding the evolution of profitability of the three licensor brands considering three years: 2017, 2018 and 2019. This is relevant because 2017 is the year in which the joint venture with Woolrich was established.

Thanks to the contribution of the chief of the administrative office, we collected information from the ERP system of the company together with the support of accounting documents. Specifically, we consulted invoices of the period, balance sheet reports and price lists in order to obtain as many data as possible.

### **4.3 AIMS OF THE PROJECT AND APPROACH USED**

This paragraph has the objective of presenting the results obtained from implementing managerial accounting tools in Giano s.r.l. in order to perform a profitability analysis. This study is aimed at comparing costs and revenues associated with the three brands. In the light of these considerations, we decided to implement a variable costing approach because it better highlights the Contribution margin at different levels. This setting allows to have objective information on the profitability of the cost object. Indeed, both the Contribution margin and the Segment margin result in unbiased profitability indicators since only direct cost are assigned at this stage. The measures express how sales revenues of each brand contribute to cover costs directly associated with the brand and generate profit for their residual amount.

Furthermore, to satisfy the necessities of the management, we charged indirect costs to cost objects. Therefore, for the purpose of our analysis all costs have been included in the profitability analysis.

Being the first time that such a system was implemented, we preferred to apply a traditional costing approach opting for a multiple-base allocation process using volume-based allocation bases. Despite being simplistic, we tried to allocate indirect costs using more cost pools so that the model could reflect the real consumption of overhead resources.

In the analysis we refer to the brands as A, B and C. Moreover, to guarantee anonymity, results obtained shown in the tables later in the chapter have been rounded off. Table 4.3 presents the Contribution margin income statement for the year 2017, Table 4.4 involves the analysis for 2018 and finally, Table 4.5 for 2019.

#### **4.4 CONTRIBUTION MARGIN ANALYSIS**

In order to obtain the Contribution margin, we gathered revenues and cost information. In particular, costs relevant to the Contribution margin calculation are variable costs since the Contribution margin is given by the difference between sales revenues and variable costs. For the purpose of our analysis, we considered variable manufacturing costs and variable selling expenses.

Concerning the approach used, first, we identified which cost items had to be assigned to the cost objects. We classified each period costs found in the P&L according to the relationship with the cost object distinguishing in direct and indirect cost with respect to the brand. Then, we analyzed the cost behavior indicating whether it was variable or fixed using a volume-based cost driver.

Second, we determined sale revenues, net of rebates, returns and discounts, for the years 2017, 2018 and 2019 distinguishing the revenues generated by each brand.

We have to note that sales revenues include the revenues generated by the selling of the samples that precedes the order collection.

Among the three brands, A is the brand that generates higher revenues, followed by B and C, as the sales mix, shown in table 4.2, demonstrates.

**Table 4.2-** *Company sales mix evolution in the period analyzed*

<b>Sales mix</b>	A	B	C
2017	67%	29%	4%
2018	59%	32%	9%
2019 <sup>2</sup>	60%	32%	8%

**Source** – Giano s.r.l. profitability analysis, 2020.

Then, we calculated variable costs, considering both variable manufacturing costs and variable selling costs. While variable selling costs are represented by sale commissions and royalties registered in the P&L, variable manufacturing costs concern the items manufactured. Giano’s internal production represents about the 15% of the total number of pairs sold. The remaining part is outsourced. Therefore, we investigated in the ERP system whether each item sold was produced by the company or whether it was a finished product bought from an external supplier. Variable manufacturing costs are found analyzing the bill of material for each product. On the contrary, the cost of finished goods bought from external parties is found in the price list. Since some products are supplied from extra-EU suppliers, the price indicated is in US Dollar. Therefore, we traced the

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<sup>2</sup> Data for 2019 are provisional

invoices and determined the price in euro considering the exchange rate at the date of the invoice instead of at the date of the custom invoice. Despite being formally incorrect, examining the custom invoice would not have been cost-effective.

While we observed an increase in variable manufacturing costs from 2017 to 2018, in 2019 these costs decreased. However, we noted that in 2018 total variable manufacturing costs are attributable to the purchase of finished goods whereas in 2019 we observed a decrease in cost associated with subcontracted work and an increase in internal production. This reflects the willingness of the company of becoming more independent from contracting companies.

After having obtained complete information on variable costs we calculated the Contribution margin.

In addition, we elaborated the Contribution margin and the variable costs as a share of sales revenues expressed in percentage terms enabling the comparison of the Contribution margin among the three brands.

#### **4.5 SEGMENT MARGIN ANALYSIS**

Proceeding with the analysis, the Segment margin is obtained assigning traceable fixed costs to each brand. The Segment margin represents the profitability of the segment and is calculated as the difference between the Contribution margin and the traceable fixed costs. In this case, the traceable fixed costs are found in the

P&L statement and concern mainly costs associated with advertising or managing the showroom. The former includes advertising campaign and expenses traceable to the brand, expenses incurred to participate to fairs and exhibitions whereas the latter involves the mono-brand store that Giano s.r.l. manages. We observed an increasing trend in these expenses over the period analyzed as it is part of the strategies intended to create synergies with the brand licensors. In fact, the company has been focusing the attention on marketing activities aimed at improving the business relationships with its customers, consolidating and expanding the distribution network. The Contribution margin and Segment margin of brand C coincide because traceable fixed costs did not incur.

#### **4.6 NET OPERATING INCOME AT A BRAND LEVEL**

Then we moved forward to the calculation of the Net operating income. In order to obtain this measure, we gathered the indirect costs that need to be allocated. They concern manufacturing overheads, selling expenses and direct labor.

We grouped the indirect costs in cost pools as homogenous as possible and we chose the appropriate cost driver for each cost pool. We decided to create five cost pools including manufacturing overheads, selling expenses, expenses for agents who are responsible for the distribution and finally direct labor. We defined different cost drivers for each cost pool following the multiple allocation base

approach. As the traditional allocation method envisages, we employed volume-based allocation base. For instance, we chose to allocate manufacturing overheads according to the number of pairs produced following the logic that manufacturing costs increase as the number of pairs produced increases. Manufacturing overheads includes manufacturing materials that cannot be traced directly to the brand because of economic convenience like glues or modelling materials, depreciation of machinery and equipment, repair and maintenance costs of machinery and equipment, insurance premiums for the factory plant and finally, power for machinery. At this stage, the elaboration of cost information is subjected to some limitations. Due to lack of information, we assume that the number of pairs produced internally has been completely sold. Although the ERP system provides information on the inventory level at the beginning and at the end of the year differentiated by brand from which we deduce the number of pairs produced, that value considers all the pairs without distinguishing between pairs bought from external suppliers and pair manufactured by the company. It would not be cost effective to look for further information. Since Giano's internal production is just a small share of the total number of pairs sold, we are forced to consider the number of pairs sold as number of pairs produced assuming that there is no inventory.

Except for the 2017, in which Giano s.r.l. manufactured brand C shoes, the manufacturing cost is driven by the production of brands A and B. In particular,

brand B absorbs more resources since the company manufactures more of this brand.

Another limitation concerns direct labor costs that we are not able to trace directly to the brand since shoes are processed regardless of the brand. Therefore, direct labor costs cannot be treated as variable costs as the theory suggests. Not only does total direct labor cost include salaries but also overtime pay, social security contribution, recruiting and training expenses. Given the limitations in information collection, to address this problem we can either group direct labor costs in manufacturing overheads cost pool or assign them in proportion to the hours spent in production. In first case, the allocation base used is the total number of pairs produced. As explained above this number is the result of assumptions and does not reflect the real number of pairs produced in the period. In the second case, we computed an estimate of the average direct labor hour cost. We divided the total direct labor cost by the total hours spent in production and then we allocated the cost in proportion to the hours spent in production for each brand assumed to be proportionated to the pairs produced. The result is a construction because time spent in manufacturing depends on the complexity of the shoe and not the number of items processed. Given that in 2018 and in 2019 the production of brand C was completely outsourced, we decide to group direct labor costs separately.



Another category of indirect costs concerns selling expenses and include all those expenses incurred to support selling activities such as transport freight and packaging material and advertising activities including company advertising material, business trips and sales consultancy. We decided to choose two cost drivers that better explain the cost behavior, one is a quantitative allocation base and the other is a monetary allocation base. Indeed, the number of pair sold may be the cost driver for transportation freights and packaging costs whereas sales revenues may be the cost driver for advertising expenses. As a result, we obtained two cost pools.

Although the distribution is carried out by agents to whom sales commissions are paid and is possible to trace directly, the company sustains also fixed costs that need to be charged to the brands. We included occasional sales commissions and social security contributions. Except for brand C, which distribution is not supported by the activities of agents, the agents' total cost is driven by the number of pairs sold for brand A and brand B.

The costing approach chosen is the multiple base allocation method resulting in three different cost drivers. This choice aimed at obtaining an indirect cost allocation as objective as possible so that the cost drivers allow to explain the incurrence of the cost. In spite of the limitations presented above, the indirect costs allocated represented about 15% of total costs. Therefore, the results are not biased by the indirect allocation.

After allocated fixed costs have been deducted, we obtain the Net operating income at brand level. It represents the revenues residual amount after all costs attributable to the brands have been deducted.

#### **4.7 NET OPERATING INCOME AT A COMPANY LEVEL**

Finally, we grouped the remaining costs in cost pools that are not assigned. These cost pools concern either costs for which it was not cost effective to be traced or facility-sustaining costs. This category cannot be allocated to the brand since any cost driver can explain the relationship between cost and cost object and hence is treated as common costs. They incurred to lead and direct the activity of the company and in fact, are defined as facility-sustaining costs. The most relevant cost pools concern administrative labor costs and administrative and selling expenses.

The problem of allocating labor costs exists for administrative and selling costs as well. In this case, they are treated as common fixed cost since administrative and selling employees carry out their activities regardless of the brand. For instance, think about the administrative activities involved with managing the order of a single client who bought items of the three brands. In this case, it would be rational to analyze the incurrence of costs to serve the customer rather than allocate them. In fact, after having observed what happens in practice, we deduced

that tasks of the administrative staff can be divided in two main activities: customer relationship management and debt recovery. The former concerns all the activities involving serving a customer, from order receiving to after-sale service whereas the latter involves the activities aimed at evaluating the customer, rating his position, contracting and finally collecting the receivables. Nevertheless, the turnover is mainly represented by sales revenues addressed to the domestic market. Considering that the majority of the customers in Italy are involved with brand A, rather than the two other brands, we may speculate that brand A contributes more to administrative expenses. Although we could allocate these costs in a more objective way using a time-driven Activity-Based Costing, it would have required a deeper analysis and the scope of our analysis was limited.

Other cost pools group all the cost associated with the main activity of the company such as depreciation of equipment used by the administrative office, surveillance service and utilities which amount was not relevant to be allocated.

As explained in the previous chapter, usually managers prefer having a complete framework of the current situation. Therefore, we considered also costs that are not linked to the manufacturing activity such as the costs for a specific project, consultancies, currency conversion loss, interest expenses, CEO compensation and other operating expenses. These cost pools are treated as common costs and are included in a single cost pool because they represent the so-called facility sustaining costs. If in one hand, they contribute to the formation of the total cost,

in the other, it would not be rational to ascribe them to the brand since their incurrence is neither connected with the manufacturing nor the selling of the brands. Common fixed costs did not change significantly over the years object of the analysis. The most relevant variations are to be ascribed to an increase in depreciation of the software, in fact, in 2018 the company changed its ERP system, to personnel costs and to a decrease in consultancies. Moreover, in 2019 the company invested in a new R&D project.

In conclusion, we computed the Net operating income at company level that represents the profit generated after all costs have been deducted from sales revenues. It also expresses the ability of Giano s.r.l. to cover general costs incurred for the leading the company.

#### **4.8 MANAGERIAL INCOME STATEMENTS**

This paragraph has the objective of presenting the managerial income statements resulting from our analysis for the period. We aim at providing a framework that allows the comparison of the profitability of the three brands and the evaluation of the trend during the period analyzed.

First, we present the outcomes of the analysis for the 2017, 2018 and 2019 respectively in Table 4.3, Table 4.4 and Table 4.5, and then we focus on the interpretation and the comparison of what observed.

**Table 4.3- Contribution margin income statement 2017**

	A		B		C		TOT
Sales revenues	6.640.000		2.880.000		390.000		9.910.000
Variable costs	4.232.000	64%	1.906.000	66%	246.000	63%	6.384.000
Manufacturing variable costs	3.450.000		1.567.000		246.000		5.263.000
tot variable costs	507.000		562.000		2.000		1.071.000
finished goods	2.943.000		1.005.000		244.000		4.192.000
Selling variable costs	782.000		339.000		-		1.121.000
sales commissions	139.000		91.000		-		230.000
royalties	643.000		248.000		-		891.000
Contribution margin	2.408.000	36%	974.000	34%	144.000	37%	3.526.000
Traceable fixed costs	282.000		267.000		-		549.000
stylistic consulence	11.000		24.000		-		35.000
advertising campaign	124.000		115.000		-		239.000
advertising material	3.000		1.000		-		4.000
fair and exhibitions	34.000		60.000		-		94.000
shop and showroom	110.000		67.000		-		177.000
Segment margin	2.126.000	32%	707.000	25%	144.000	37%	2.977.000
Allocated fixed costs	828.000		637.000		22.000		1.487.000
manufacturing overhead	262.000		278.000		2.000		542.000
selling expenses	352.000		144.000		19.000		515.000
agents	19.000		7.000		-		26.000
direct labour	195.000		208.000		1.000		404.000
Net operating income at brand level	1.298.000	20%	70.000	2%	122.000	31%	1.490.000
Common fixed costs							1.346.000
employees costs							519.000
administrative expense							363.000
depreciation							11.000
utilities							4.000
other operating expenses							449.000
Net operating income at company level							144.000

**Source** – Giano s.r.l profitability analysis, 2020.

**Table 4.4- Contribution margin income statement 2018**

	A		B		C		TOT
Sales Revenue	6.990.000		3.780.000		1.090.000		11.860.000
Variable costs	4.517.000	65%	2.509.000	66%	922.000	85%	7.948.000
Manufacturing variable costs	3.663.000		2.008.000		922.000		6.593.000
tot variable costs	422.000		505.000		-		927.000
finished goods	3.241.000		1.503.000		922.000		5.666.000
Selling variable costs	854.000		501.000		-		1.355.000
sales commissions	174.000		174.000		-		348.000
royalties	680.000		327.000		-		1.007.000
Contribution margin	2.473.000	35%	1.271.000	34%	168.000	15%	3.912.000
Traceable fixed costs	403.000		311.000		-		714.000
stylistic consulence	-		36.000		-		36.000
advertising campaign	252.000		151.000		-		403.000
advertising material	1.000		6.000		-		7.000
fair and exhibitions	40.000		89.000		-		129.000
shop and showroom	110.000		29.000		-		139.000
Segment margin	2.070.000	30%	960.000	25%	168.000	15%	3.198.000
Allocated fixed costs	743.000		610.000		50.000		1.403.000
manufacturing overhead	194.000		203.000		-		397.000
selling expenses	276.000		134.000		50.000		460.000
agents	19.000		8.000		-		27.000
direct labour	254.000		265.000		-		519.000
Net operating income at brand level	1.327.000	19%	350.000	9%	118.000	11%	1.795.000
Common fixed costs							1.500.600
employees costs							587.000
administrative expense							398.000
depreciation							49.000
utilities							600
other operating expenses							466.000
Net operating income at company level							294.400

**Source** – Giano s.r.l. profitability analysis, 2020.

**Table 4.5- Contribution margin income statement 2019<sup>3</sup>**

	A		B		C		TOT
Sales revenue	6.540.000		3.490.000		830.000		10.860.000
Variable costs	4.207.000	64%	2.195.000	63%	742.000	89%	7.144.000
Manufacturing variable costs	3.430.000		1.706.000		742.000		5.878.000
tot variable costs	409.000		708.000		-		1.117.000
finished goods	3.021.000		998.000		742.000		4.761.000
Selling variable costs	777.000		489.000		-		1.266.000
sales commissions	137.000		184.000		-		321.000
royalties	640.000		305.000		-		945.000
Contribution margin	2.333.000	36%	1.295.000	37%	88.000	11%	3.716.000
Traceable fixed costs	416.000		275.000		-		691.000
stylistic consulence	-		33.000		-		33.000
advertising campaign	257.000		139.000		-		396.000
advertising material	12.000		1.000		-		13.000
fair and exhibitions	37.000		73.000		-		110.000
shop and showroom	110.000		29.000		-		139.000
Segment margin	1.917.000	29%	1.020.000	29%	88.000	11%	3.025.000
Allocated fixed costs	622.000		653.000		35.000		1.310.000
manufacturing overhead	147.000		213.000		-		360.000
selling expenses	233.000		108.000		35.000		376.000
agents	19.000		8.000		-		27.000
direct labour	223.000		324.000		-		547.000
Net operating income at brand level	1.295.000	20%	367.000	11%	53.000	6%	1.715.000
Common fixed costs							1.424.200
employees costs							564.000
administrative expense							368.000
depreciation							50.000
utilities							1.200
other operating expenses							441.000
Net operating income at company level							290.800

**Source** – Giano s.r.l profitability analysis, 2020.

Beginning with analysis of the Contribution margin, we note that while in 2017 we could observe consistent Contribution margins among the three brands around

<sup>3</sup> Data for 2019 are provisional.

a 36% of sales revenues, in 2018 and 2019 the Contribution margin dramatically reduced for brand C.

Brand A Contribution margin remained constant over the period analyzed. The 64% of sales revenues generated by this brand contributes to cover all variable costs and the remaining 36% contribute to profit generation. The results show a similar situation for brand B as well. In fact, the Contribution margin was consistent in 2017 and 2018 at 34% of sales revenues and increased in 2019 reaching the 37%. In contrast, brand C Contribution margin worsened shifting from 37% in 2017, to 15% in 2018 and finally to 11% in 2019. The causes are to be attributed to a misallocation of revenues when the company registered the sales revenues for a single season rather than both. As a results, costs and revenues comprise the samples realization and selling as well as the revenues and costs for one season. Therefore, brand C Contribution margin should be around 10-15% as it is in 2018 and 2019. If in one hand, brand C Contribution margin is the lowest, on the other, it is the brand that consumes less resources. This is because Giano s.r.l. manufactures brand C and manages the business relations with customers but the distribution and advertising dedicated to the brand are carried out by the licensor. Nevertheless, the production is outsourced resulting in a lower incidence of brand C costs on total costs.

Finally, we can say that the profitability of the company is driven by brand A production which produces the highest Contribution margin.



Moving forward, we can observe a similar situation for the Segment margin. Brand A has the highest Segment margin, but it is also the brand that accounts for the traceable fixed costs driven mainly by advertising costs and showroom management. Despite the decreasing value for brands A and C, we still observe positive values for the three years. Therefore, the brands are profitable and manage to cover all the costs incurred for their production and selling. In particular, while brand A slightly decreased from 32% in 2017, to 30% in 2018 and to 29% in 2019, brand B slightly increased its Segment margin in 2019 shifting from 25% to 29%.

Brand C Contribution margin and Segment margin are at the same level because traceable fixed costs are not sustained for this brand.

At Net operating income at brand level, the profitability is eroded by allocated fixed costs, in particular, by indirect manufacturing costs and direct labor costs that have the greatest incidence.

While brand A maintained the same level of Net operating income, around 20%, brands B and C experienced some variations. In particular, the causes of the variation from 2017 to 2018 of brand C Net operating income has been explained earlier, while in 2019 we can observe values consistent with the previous year. On the contrary, brand B Net operating income increased progressively from 2%, to 9% and finally to 11% despite the significant increase in manufacturing overhead costs and direct labor costs. In fact, over the years Giano s.r.l. has concentrated its

production on brand B rather than the other two brands. Being the allocation process performed employing volume-based cost drivers, brand B results in being charged with more overheads.

Although we still observe positive results that reflect the profitability of the brands, brand A contributes more to profit generation compared to brand B and C. Nevertheless, we remind that when evaluating brand profitability, the strategic relevance of the brand has to be considered. In the case of Giano s.r.l., the collaborations started a long time ago reflecting the intention of creating synergies with the licensors and developing long lasting business relations.

Finally, after having deducted common fixed costs we obtain the Net operating income at company level. We can observe a positive Net operating income at company level reflecting the capability of the company of generating profit relying on a single source of revenues that is sales revenues from the brands. Giano s.r.l is involved in the selling of raw materials to other companies that assures another source of revenues. As for the other profitability measures, while we observe a significant increase between 2017 and 2018, we observe that the value slightly decreased from 2018 to 2019.

Even though in 2019 Giano s.r.l. experienced a decline in both turnover and Net operating profit, during the period analyzed we can observe a positive trend. Indeed, profit level improved.

We remind that the analysis is subjected to some limitations. The difficulties in information collection was the most relevant limitation. The company is not provided with any managerial accounting system that organically structures costs and revenues information. The deeper the degree of the analysis, the more laborious was the research of the information. We faced the trade-off between the benefits of obtaining additional and precise information and costs of the research in terms of time requirement. Being the analysis time constrained, the most effective costing method to be implemented was the variable costing using the multiple-base allocation approach.

For a future improvement, we suggest employing better cost drivers to explain the incurrence of the costs. For instance, volume-based cost drivers are not suitable to demonstrate manufacturing costs that, instead, are driven by the complexity of the item manufactured. Moreover, tracking the costs associated with the manufacturing activities could be useful in make or buy decisions as well considering that the company chooses which items to produce internally and which to outsource.

A more sophisticated costing system is recommended for administrative and selling costs as well.

## CONCLUSIONS

The objective of this thesis was to analyze functions and features as well as benefits and criticalities of the implementation of a cost accounting system in an operational context.

Given the environment in which companies operate today, managerial accounting, and in particular cost accounting, are essential to provide information to managers and to drive their decisions. After having presented cost accounting from a theoretical perspective to understand better this function, we described the steps undertaken to design and implement a cost accounting system in Giano s.r.l.

In particular, in Giano s.r.l. a cost accounting system was built in order to analyze the profitability of the three brands that the company manufactures and distributes under a contract license. Therefore, such an analysis is important to understand and evaluate which collaboration is the most profitable for the company. In order to conduct our analysis, we decided to implement a variable costing system since we believe that it better highlights the profitability indicators at different levels such as the Contribution margin, the Segment margin and the Net operating income. For the purpose of our analysis we gathered cost information, we classified it with respect to the cost object as direct and indirect and according to its behavior in variable and fixed. As the variable costing envisages, we traced direct costs directly to the brand and assigned the indirect costs thanks to the

allocation process using multiple allocation bases. However, not all indirect costs have been allocated since we wanted to respect the causality relationship that exists between the variation in the cost driver and the incurrence of a cost.

The output of the process was a managerial income statement able to provide management with information on the Contribution margin, the Segment margin and the Net operating income generated by the three brands, as well as the Net operating income generated by the company as a whole.

The design and the implementation of a cost accounting system in Giano s.r.l. have entailed a series of benefits, in particular with regard to the information that the system was able to provide. In particular, our findings induce both reflections on how to improve some aspects of the cost management and on which brand continue investing. While the former concern operational control over costs, the latter takes a strategic perspective. The Marginal income statements not only do present profitability indicators but also compare which resources, and in what measure, are consumed by the three brands. It is a control tool as well on which management can assess the comparison between expectations and actual results.

Our findings suggest profitable relationships during the period analyzed. The analysis of the trend suggests a consolidation of the profitability around consistent Contribution and Segment margins resulting in an improvement of the company performance during the years. We do not observe negative value, hence the company manages to generate profit. Each of the three brands covers the costs

incurred for its production and distribution and the exceeding value contributes to cover common fixed costs and generate profit at company level. Results demonstrate that the company should continue these profitable collaborations.

From our analysis, brand A resulted in being the most profitable with consistent Contribution margins around 35-36% that progressively narrow to 19-20% at Net operating income level. Brand B is the second most profitable brand. Despite having the same levels of Contribution margin as brand A, profitability is eroded at Net operating income level. However, we note a recovery during the period analyzed. In fact, the Net operating income increased from 2% to 9% in 2018, and finally to 11% in 2019 translating an improvement in indirect costs control. Finally, brand C is the least profitable brand compared to the other three but still contribute to the generation of profit. In this case, it is also the brand that absorbs the least resources in Giano s.r.l. In effect, the cost pools that determine the profitability of the brands are the variable manufacturing costs and the manufacturing overheads connected to the production and the selling and administrative expenses associated with the distribution. In particular, we observe an increase in manufacturing costs reflecting the willingness of the company of committing to growth and in marketing expenses that involve the creation of synergies with the licensors. Among the relevant costs we cannot forget personnel costs, both direct labor and administrative staff, that represent the 8% of total costs.

From our analysis a positive trend for three years is observed. In particular, while between 2017 and 2018 we note significant improvements in performance, in 2019 we observe the consolidation of this position.

A second interesting finding is how Marginal income statements can be employed to engage in critical thinking.

The comparison between brand profitability and the different sources of cost inform short-term decisions. In particular, the weight of variable manufacturing costs induces reflections on which activity focus the attention. As a consequence, make or buy decisions may be considered. For instance, this cost information can be employed in a differential analysis when the company evaluates which items are produced internally and which items are subcontracted to external suppliers. Similarly, it provides insight on how the company can improve its performance related to other types of costs. Giano s.r.l. may be interested in monitoring marketing costs such as advertising, selling and distribution expenses.

These are just few examples to address the use of Marginal income statements to decision-making and problem-solving.

During the design and the implementation of the cost accounting system, criticalities arose, as well. Due to the limitations of the information system we faced problems involving data collection. As a result, our work is limited by some assumptions. The strongest one concerns the choice of the allocation bases used to allocate indirect costs to the cost objects, i.e. the three brands. Cost pool and its

cost driver should be strictly linked to the cause-and-effect relationship but in such a context it would have required additional measurements. For instance, the company should have observed how resources are actually consumed within the company in order to measure the complexity of the activities carried out. In fact, the consumption of resources in the footwear manufacturing is driven by the complexity of the process and not by volume-based cost drivers. Thus, the first limitation of the system concerns the use of volume-based cost drivers to allocate indirect costs to cost objects. However, this choice did not bias against the final result because of the small incidence of indirect costs allocated on total costs. In fact, this share represents about the 15% of total costs.

Consequently, the second limitation is the time requirement. The company is not provided with a managerial accounting system that neither systematically collect and store cost information nor is integrated within the organizational functions. Therefore, we started from scratch. For instance, we were forced to assume that all the production had been completely sold and not to trace direct labor directly to the cost objects.

Considering that the analysis was conducted in four months, our choices were motivated by the evaluation of the benefits of obtaining additional information and the difficulty in searching for this information.

The company is already planning to refine the current managerial accounting system in order to solve these limitations. In particular, grouping costs in more



cost pools and employing for each of them a different costs driver could be a solution. Moreover, the company could opt for activity-based cost drivers rather than volume-based allocation bases that better reflect the complexity of both the manufacturing process and the selling activities. The use of a refined costing system has the advantage of reducing the amount of indirect costs that currently are treated as common indirect costs. Therefore, the management could benefit from obtaining complete information on cost allocation.

In order to do that, the company should endow itself with a sophisticated managerial accounting system such that relevant information will be registered, stored and provided promptly when necessary. However, we caution that the management and employees should be actively involved in this process and spend time to maintain such a system otherwise the information would be inaccurate and compromise the decision-making.

The experience in Giano s.r.l. has provided the opportunity to start building a management control system, even though with some limitations. It was a way to take advantage of the knowledge and competence gained in order to demonstrate the usefulness of the implementation of managerial accounting practices in operational contexts. In fact, it is important that every company, even the SME, is endowed with a managerial accounting system to assist daily activities and strategic decisions as well. We believe that this is just the starting point from which a further analysis could be carried out in the future. We see it as an

opportunity to develop a more integrated system for continuous control applied to other organizational functions as well aiming at producing relevant information. In fact, as the trend of sales revenues and profit shows, the company has consistently grown during the three years. At this stage, having a complete framework of the company is important to take the right decisions that will ensure profitability and growth.

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