THE RELATIONSHIPS BETWEEN QUALITY MANAGEMENT PRACTICES
AND PURCHASING

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Resumen

Como resultado del creciente interés en la gestión de la cadena de suministro, la calidad se convirtió en un factor importante en el proceso de valor añadido que participan en la producción y entrega de productos a lo largo de la cadena de suministro. Además, la función de compras ha comenzado a desempeñar un papel más estratégico de las organizaciones, especialmente en la aplicación de conceptos de la gestión de la cadena de suministro y externalización de sus actividades. Curiosamente, en este nuevo contexto, ya pesar de la creciente importancia de estos dos temas en la literatura, la relación entre estas dos cuestiones no se aborda exhaustivamente. El objetivo principal de este trabajo es llenar este vacío. Se examina cómo las prácticas de gestión de la calidad se puede implementar en Compras, y el impacto que puede tener Compras en la consecución de la calidad. Con este fin, se realizó una revisión inicial de las principales cuestiones en la gestión de calidad permitiendo además analizar y comprender las relaciones entre estos dos aspectos

Abstract

As a result of the increased interest in supply chain management, quality became an important factor in the value-adding process involved in the production and delivery of products along the supply chain. In the other hand, Purchasing has begun to play a more strategic role as organisations implement supply chain management concepts and outsource theirs activities. Interestingly in the literature relationship between these two topics are not addressed in a comprehensive way. The main aim of this paper is to fill this gap. We analyse, how quality management practices could be implemented in the Purchasing, and the impact that this function can have in achieving quality. A review of the most relevant issues in quality management is made: quality concept, evolution and models of quality management and critical successfully quality management factors, allowing understand the relationships between them and Purchasing.

Key-words: Purchasing, TQM, supplier management, quality practices
1. Introduction

It is consensual that Purchasing has begun to play a more strategic role as organisations implement supply chain management concepts (Stanley and Wisner, 2001, 2002), which led to a change in its classic definition, having appeared in the literature several proposals for a new definition, with purchasing increasingly becoming known by supply management\(^1\). Here we use the term purchasing in a similar way to that used by Cousins at al. (2006): in a broad sense, relating to the full range of potential activities contained within the function, from tactical buying to strategic supply chain management. Its key elements include a proactive, long-term focus, and managing strategically supplier relationships (Lawson et al., 2009).

As a result of the Purchasing evolutionary process, Purchasing became seen as one of the primary boundary-spanning functions, since it is particularly important as an intermediary in the supply chain between external suppliers and internal customers who provide products and services for external customers.

On the other hand, as a result of the increased interest in supply chain\(^2\), quality became an important factor in the value-adding process involved in the production and delivery of products along the supply chain. In fact, the production of defect-free components and parts that meet the requirements of customers along the supply chain is critical for the quality of the final products. In order to achieve quality, many companies replace inspection-based activities for detailed advanced quality practices, and these are built in order to develop a total quality approach to manage the business (Dale, 1999). In addition, by making Quality Management an integral element of the supply chain, companies can avoid being simply reactive to the requirements of their supply chain customers and can strive to meet their demands more proactively (Love et al., 2003).

Recent literature contains a number of suggestions for potential synergies between supply chain management and quality management (Flynn and Flynn, 2005). Less frequent in the literature is to examine the link between quality and Purchasing, despite the importance and theoretical development of quality management and the recognition of purchasing as a key role player in itself (Sánchez-Rodríguez and Martínez-Lorente, 2004) and the recognition that the introduction and development of quality management affect in several ways the role and activities of the purchasing function in an organisation (Caddick, and Dale, 1998).

The main aim of this paper is to, through a literature review, analyse the link between Purchasing and quality management. More specifically, we intend to analyse the impact that the implementation of a Total Quality Management (TQM) approach can have in purchasing.

This paper is structured in the following way: firstly, we discuss the quality concept in Section 2. Subsequently, in Section 3, the historical development of quality management is presented. In Section 4, a detailed review on quality award models is undertaken. Section 5 presents the relationships between quality management and Purchasing. Section 6 provides some conclusions.

2. What is quality?

\(^1\) Lysons and Farrington (2006) discuss the different perspectives of purchasing and present several definitions that appear most commonly in literature. The authors also present alternative models of the purchasing evolution. Therefore, their analysis seems to conclude that the more advanced stage of its evolution considers purchasing as a proactive strategic activity.

\(^2\) A supply chain could be defined as “a coordinated system of organisations, people, activities, information, and resources involved in moving a product or service from its ideation or build from supplier to customer” (Carmignani, 2009). More specifically, supply chain management integrates supply and demand management within and across companies (Knouse et al., 2009), which makes visible its connection to Purchasing.
There seems to be a consensus regarding the non-existence of a single holistic quality definition. As stated by Sousa and Voss (2002), research in quality management has been unable to reach a single definition of quality. Also, Reeves and Bednar (1994) identify different approaches to quality, and conclude that a global definition of quality does not exist; rather, different definitions of quality are appropriate under different circumstances. As they highlight, regardless the time period or context in which quality is examined, the concept has had multiple and often muddled definitions and it has been used to describe a wide variety of phenomena.

Several definitions have been proposed, and it has been differently defined, including the one by the quality gurus. For instance, Deming defines quality as follows: “Quality is continuous improvement through reduced variation”. For Taguchi quality is “the loss imparted to society from the time the product is shipped”.

The most quoted ones are the Crosby and Juran quality definitions. Crosby mentions quality as “conformance to requirements”. He also stresses that the definition of quality can never make sense unless it is based on what consumers want – that is, a product is a quality product when it matches the customers’ requirements. Joseph M. Juran defines quality as “fitness for use”. This definition implies quality of design, quality of conformance, availability and adequate field services.

Reeves and Bednar (1994) suggest a four-way taxonomy of quality definitions that incorporates excellence, value, conformance to specifications and meeting and/or exceeding customer requirements, and where the gurus’ quality definitions fit. The American Society for Quality explicitly recognises in the definition of quality the subjective nature of the term, and it considers that, “in technical usage, quality can have two meanings: (1) the characteristics of a product or service that bear on its ability to satisfy stated or implied needs; (2) a product or service free from deficiencies”. The Juran and Crosby’s quality meanings are mentioned in the quality definition proposed. It seems that there are emphasised two different quality perspectives (ASQ, 2010).

Ghobadian et al. (1994) distinguish different perspectives setting out the definitions of “quality” in five broad categories: (i) Transcendent, (ii) Product led, (iii) Process or supply led, (iv) Customer led and (v) Value led. Most of the quality definitions fall within the “Customer-led” and the “Process or supply led” categories. The definitions of quality proposed by Crosby and Taguchi fall within the “Process or supply led” category. The focus is internal rather than external. The authors note that such a definition is useful for organisations which perceive their problems as lying within the transformation or engineering process. Alternatively, this definition might be useful in organisations producing either standard products or services.

According to Deming and Juran, the definitions of quality fall within the “Customer led” category proposed by Ghobadian et al. (1994). Here, the focus is external. This approach relies on the ability of the organisation to determine customers’ requirements and then meet these requirements. A “customer-led” definition implicitly encompasses the “Supply-led” approach. This is because customers’ requirements are built in the service at the design stage, but it is at the transformation stage that the degree of conformance is determined. Garvin’s approach to define quality seems to be one of the first classifications of quality that appears in the literature (Soltani et al., 2008). His classification is very similar to the categories mentioned above. He distinguishes five definitions of quality: (i) Transcendental: quality is absolute and universally recognisable. The concept is loosely related to a comparison of product attributes and characteristics (ii) Product-based: quality is a precise and measurable variable. Differences in quality reflect differences in the quantity of some product characteristics; (iii) User-based: the quality is defined in terms of fitness for use or
how well the product fulfils its intended functions; (iv) Manufacturing-based: quality is in “conformance with the requirements” – that is, targets and tolerances determined by product designers, and (v) Value-based: quality is determined in terms of prices and costs. Here, a quality product is one that provides performance at an acceptable price or conformance at an acceptable cost.

These alternative approaches often overlap and may be in conflict. Taken together, the different definitions ultimately carve a single face of quality, observed through different points of view. Reeves and Bednar (1994) inclusively note that multiple definitions of quality are required to capture the complexity and richness of the construction. Conversely, they state that that diversity has made theoretical and research advances difficult. The deficiencies of the existing quality management literature in defining product quality have been identified as being responsible for conflicting results reported in the literature, linking quality to outcomes such as market share, cost and profits (Sousa and Voss, 2002). The lack of a universal definition of quality is mentioned as one of the reasons to the increase of the criticism regarding quality management.

Perspectives of quality may change as a product moves from the design to the marketing stage. Despite being an abstract concept, it has to be considered that consumers perceive the quality of a product by assessing one or more quality dimensions. For this reason, it is essential to highlight that quality is a multi-dimensional construction. Garvin (1984) proposes several dimensions of product quality (performance, reliability, durability, features, conformance, serviceability, aesthetics and perceived quality). Dale et al. (1994) point out that these dimensions are somewhat independent; therefore, a product can be excellent in one dimension and average or poor in another. From the above dimensions, we must emphasise the quality attribute reliability. In fact, this is so important that the terms “quality and reliability” are often used together (Lysons and Farrington, 2006).

According to Garvin (1984), quality is not only a strategic weapon for competing in the current marketplace, but it also means pleasing the consumers, not just protecting them from annoyances. Therefore, a company’s specific advantage is to identify and then compete on one or more of the quality dimensions. For example, the Japanese have been quoted for high-quality cars in the 1970s based only on the dimensions of reliability, conformance, and aesthetics (Dale et al., 1999). Sousa and Voss (2002), however, stress that the importance of the multi-dimensional nature of quality cannot be overstated. They share the same opinion than Dale et al. (1994), giving relative strategic importance to the different quality dimensions that vary across products and industries. Despite Garvin’s (1984, 1987) quality dimension is a robust framework for research, it should be considered as a good starting point for choosing the right dimensions, since in certain situations it may be necessary to consider other dimensions not considered in the framework, or to disaggregate / aggregate Gravin’s basic dimensions.

Furthermore, different quality dimension places different demands in different organisational functions, and it may require different organisational practices. For example, while the design function and associated design practices are bound to influence most quality dimensions, the manufacturing function and practices will probably be limited to influencing conformance quality (Sousa and Voss, 2002). Garvin (1984) illustrates this by giving some examples: an exceptional serviceability requires a strong costumer service department; superior durability requires close cooperation between engineering and purchasing. As consequence of the quality dimensions’ choice, the company must tailor its organisation and operations to meet these needs.

3. The evolution of quality management
Concerns about quality have always existed, but only with the mass industrial production and increasing competitiveness it has become a strategic condition to compete. The concept of quality has evolved in stages that correspond to different organisation scenarios in productive systems. Activities related to quality, for monitoring and managing quality, have evolved, and more recent approaches to quality are the result of that evolutionary process.

Most modern approaches to quality have gradually emerged, coming from a steady evolution rather than dramatic break-troughs. They are the product of a series of discoveries stretching back over a century. Several stages have been suggested related to this evolutionary process. However, it is very difficult to distinguish when one stage ends and another begins, because quality systems have not developed in a uniform way in different geographical areas; rather, they have been adapted to economic and social development in different places in function of the cultural and organisational context in each separate place. However, the development of quality management is usually defined in four stages (Dale and Plunkett, 1990): firstly, focused on quality inspection, following of the quality control, quality assurance and finally total quality management (TQM). It must be noted that these four distinct “quality eras” are associated with the evolutionary process in the United States (Garvin, 1994). Those four stages are progressive and embracing. That is, quality control embraces inspection, quality assurance embraces quality control and total quality management embraces quality assurance. The main features of each stage of this evolution are shown, based on Garvin (1994), in Table 1.

Table 1: The four stages of quality evolution

<table>
<thead>
<tr>
<th>Basic characteristics</th>
<th>Inspection</th>
<th>Quality control</th>
<th>Quality assurance</th>
<th>Total quality management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main interest</td>
<td>Checking</td>
<td>Control</td>
<td>Coordination</td>
<td>Strategic impact</td>
</tr>
<tr>
<td>Vision of quality</td>
<td>A problem to be solved</td>
<td>A problem to be solved</td>
<td>A problem to be solved, but that is proactively addressed to</td>
<td>An opportunity to vary the competition</td>
</tr>
<tr>
<td>Focus</td>
<td>Uniformity product</td>
<td>Product uniformity under inspection</td>
<td>The whole chain of manufacturing, from design to the market, and the contribution of all groups to prevent functional failures in quality</td>
<td>Market and client needs</td>
</tr>
<tr>
<td>Methods</td>
<td>Instruments measurement</td>
<td>Tools and Techniques Statistics</td>
<td>Programs and systems</td>
<td>Strategic planning, goal setting and mobilisation of the organisation</td>
</tr>
<tr>
<td>Role of professionals’ quality</td>
<td>Inspection, classification, counting, assessment and repair</td>
<td>Troubleshooting and the application of statistical methods</td>
<td>Planning, Measurement and Quality program development</td>
<td>Setting goals, education and training, consulting other departments and development programs</td>
</tr>
<tr>
<td>Who is responsible for</td>
<td>The Inspection department</td>
<td>Departments Manufacturing and</td>
<td>All departments, with high administration</td>
<td>Everyone in the company, with top administration</td>
</tr>
</tbody>
</table>
As we can see, Total quality management (TQM) stage is the highest level of quality management. TQM involves the application of quality management principles to all aspects of the business, including customers and suppliers. This stage is characterised by a new attitude of management resulting from the emergence of new ideas and practices in the area of quality. Quality management requires now that the principles of quality management can be applied in every branch and in every level in an organisation. Quoting Dahlgaard (1999), “quality management became ‘the tool’ for all people involved in a company, both vertically and horizontally. Vertically, it involved all people from top to bottom and from bottom to top, and horizontally it involved all related departments as well as external organisations”. It is not well defined when and where TQM has been born. According to the American Society for Quality, TQM appears in the end of the 1970s. In an environment of quality competition, where Japanese organisations exported high quality products at lower prices, being this the result of a strategy based on quality, after the World War II, American companies responded towards an approach that embraced the entire organisation. Other authors put its origins in Japan after World War II (Lysons and Farrington, 2006). However, it seems consensual that, in this approach, the improvements undertaken on a continuous basis involve everyone in the organisation. As stated by Dahlgaard (1999), quality is for the first time everybody’s job and everybody’s responsibility. Besides an increased emphasis on people, TQM requires the spread of greater sophistication in the application of quality management tools and techniques.

In the quality management literature, we find many definitions of TQM (Soltani et al., 2008). Mann (2008) identifies two types of definitions: definitions that describe TQM in terms of its ultimate goal, and definitions that describe TQM in terms of the activities of functions that need to be addressed in order to achieve its objective. He presents several of them. Also Main et al. (2003) use several quotes from the literature that illustrates diversity of definitions of TQM. Ahire et al. (1995) view TQM as “an integrative management philosophy aimed at continuously improving the quality of products and processes to achieve customer satisfaction”. Shiba et al. (1993), on the other hand, defend that “TQM is an evolving system of practices, tools, and training methods for managing companies to provide customer satisfaction in a rapidly changing world”. Hellsten and Klefsjö (2000) define TQM as “a continuously evolving management system consisting of values, methodologies and tools, the aim of which is to increase external and internal customer satisfaction with a reduced amount of resources”. Despite these multiple definitions, there is a general consensus regarding the essential principles, practices and values of TQM. Together with the involvement of people, a focus on product improvement from the customers’ viewpoint and continuous improvement are others essential beliefs of the TQM (Hafeez et al., 2006; Lysons and Farrington, 2006).

4. Models of Quality Management
Over the last two decades, many organisations around the world have adopted TQM because it has been seen as a way of improving the competitiveness, effectiveness and efficiency in an organisation (Tanninen et al., 2010). With customers demanding quality and competitors responding to such demands, business turned to TQM as the key to enhance overall performance (Vokurka et al., 2000).

Theoretically, we can establish two main routes for the effect of quality on business performance: the manufacturing route and the market route.

In the market route, improving the quality increases customer satisfaction, as well as it increases their loyalty and repeats purchases, leading in this way to the increase in market share and this, in turn, to increased profits. Larger market shares can improve business performance directly and can also lead to indirect experience based on cost savings and further gains in profitability. Finally, improved product quality can lead to lower warranty and product liability costs, resulting in lower service costs and improved business performance.

In the manufacturing route, improved internal process quality, meaning fewer defects, scrap and rework, results in an improved operational performance (e.g. lower manufacturing costs, more dependable processes). The increase in productivity caused by improvement in quality has an impact in two levels: the reduction of costs, which has a direct impact on profits and prices, allowing the competition to lower prices, with effects in increasing market share, and by this means, improved business performance.

One important area of research in quality management has been the examination of the extending to which quality management practices have an impact on firm performance (Sousa and Voss, 2002). Several studies analysed the impact of quality management practices/factors/criteria on quality/business performance. A large body of literature highlights the positive implications of quality on performance (Nair, 2006). In contrast, there are some researchers who found that the implementation of TQM did not improve performance.

Several models linking TQM constructs and organisational performance measures constructs have been proposed. However, there has been a tendency for organisations to use the structures of the models of TQM based on the criteria of the most important quality awards: Deming Prize in Japan, the Malcolm Baldrige National Quality Award in the U.S. and the European Quality Award in Europe.

These models are representative of TQM approaches, but they are not the only ones. Costing (1994) explores beyond these models, the Wheel Model. Other authors examine some leading excellence frameworks and models and discuss/identify their strengths as well as their limitations. For instance, Dahlgaard-Park and Dahlgaard (2007) examine Peters and Waterman's eight excellence attributes (1982), Peter and Austin’s simplified excellence model (1985), lists of best practices (1998), Xerox excellence models (1990, 2002), Dahlgaard-Park and Dahlgaard’s 4P model (1999, 2004) and Toyota’s 4P model.

On the next table, there are presented the primary elements of two of the most referenced models in literature: the Model of Malcolm Baldrige Quality Award and the model developed by European Foundation Quality Management (EFQM), which has recently suffered some changes.

| The Malcom Baldrige Quality Award Framework | EFQM Excellence Model (2010) |
As noted by Sousa and Voss (2002), the scope of the major quality awards assessment frameworks has been continuously enlarged, making them overall “business excellence” models rather than strictly quality models. The authors understand this like a dangerous trend that may threaten the quality field’s conceptual foundations.

With regard to models based on the quality wards, it is noted that, despite being one of the most known and referenced in the literature, these models were not, however, constructed and validated by empirical means. But their existence shows, as pointed by Ghobadian and Galler (1997), that governments also recognise the positive relationship between quality and competitiveness, by promoting these awards in order to encourage efforts towards quality improvement.

The models of quality awards mentioned above provide a universal framework for evaluating aspects of quality management practices in an organisation. They also provide a framework for identifying a range of intangible and tangible processes which influence the organisation’s total quality management and the end results. These models contain much of the knowledge in the quality area in a condensed form. Thus, they are useful as instruments for improvement and many organisations use the models without having the ambition to apply for the award.

Although each model has its own unique categories and emphasis, after specific elements examination, we conclude that there are some common areas: (i) Leadership; (ii) People management; (iii) Processes; (iv) Policy and strategy; (v) Supplier relations; (vi) Customer focus; (vii) Education and training, and (viii) Employee participation.

The quality models do not address a specific organisation’s characteristics, which may affect the implementation of TQM. Relevant contextual variables include managerial knowledge, size, ISO 9000 registration, country of origin, scope of operations, corporate support for quality, product complexity, manufacturing strategy, and years since the adoption of quality programs (Sila, 2007). It should be noted also that the quality models do not provide detailed guidelines for the organisations to use in improving quality management practices. Moreover, they do not provide all kinds of quality management methods to be used in overcoming the weaknesses of the organisations. Thus, there remain some difficulties for the organisations to use the quality award models effectively to improve their quality management practices.

It must be recognised that there are many approaches and models to achieve excellence (Zairi, 2002), but within a non-prescriptive framework, there are some fundamental concepts, which are underpin such models.
Some authors categorise quality practices into two clusters. For instance, Flynn et al. (1995) categorise seven quality practices into two groups: infrastructure practices (top management support, workforce management, supplier involvement, and customer involvement) and core practices (quality information, process management, and product design). The infrastructure practices pertain to behavioural attributes of quality management, whereas the core practices relate to the technical aspects. The analysis of other studies shows, as stated by Sousa and Voss (2002), that there is substantial agreement as to the set of constructs classified under the quality management umbrella. As we can see, these constructs are present in the frameworks used for the quality awards, such as the Malcolm Baldrige Quality Award and the European Quality Award. This should not be surprising, since some authors claim that most relevant excellence models and excellence award programs have their roots in TQM (Khoo and Tan, 2003). Zakuan et al. (2010) and Soltani et al. (2008) have identified in the literature a common set of practices considered essential to the success of quality management implementation that is designated as: quality leadership -the institution of leadership practices oriented towards TQM values and vision; customer focus and satisfaction -meeting customers’ expectations at the least cost, which requires a focus on quality throughout all phases of the design, production and delivery of product/service – i.e. not just the end product; quality information and analysis -frequent use of scientific and problem-solving techniques, including statistical process control, human resource development – striving continually to improve employee capabilities and work processes; involvement of all organisational members in cooperative, team-based effort to achieve quality improvement efforts; supplier quality management - to involve external suppliers and customers involved in TQM efforts, and strategic planning management.

The ISO 9000 family standards can be a possible framework to categorise the TQM literature (Ahire, 1995). The ISO 9000 established as quality management principles the following: customer focus, leadership, involvement of people, process approach, management approach as a system, continuous improvement, approach in making decisions based on facts, and mutually beneficial relationships with suppliers. Once again, we conclude that many of these principles match with the practices listed above mentioned by Zakuan et al. (2010) and the sub-criteria from the models based on quality awards, and they can be easily fitted in the TQM philosophy. The requirements of ISO 9001: 2008 are based on these principles and they should be present in all activities, including Purchasing ones.

5. Quality management and purchasing

It is consensual that Purchasing has begun to play a more strategic role as organisations implement supply chain management concepts (Stanley and Wisner, 2002), which led to a change in its classic definition, having appeared in the literature several proposals for a new definition (purchasing has increasingly become known by supply management). Lysons and Farrington (2006) discuss the different perspectives of purchasing and present several definitions that most commonly appear in literature. The authors also present alternative models of purchasing evolution. Therefore, their analysis seems to conclude that the more advanced stage of its evolution considers purchasing as a proactive strategic activity. Here we use the term purchasing similarly to that used by Cousins at al. (2006): in a broad sense, relating to the full range of potential activities contained within the function, from tactical buying to strategic supply chain management.

Recent literature contains a number of suggestions for potential synergies between supply chain management and quality management (Flynn and Flynn, 2005). Less frequent in the literature is to examine the link between quality and Purchasing. In the following sections, we

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3 Different terms have been used for “practices”, such as “factors” or “implementation constructs”. According to Sousa and Voss (2002), researchers should strive for a standardisation of definitional terms.
intend to specifically analyse the quality-purchasing relationships. Firstly, we tried to examine the role of Purchasing to reach quality; then we analysed some of the most relevant practices in the Purchasing if we wish to achieve quality.

5.1 Role of Purchasing in quality

There are several reasons to consider that Purchasing decisions have a potentially great impact on the firm’s end product and on the overall business performance. Next, we highlight the most relevant ones.

Firstly, most of the materials included in manufacturing are purchased from other companies. It seems obvious that it is difficult to achieve the required quality standards without the appropriate raw materials. Handfield at al. (2009) claim that the average manufacturing firm spends more than 55% of its sales dollar in purchased goods and services. These values may take over a higher importance if companies opt to outsource some activities, a trend that has existed in recent decades.

Materials are a source of process variation (Sánchez-Rodríguez and Hemsworth, 2005) with a direct impact on the quality of the product. This idea is reinforced by the Crosby’s statement. He has estimated that 50% of quality problems in manufacturing are due to defects in the purchased materials (Handfield at al. 2009). Furthermore, the supply of materials with poor quality may have important consequences in terms of complaints (Juran, 1992).

These conclusions about the Purchasing impact on quality are not new. The early works of the quality gurus stressed already the critical role of the Purchasing function in quality (Sánchez-Rodríguez and Hemsworth, 2005). To illustrate it, these authors highlight one Purchasing dimension: the supplier management. The reason to highlight this dimension seems obvious: in order to achieve total quality, companies need to mobilise all their resources, not only internal (employees) but also external (suppliers), in a continuous process to improve product and service quality. This importance is visible in several studies that face Purchasing-related dimensions as one of the key building blocks of TQM, where it is granted a special emphasis on the role that supplier management plays in quality management (Sánchez-Rodríguez and Martínez-Lorente, 2004). On the other hand, recent trends inclined to buying instead of making, to lower inventories, to integrate supplier and purchaser systems, and to create cooperative relations, brought an increasing attention to this aspect.

5.2. Quality management practices in Purchasing

According to Sánchez-Rodríguez and Martínez-Lorente (2004), the emergence of TQM and its implications for Purchasing management have attracted the attention of numerous researchers in the last two decades. This can be demonstrated by several studies that have been published related to specific quality management recommendations for Purchasing. From a literature review, the authors identified some studies whose recommendations were related to: teamwork (e.g. Carter et al., 2000), collaborative supplier relationships (e.g. Lascelles and Dale, 1989), process improvement (e.g. McGinnis and Vallopra, 1999), and coordination of Purchasing with other functional areas (e.g. Lascelles and Dale, 1989). Hemsworth et al. (2008), as well, mention some studies that have discussed issues pertaining to the implementation of quality management in Purchasing. These issues include: the need to manage Purchasing personnel based on quality (e.g. Carter and Narasimhan, 1994; Carter et al., 1998; Carter et al., 2000), the need to enhance the coordination of
Purchasing with other functional areas of the company (e.g. Carter and Narasimhan, 1994; Carter et al., 1998), the strength of Purchasing management’s commitment towards quality (e.g. Hemsworth and Sánchez-Rodríguez, 2003), and benchmarking in Purchasing (e.g. Hemsworth and Sánchez-Rodríguez, 2003). Other studies have recognised the importance of supplier quality management to a buyer’s quality success (e.g. Saraph et al., 1989; Flynn et al., 1994; Powell, 1995; Ahire et al., 1996; Black and Poter, 1996).

Table 3 has been prepared on the basis of the above studies only related with Purchasing practices, allowing us to identify and compare the practices considered in these works. We kept the terms used by the authors and we tried to match them together wherever possible. Below we analyse in particular each one of these practices.
Table 3. – Quality Purchasing practices

<table>
<thead>
<tr>
<th>Practices</th>
<th>Studies</th>
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<tr>
<td><strong>Supplier quality management</strong></td>
<td></td>
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<tr>
<td>Supply base rationalisation</td>
<td>1); 2); 3)</td>
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<tr>
<td>Supplier evaluation</td>
<td>1); 2); 3)</td>
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<tr>
<td>Establishment of aggressive supplier improvement goals</td>
<td>3)</td>
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<tr>
<td>Supplier reward and recognition</td>
<td>1); 2); 3); 4)</td>
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<tr>
<td>Certification of suppliers under ISO 9000</td>
<td>1); 2); 3)</td>
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<tr>
<td>Supplier development</td>
<td>3)</td>
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<tr>
<td>Supplier involvement in the buyer’s product design process</td>
<td>1); 2); 3); 4)</td>
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<tr>
<td>Training for suppliers</td>
<td>1); 2); 3); 4)</td>
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<tr>
<td>Suppliers’ sharing of internal information</td>
<td>2); 3)</td>
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<tr>
<td>Access internal and external supplier information</td>
<td>4)</td>
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<tr>
<td>Long-term relationships with suppliers</td>
<td>4)</td>
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<tr>
<td>Sharing of production schedules and plans with supplier</td>
<td>4)</td>
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<tr>
<td><strong>Cross-functional coordination</strong></td>
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<tr>
<td>Purchasing interaction with new product development</td>
<td>1); 2)</td>
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<tr>
<td>Collaboration between Purchasing and marketing in the new product design process</td>
<td>3)</td>
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<td>Evaluation of Purchasing personal based on their involvement with suppliers</td>
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<td>Purchasing management’s evaluation based on quality</td>
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<td>Predominance of quality in supplier selection and evaluation</td>
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<td>Benchmarking Purchasing performance</td>
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Legend:
1) Sánchez-Rodríguez and Martínez-Lorente (2004); 2) Sánchez-Rodríguez and Hemsworth (2005); 3) Hemsworth et al. (2008); 4) Carter et al (1998)

Supplier quality management
Recalling what has been mentioned earlier, supplier quality management is considered to be one of the essential practices to the success of quality management implementation (Zakuan et al., 2010; Flynn et al., 1994), and one of the main aspects underlying quality models based on quality awards. Such importance seems to be due to a TQM principle: the process of quality improvement should never be treated by an organisation as a separate activity: it must spread out to include partnerships with customers and suppliers.

Van de Wiele et al. (1993) were concerned to note that a much lower importance was given to develop partnerships with suppliers comparing to the one given to developing partnerships with costumers, in a study conducted in organisations mainly from the UK and the Netherlands. The authors put forward as justification the possibility of organisations to implement their philosophy and concept of TQM firmly into place before extending the concept to suppliers, or, supplier partnerships and long-term business relationships may not be seen as key issues by some companies. The authors concluded that it was urgent to change this situation. More recently, Sánchez-Rodríguez and Hemsworth (2005) stated that recent theory in total quality management (TQM) has reinforced the key role that suppliers play in quality management by considering partnership-like relationships with suppliers a key element of TQM.

In a TQM approach to manage a business, suppliers should be chosen according to their quality and reliability and not just to price. Not only the suppliers’ selection but also their evaluation is required by the requirement of ISO 9000: 2008 regarding Purchasing. The clause 7.4 of this standard mentions that the organisation must ensure that “purchased product conforms to specified purchase requirements and that suppliers are evaluated and selected according to their fitness to provide compliant product”. According to these standards, it is expected that the organisation has clear criteria for progressively selecting and evaluating their suppliers. It will be necessary evidence to prove that these criteria are met and that appropriate actions are being taken where the supplier performance is not satisfactory.

Dale et al. (1999) present ten conditions for selection and evaluation of suppliers:

1) The supplier understands and appreciates the management philosophy of the organisation;
2) The supplier has a stable management system;
3) The supplier maintains high technical standards and has the capability of dealing with future technological innovations;
4) The supplier can supply precisely those raw materials and parts required by the purchaser, and those supplied meet the quality specifications;
5) The supplier has the capability to produce the amount of production needed or can attain that capability;
6) There is no danger of the supplier breaching corporate secrets;
7) The price is right and the delivery dates can be met. In addition, the supplier is easily accessible in terms of transportation and communication;
8) The supplier is sincere in implementing the contract provisions;
9) The supplier has an effective quality system and improvement program such as ISO 9000;
10) The supplier has a track record of customer satisfaction and organisation credibility.

To judge the quality of vendors and purchased parts, Deming considers that the Purchasing must use statistical tools (March, 1994). Benito and Dale (2001) point out two major instruments that should be used to gather the information needed for the selection procedure: quality system certification and the maintenance of quality, and reliability performance records.
Nowadays, many companies choose suppliers based on quality certification, along with cost and delivery parameters. Such as Dale et al. (1999), also Saraph et al. (1989) agree that supplier quality certification programmes provide a means of conveying manufacturers’ quality expectations to suppliers, as well as providing assurance about the quality of incoming materials and parts. Arauz et al. (2009) state that quality certification programmes have become reference points for managers to evaluate companies at national and international level. Naor et al. (2008) stress that certified suppliers have fully documented process and quality systems, and they tend to decrease uncertainty and ensure timely delivery of goods. Uncertainties, this is avoided because the responsibilities of certified suppliers include the control of the production process during manufacture to prevent nonconformities and furnishing timely copies of certificates of analysis, inspection, and test results. However, Lenders et al. (2006) noted that it is very difficult for a purchaser to insist that suppliers meet stringent quality requirements when it is obvious to the supplier that the Purchasing organisation itself shows no sign of a similar commitment, so this requirement pushes the organisation itself to use quality standards.

Most purchasers and sellers now recognise a need for joint cooperation to achieve cost, quality, delivery, and time improvements (Handfield et al., 2009). Landeros and Monczka (1989) described the cooperative relationship as one where Purchasing buys from a small supply pool, partnering arrangements are common, Purchasing and their suppliers solve problems jointly, information is exchanged, and both parties adjust together to market conditions. Supply base reduction is a necessary precursor to buy from a small pool of suppliers and considered one way to build stronger, long-term relationships with remaining suppliers (Atkinson, 1989; Naor et al., 2008). Some authors also state that firms have attempted to reduce the number of suppliers and increase the efficiency of those that remain, to improve their performance (Naor et al., 2008).

To reduce the size of supply base constitutes a change with the traditional Purchasing. In fact, according to Carter et al. (1998), traditional Purchasing says that it is important to have a large supply base in order to assure an uninterrupted supply of materials. Single sourcing should be avoided if at all possible, because it makes the buying firm dependent on a single supplier.

Deming proposes long-term relationships and the use of fewer suppliers in an effort to upgrade the quality of their products (March, 1994; Stanley and Wisner, 2001). Ishikawa also suggests reducing the number of suppliers. Other experts have strongly defended the reduction of the supply base. The general argument is that a single supplier will be more cooperative, more interested, and more willing to please (Carter et al., 1998). Another argument states that suppliers must devote much time to understand the buying firm’s needs and requirements in order to maximise product and service quality.

To develop a long-term relationship with a few high-quality suppliers has several advantages for both parties. For instance, the company does not have to go through the supplier selection process as frequently; this is good because evaluating suppliers can be time-consuming and costly. Furthermore, in peak demand periods, the company can still obtain all of its materials from the same supplier without searching for additional ones (Mitra, 1998). The reasons for partnerships are found in literature by Stanley and Wisner (2002): securing reliable sources of supply, price considerations, and to improve supplier quality, share costs, capitalise on supplier technical knowledge, shorten the product life cycle and reduce uncertainty. These authors present conclusions from several researches which examined the cooperative relationships with external suppliers. Mitra (1998) highlights advantages from reduction of the number of suppliers, from the suppliers’ points of view. The author states that a long-term relationship develops mutual trust. In the case of an occasional poor shipment, for instance, the supplier knows that its contract will not be ending right away.
Moreover, the supplier does not worry about frequently renewing contracts. The stable environment helps the supplier to maintain a desirable quality level. To Handfield et al (2009), trust makes possible to share data costs and can also result in a supplier working with a purchaser early in the design of a new product, with consequences on the activities needed for checking the completeness of product specifications.

Supplier development can be considered as another quality and reliability practice, as shown in Table 3. Helping existing suppliers to improve their production and process capabilities and competitive advantage contributes to product and supply improvements (Benito and Dale, 2001).

Creating incentives for suppliers is another way to ensure that they remain committed to a quality improvement strategy. However as we can see on Table 3, this issue is only mentioned by Hemsworth et al. (2008). According to Dale et al. (1999), incentives may be in the form of preferred supplier category with its rewards. Usually, the supplier is interested in recognition such as publication of outstanding contributions in the customer’s newsletter; a letter of commendation that can be posted on the TQM bulletin board; or a plaque that can be mounted in the suppliers’ reception area. Other practices that could be considered to improve quality related with suppliers are shown on Table 3.

**Cross functional coordination**

Cross-functional coordination refers to the interaction of Purchasing with internal departments, such as quality and/or production in determining the materials specifications, collaboration with production/manufacturing personnel in solving production problems, and the involvement of Purchasing in the firm’s new product development process (Sánchez-Rodríguez and Martínez-Lorente, 2004). Some of these aspects are present in ISO 9000 standards. For instance, the sub-clause 7.4.2 from ISO 9000: 2008 determine that the purchase information / purchase documents must indicate, without ambiguity, the specification of the product or product requirements required (e.g. deadlines, logistics; packaging types, reference standards, technical characteristics, types of packaging and expected outcome of the service). Also sub-clause concerning planning design and product development (sub – clause 7.3.1 from ISO 9000: 2008), which are established features of the product, states that this process is often cross-functional, which may include as inputs information from different areas within the organisation, including marketing, sales, manufacturing, servicing, maintenance, Purchasing, and others.

When referring to that issue, the majority of studies refer to an interaction between two functions: Purchasing and production/manufacturing (Sánchez-Rodríguez and Martínez-Lorente, 2004; Sánchez-Rodríguez and Hemsworth, 2005; Hemsworth et al., 2008 and Carter et al., 1998; Carter and Narasimhan, 1994). However, Purchasing has a better knowledge about specifications if interacting with other functions beyond production. Research has shown, according to Sánchez-Rodríguez and Martínez-Lorente (2004), that Purchasing interacts beyond production more closely with the marketing area in the new product development process.

In point 9 of Deming’s 14 points, the author draws attention to the need of breakdown barriers between departments: people in research, design, Purchasing, sales and production must work as a team to foresee problems of production and use of the product or service (Lysons and Farrington, 2006). Each discipline must stop optimising its own work, and work together as a team for the company as a whole. Purchasing staff are the intermediaries between the supplier and the user. Deming states that they must understand the specifications, but they must also know how the material is to be used in production and by the final costumer (March, 1994).
To Handfield et al. (2009) as well, cross-functional coordination is promoted by creating organisational structures, such as cross-functional teams. They point out several benefits: reduced rework and time to complete a task, increased innovation, better identification and resolution of problems, joint ownership of decisions, realising synergies, among others. Lysons and Farrington (2006) stress as an advantage of cross-functional teams an increased understanding between functions of each other’s problems. The contributions made by Purchasing staff to cross-functional teams can do much to enhance the reputation and recognition given to Purchasing by other team members.

Additionally, empirical research has shown that cross-functional coordination and management commitment are positively correlated with quality performance (Curkovic et al., 2000).

**Personnel management**

Table 3 shows that all studies which sought to examine empirically management practices in Purchasing quality, have considered personnel management. In this context, there is a consensus in the literature that multidisciplinary teamwork in teams composed by members from different organisational functional areas promotes TQM. Teamwork is necessary because it involves the collaboration between managers and non-managers, between functions (as we saw in cross-functional coordination), as well as with customers and suppliers (Dean and Bowen, 1994). Moreover, teamwork causes a decline in resistance to change due to sectional interests and less organisational rigidity (Wilkinson, 1994). Lysons and Farrington (2006) stand the movement from discrete Purchasing “departments” to cross-functional procedures by cross-functional teams.

It is also supposed that TQM places a greater emphasis on self-control, autonomy and creativity, expecting active co-operation from employees rather than mere compliance with the employment contract. TQM proponents have highlighted the need to increase the involvement of all employees in monitoring their own work with the aim of constantly maintaining quality (Wilkinson, 1994).

Another issue that has been recognised as essential to the implementation of TQM is training and development. Two of Deming’s 14 points are related with this issue. According to Deming, all employees must be continually trained and retrained, and all training must include basic statistical techniques. Companies committed to TQM invest in training believing that it is vital for the internal diffusion of quality ideas and practices, as without it there is no solid foundation for a formal quality programme (Jiménez-Jiménez and Martínez-Costa, 2009).

It is obvious that the application of all these aspects outlined above is critical in Purchasing. For instance, the supplier development process must be supported by well-trained personnel capable of helping laid down suppliers, such as it is essential that Purchasing staff can understand the capabilities of their suppliers’ manufacturing processes and systems and have a good working knowledge of the philosophy, principles and techniques of continuous improvement (Dale et al., 1994).

**Management commitment**

Management commitment is a success factor for successful TQM. Deming’s first and second points define the tasks of management. In fact, his 14 points all aim management, implying that management’s undivided attention is necessary to create a total quality system. Point 1 in Crosby’s 14-step process stresses the importance of management communicating its
understanding and commitment. Juran’s quality planning, control, and improvement process seeks management support in all levels (Mitra, 1998).

So, management plays a major role in achieving quality in Purchasing. Management had to take the lead in developing long-term relationships with suppliers, improving and maintaining quality or train his Purchasing department. The commitment with quality in Purchasing can be evaluated by analysing the predominance of quality over other Purchasing objectives, Purchasing management’s evaluation based on quality or predominance of quality in supplier selection and evaluation (Sánchez-Rodríguez and Martínez-Lorente, 2004; Sánchez-Rodríguez and Hemsworth, 2005).

**Benchmarking**

Some studies (Sánchez-Rodríguez and Martínez-Lorente, 2004; Sánchez-Rodríguez and Hemsworth, 2005) consider Benchmarking as a practice used for evaluation and comparison of their Purchasing process or Purchasing performance with others from other organisations, which obtained better performance indicators. The main objective of benchmarking is the sharing and acquisition of insight to improve the company’s system (Sánchez-Rodríguez and Martínez-Lorente, 2004).

6. Conclusions

Quality management has evolved over a century, being today a mature area in management research. Concepts and practices underlying the TQM have been extensively documented in literature and adopted by many organisations. The adoption of a TQM philosophy offers potential for broadening the perspective of supply chain management form its traditional narrow focus on costs and competitive relationships to a focus on cooperative relationships between members of the supply chain.

The increasing emphasis on supply chain management is causing researchers to rethink models, constructs, and frameworks for quality management (Foster, 2008). Competition now is not only found at the firm level, requiring a much greater level of coordination among chains or networks of suppliers, distributors, producers and costumers. Some authors suggest that traditional quality programs focusing on approaches such as TQM, Quality Awards frameworks and ISO 9001, must now transform themselves into a supply chain perspective, in order to simultaneously make use of supply chain partner relationships and quality improvement gains, essential to the marketplace satisfaction.

The adoption by Purchasing of principles and practices of quality management existing in the TQM approach could positively influence the quality performance. Particularly, supplier management, that is one of the most important aspects of Purchasing (Lysons and Farrington, 2006), as we define it, has a central place in supply chain management. Furthermore, as we previously noted, effective management of external supplier quality is a critical element of quality management, and their benefits have been extensively reported in literature. However, if these issues are undoubtedly related, others should not be despised. Literature review presents several cases and studies that confirm the positive impacts of adoption/implementation of others quality practices in Purchasing. It can be a way to positively potentiate supply chain performance. More research should be conducted in order to confirm these relationships.

7. References


