American Journal of Management Science and Engineering
2024, Vol. 9, No. 2, pp. 24-44
https://doi.org/10.11648/j.ajmse.20240902.11

Research Article

The Functionality of Global Quality Management in the Dynamic and Global Environment of Mergers, Acquisitions, and Strategic Partnerships - Adoption of a Systematic Process Concept

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Abstract

Purpose: To explore the functionality of the quality management processes at the global level and understand its complexity and multiple dimensions. *Design/methodology/approach:* The researchers use a novel systems perspective to explore international standards ISO 9001/9004 capacity to encompass this complexity and analyze the stages by which global multinational organizations develop. In-depth interviews with experts (CEOs, quality managers, and global managers) from 18 international firms were some of the qualitative methods used in the research, along with content analysis, observations, and other methods. The study addresses the philosophy of global quality management and emphasizes the need for inter-organizational coordination and process management. *Findings:* The results of the qualitative tools showed that the existing definitions in ISO 9004/9001 have made it challenging to address the level of process complexity in international organizations. The main recommendations of the study are the following key points for expanding and refining the existing process concept for a global reality: 1) adopting a systems approach for analyzing the development of a global quality function in complex, multinational companies. 2) extending the classic process approach to open, multi-interface systems oriented towards mutual strategic, operational, and marketing processes. *Originality/value:* In this article, we suggest an innovative, integrated systems approach to multinational quality management based on shifting from the traditional emphasis on separate operations and manufacturing sites toward a comprehensive perspective that considers the interdependence and coordination among locations. This novel analysis and mapping process offers a comprehensive view of coordinating interdependence between elements comprising an international global process system. It expands the classical approach and provides a basis for developing a global, networked QMS. The current study might be useful for organizations that implement quality management systems in multinational companies. The study is part of vast academic research on international strategy in the global competitive landscape.

Keywords

Globalization, Quality Management System (QMS), Multinational Organizations, Process Approach, Business Process Management, Mergers & Acquisitions (M&A), ISO 9004, ISO 9001

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Received: 15 May 2024; **Accepted:** 3 June 2024; **Published:** 19 June 2024

1. Introduction

Companies continually explore ways to grow their business in size, market share, product line, and profitability [32]. Leaders look to expand their footprint beyond their current active location and seek global market opportunities. Investing in innovation and new product development (NPD) using internal business resources is one strategy to increase corporate performance. Investing outside the company through Mergers & Acquisitions (M&As) is another strategy to enhance performance and growth [12]. As such, they are a rapid method for achieving new client relations and projects needed for revenue growth [28].

Globalization processes are still in their early stages, and mature insights into the complexities of management systems operating in a global environment are still developing. Also, there is no widely accepted global quality management system (QMS) definition. As a result, models and methodologies for dealing with the challenges posed by globalization are lacking. A Global QMS faces challenges due to its complexity, multiple interfaces, and strategic, operational, and marketing interactions, all requiring attention. These challenges become more complex when compounded by organizations' efforts to grow using business processes such as M&A and strategic partnerships.

The current study examined the ways in which QMSs operate in eighteen multinational companies in the face of local and global needs that emerge along the global supply chain. In addition, the study identified the unique needs and challenges found among those multinational companies and examined the issue of regulating the QMS's local and global needs.

1.1. The Multinational Organization as a Complex System

The expansion process of multinational companies (MNC) – both their geographical spread, their vertical and horizontal interactions, and their compliance with local regulations– highlights the transition from the traditional model of a single enterprise to an international network with an array of inter-company processes requiring a suitable level of integration and coordination. According to Barabási and Frangos [4], "network organizations" are formed as part of companies' expansion process, creating synergy between organizations, or a meta-organization, moving from a "tree structure" to a whole multi-dimensional network structure.

Global competition forces the improvement of the quality of all processes [58]. Furthermore, a systems perspective must be used to examine how an MNC evolves and the impact of that development on global quality performance due to the high degree of complexity that defines the competitive global environment.

Although globalization presents organizations with many opportunities, it also poses complex challenges for managerial systems [44]. Management continues to cope with classical issues associated with local operations but must also contend with new challenges emerging from the decentralization of manufacturing, acquisition, marketing, administration, etc. Quality managers at various levels within a global operation face challenges often due to multinational systems' extreme complexity [45]. They can best address these challenges by adopting a broad, strategic perspective.

Bashan and Notea–Researchers examined how QMS in multinational corporations function in a complicated environment [10]. They discovered that M&A creates network structures with numerous interrelations in complex constellations and that planning appropriate integration methods for all quality functions is necessary. They proposed a framework for categorizing the system's attributes based on the global operations and marketing structures brought about by expansion activities on this basis.

Even on the local level, organizations are often complex. Not only must a local organization manage its inputs and outputs, but it also needs to identify, acquire, and manage resources (raw materials, knowledge, technology, human resources, and capital); coordinate processes and operations, while remaining alert to changes in the competitive environment and ready to respond, even when uncertainty prevails. These challenges become substantially more complicated for global organizations because they appear simultaneously in multiple local environments, each with its own complexity. An MNC must consider the regions where it currently operates and those where it wishes to expand.

Managing an MNC demands a more sophisticated and multifaceted skill set than that needed in local organizations. Flexibility and a broad strategic view of organizational and business functions are critical, as well as the ability to respond adequately, agility, and rapidly to constant, sometimes multiple, internal and external changes. Each multinational system should be considered as a system of systems, consisting of several subsystems, some of which are autonomous but connected by mutual dependence relationships (i.e., operational and marketing connectivity). For example, each disparate branch of a MNC is an organization with its own policies, judgment, financial management, and other management categories, adapted to the characteristics and requirements of its local environment. It is independent and managed primarily according to local needs but also has inevitable connections to all other branches, subsidiaries, and the organization's top management (the parent organization), which is responsible for strategic planning and implementation, budget distribution, procedures, and regulations that are binding on all branches. This creates a state of dependence, not only with the parent organization but also between subsidiaries and operating units. All organization components are connected

through strategic, business, and functional relatedness in relationships managed using diverse strategies (e.g., vertical or horizontal; supplier-customer relationships, inter-organizational competition, etc.), and reinforced by technological advancements that facilitate innovative modes of communication. The simultaneous state of autonomy and dependence within a global organization creates an organizational structure that is more like a network than a centralized hierarchy. This structure creates many conflicts, and it is necessary to develop managerial approaches capable of coping with them.

1.2. The Classical Process Approach Defined Over ISO 9004 ISO 9001 - Limitations and Its Inability to Meet the Requirements of Global Quality Management GQM

The findings of the field research in organizations indicate that the flexible and vague definition of the process concept as it finds its expression in ISO 9001 and ISO 9004 - does not allow for providing an answer to the level of process complexity of global organizations.

This traditional concept does not allow reference to the level of complexity of the supply chain, its various interfaces, and the integrated activity of the group of quality systems included in it. In these studies, the suitability of the classic process approach was examined, against the levels of the operation and production systems and the quality systems required to support them, and it was proven to be ineffective for managing the set of processes and cross-border products that are presented graphically and discussed later.

In its existing form, the traditional approach is mainly suitable - for a single organization as a closed system and for a single quality system - facing a local and defined set of processes and dealing with the question of increasing administrative efficiency through effective planning of internal processes. As such, there is a need to expand the classical process approach to the operational characterization of the global organizations as shown in the following charts and which forms the basis for the future development of the model for a global functional merger of the quality system.

1.3. Process Management as Part of QM

The concept of process management can be found in the definition of the quality management system, which is understood as the structure, policies, processes, procedures, and resources (including human resources) required for implementing quality management [17]. It is based on a procedural, systemic approach that creates and ensures the quality of activities and products by using processes that are constantly improved and merged into a coherent system [56]. The primary purpose of the quality system is to support the management of activities and processes. The concept of process is essential in quality management systems because current-day quality systems focus on processes with a beginning and an end. Therefore, the QMS requires a cross-functional view of an organization [40]. By implementing quality management cycles, organizations can manage internal and external disorders to stabilize or even improve the performance of the business process [61].

The QMS can best achieve its ends by using standardized processes that unify business processes and lay a foundation for working with multiple internal departments and locations [60]. According to ISO 9001, quality management must take into account the following seven principles: customer orientation, leadership, human involvement, process-oriented approach, continuous improvement, evidence-based decision-making, and relationship management. Process management is, therefore, a key element indicating ISO 9001 implementation success [21].

Globalization alters the operational environment by introducing new processes and products that cross boundaries and national borders, posing new challenges for quality managers at all levels [45]. Researchers defined the complex global environment of the twenty-first century and the need to change how quality management is implemented and understood. Their depiction emphasizes the interdependence of production, product, service, and network processes [65].

According to recent research Hitt et al. (2016), globalization provides numerous opportunities while posing significant challenges [39]. Fifty years ago, businesses were largely localized and served more stable markets. At the same time, recent advances in communications and transportation have facilitated the acceleration of global company expansion and spurred more intense competition and economic growth.

1.4. The Need to Expand the Process Approach for Global Organizations

Recent study suggests that processes themselves are the focus of quality management and uses the terms "quality management" and "process management" interchangeably [60]. All organizational activities are included in, managed, and directed by a process-oriented QMS. A model quality system needs to incorporate process management [40]. Various industries use quality management to control processes and guarantee the quality of their goods and services.

A complex international operational system is created by boundary-crossing processes and products generated by globalization. These systems are characterized by geographically separated functional units, diverse functions and products produced in various locations, and varying dependence relations (degrees of relatedness) between the operational teams. Globalization has four main fundamental causes: political, economic, technological, and informational. These elements have triggered a complex, global process through which geographical distances are no longer considered a primary factor [49].

The study's challenge was broadening the current process method to include international organizations. The lack of quality management "instruments" suitable for complicated, dynamic supply chains, such as those found in global enterprises, is the problem that the current paper discusses.

The current study aims to investigate quality management at the global level and understand its complexity and multiple dimensions.

This study suggests an integrated, comprehensive approach to quality management at the global level. General System Theory (GST), which contends that there are parallels between systems in different disciplines ("similarity of all systems"), is used as a foundation for a new, expanded process concept for managing functional systems, including global quality systems. Global quality systems are evaluated as open systems with many interfaces that must adopt a strategic, operational, and marketing rationale as their mode of operation to function effectively.

The study's main contribution is expanding the existing process approach, and adapting to the needs of global organizations and MNCs, based on findings from a field study of eighteen multinational companies. They highlighted the need to expand the process approach as a prerequisite for developing an appropriate concept for global quality management of aggregate quality systems linked through strategic, operational, and marketing interactions. The quality systems may differ, e.g. based on the Excellence Model EFQM, or the Maturity Model. The aggregate concept shifts the focus from processes at an individual plant as a "closed system" to an open, international network with many intercompany processes, joining subsidiaries, strategic partners, and operational units at different locations in a complex, integrated supply chain. The proposed paradigm expresses this change and recognizes the existence of an inter-organizational, networked process between companies under the responsibility of a single multinational company and a global QMS responsible for overall coordination and effective management.

The following sections in this paper review the relevant literature on quality management and M&A. This is followed by describing the methodology and findings of a field study of eighteen multinational companies. Based on the results, we then discuss the need to expand the process approach as a *modus operandi* for managing global processes in multinational companies.

2. Literature Review

2.1. Quality and Strategic Planning

The global environment in which twenty-first-century businesses operate is becoming increasingly complex. Moreover, the rapid changes in the global economy have significantly impacted the evolution of quality definitions and concepts. Organizations need to adapt to these complex environmental conditions.

Despite the varied perspectives on quality management, most studies show that quality management can give a company a strategic advantage. Quality and strategic planning complement each other, and good quality management is a key to competitive advantage [2, 13, 16, 36, 58].

The role of an effective organizational strategy that balances the present competitive orientation with the future-innovative orientation was covered in past studies [3].

According to the process approach, the organizational processes that guarantee efficient and effective delivery of products or services to customers should be identified and adapted to customer needs and expectations [23]. Furthermore, all processes that ensure meeting the needs and expectations of relevant interested parties (including customers) are considered and addressed in a balanced way. For every process, performance objectives are defined and understood by all participants in the product or service [24, 26].

Consolidation processes take time to develop, and globalization is a relatively new phenomenon, initiated in the late 20th century and continues in the 21st century. This complex, multilayered process affects each aspect of the economy and society [51].

Shi and Gregory–Past research contends that both production management and product engineering were inadequately prepared for the changes necessitated by globalization [62]. Therefore, insights into the complexities it introduced into management systems are still developing. Another finding was that as systems adapt, management processes in international companies shift their focus from internal factors to external ones [64].

Despite the agreement that the global quality system has a strategic function, the literature survey's results show that there is an apparent absence of information on the subject. It is difficult to find a quality strategy that takes a multi-system global approach, either conceptually or officially. As was previously indicated, there is a dialogue about the necessity of a global concept termed global quality management, or GQM, but it is yet unclear how this will be implemented in actuality. The development of a strategic concept for global quality management, which is still conspicuously lacking, is contingent upon understanding the functioning of the complicated international production systems, developing an appropriate strategic concept, and developing the network concept with a focus on coordinating the inter-system relationships that arise within it at the strategic, operational, and marketing levels.

The absence of a global quality strategy, like the absence of other functional strategies in the ever-increasing globalization processes, is an obstacle to the realization of the organization's global strategy, and therefore it is necessary to strive for its development. Establishing an advantage over others cannot be supported by an adaptive quality system that prioritizes operational efficiency and near-term goals. The ability of the quality system to create a long-term focused strategy based on the organization's global strategy and to support it proactively through knowledge of its global development stages, inter-

systemic strategic, operational, and marketing relationships, and concurrent management of local and global needs are what enable it to provide global value.

2.2. The Link Between Business Process Management and Quality Management

Globalization of the economy has profoundly impacted the development of the concept of quality worldwide, as have changes in the economy, workforce, and technology. These changes generated a need to adopt a new approach to defining quality. Given the increasing complexity and multiplicity of mutual relationships between the production, product, services, and network processes, researchers stress that firms operating in the current business environment need to alter how quality management is perceived and implemented [65].

Feigenbaum International business market is now characterized by globalization and aggressiveness, with rapid business cycles and substantial volatility on local and global levels; ever higher standards driven by client expectations; accelerating change in product development, production processes, and customer service [33]. Novel, computerized technologies are utilized for global purchasing, supply, and distribution. Each of these changes, and all of them together, pose multi-faceted challenges for MNCs and their constituent systems. Researchers evaluated the processes involved in developing global quality systems and how they interact with the complexities of functioning as a system within a large, complex multinational corporation (MNC), which operates in a competitive, dynamic, and changing market [9].

The organization's quality objectives may be achieved by managing these procedures properly and efficiently. Therefore, cutting-edge, multidisciplinary research should support the link between quality management and business process management (BPM). Researchers studied scientific literature published over the last 20 years to investigate BPM's function in quality management [68]. They discovered that integrating BPM into quality management systems creates the necessary circumstances for enhancing an organization's efficiency and effectiveness. According to researchers integrating quality management with BPM productively and effectively becomes possible by including BPM methodology while creating corporate quality management per ISO 9001 [11].

Efficiently and effectively managing processes might help to achieve the quality goals of business organizations. So, in order to ground the link between business process management and quality management, new and interdisciplinary research should be designed. For example, studies analyzed scientific articles published over the period of the last 20 years and examined the role of business process management in the context of quality management [68]. They found that the integration of business process management into quality management systems creates preconditions for the development of an effective and efficient organization.

2.3. Quality Management and M&A

Past research encourage organizations to establish an advantage over competitors by adopting suitable options and diversifying appropriately [38]. Mergers and Acquisitions (M&A) have become essential strategies for achieving this and other strategic goals and objectives. It seems that a company cannot become a significant player in the competitive global market without engaging in M&A at some point in its development. Indeed, M&A is a ubiquitous form of corporate development for pursuing business expansion [1, 63], and most are globally successful companies that have acquired several other companies as part of their development strategy [8].

M&A and corporate expansion processes create network organizations that generate synergy either between organizations or within a meta-organization. Recent research describe global maturation using a hierarchical model for a multinational organization and a derivative model for assessing the maturity of the QMS, which must be based on standardized processes that apply to all locations in an organization [10]. The QMS prescribes the processes, responsibilities, and resources needed to ensure high-quality organizational activities [60]. Researchers demonstrated the need for a systems approach in global quality management, which may help face QMS-related challenges [10].

Many factors influence the effectiveness of M&A. Much research has been devoted to the operational, strategic, financial, behavioral, and cross-cultural aspects of M&A, primarily honing in on the market and financial aspects [5, 15, 19].

The literature covers various models that can influence the outcome of M&A. The acquisition process itself, organizational culture and practices, and national culture are each essential components of successful M&A [55]. Communications play an essential role in improving M&A performance [35]. Research proposes a model based on four categories for M&A integration [66]. Recent research identified six themes that business leaders used to conduct successful M&A processes: (a) leadership focus, (b) value creation, (c) integration strategy, (d) the review process, (e) relationship development, and (f) organizational governance. However, no research discussed the quality system as influencing the failure or success of integration [12].

In the dynamic, global competitive landscape, MNCs are meaningful actors. One standard definition describes MNCs – also known as international companies, global companies, and multinational entities – as those who control or own manufacturing plants or service facilities in countries other than the home country where they are headquartered. The other countries where they conduct business are known as host countries. A multinational company or entity is a group of companies, which may be private, governmental, public, or mixed, governed by a single headquarters or administration but whose activities are located in many countries [53]. However, a

company can be considered "international" but on a low developmental level if it functions mainly locally but has suppliers and/or customers that are partially or fully global.

2.4. Adopting a Systemic Approach to Analyzing the Complexity of the Global Quality System

It's necessary to use systems thinking perspective to investigate MNCs' development and the MNCs' development and what impact development has on their global quality performance and functions due to the complexity that defines the competitive international market. Systems thinking considers account problems as a whole, emphasizing the connections between their numerous components rather than one alone [30]. This strategy is based on General System Theory [14], which asserts that systems in diverse areas share a fundamental resemblance. This makes it easier to use a conceptual framework to manage various functional systems in businesses and organizations that operate locally and globally.

Systems analysis is built on contingency theory [50] and theories of open and complex systems [6, 52], which are used to analyze patterns in managing multinational companies and their functional systems, including quality systems. This approach uses parallel analyses, drawing on many aspects of international strategy, including:

1). Global competition;
2). Analyzing the competitive global environment;
3). Strategic management of multinational companies;
4). Patterns for expanding and penetrating foreign markets;
5). M&As are the leading causes of changes in the composition and geographical distribution of multinational companies;
6). Synergetic management;
7). Strategic responses;
8). Tailoring strategic management for each level of functional management.

Evaluating the functioning of the QMS as a functional system in local and global environments, and the dynamic conditions characterized by M&A, strategic partnerships, and integrated supply chains requires systems thinking and the use of appropriate tools for holistic analysis. The key themes identified while analyzing findings from the field study, and presented above, are foundation stones for developing a body of knowledge regarding global quality management.

Integrating and expanding knowledge in disciplines like strategic and international management provides a systems perspective and understanding of global organizations' dynamic expansion on the strategic, operational, and marketing levels. These factors can potentially impact the deployment of multi-site quality systems and their performance on the global and local levels.

Figure 1 shows alternative expansion strategies, depicts the possible directions in which an organization might expand and diversify, and how these processes are expressed in a competitive global environment. Some stages included in the global outline may also be compatible with local expansion. The levels of development shown resulted from the operational and structural changes that expansion strategies generate. The global activity levels are based on features of a multinational company's activity in each area. The changing needs of the global quality system in a growing company were developed from this outline.

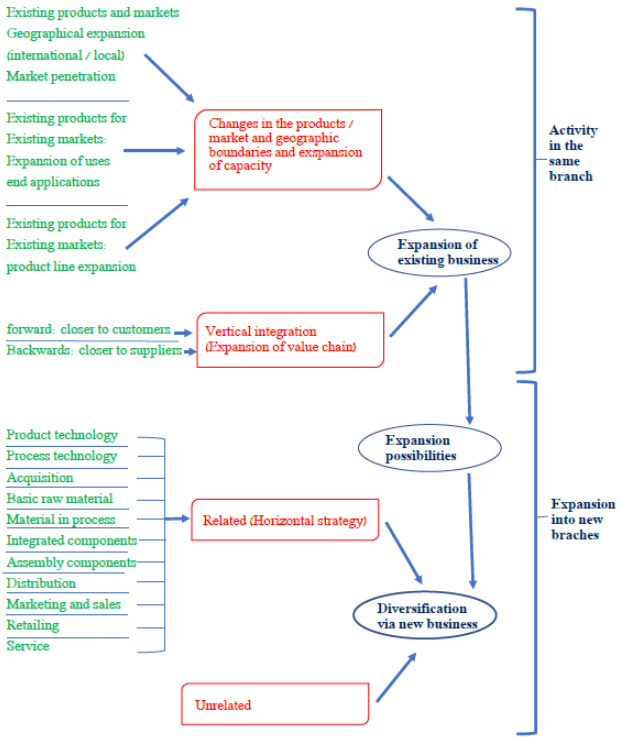


Figure 1. *Expansion directions of multinational companies.*

2.5. The Need to Expand the Process Approach for Global Quality Management

When becoming multinational, companies transition from the conventional, single enterprise model, spread geographically, and add horizontal and vertical interactions to build an international network. An array of inter-company processes are essential for maintaining an appropriate level of coordination and integration. Quality systems designed for the relative degree of global expansion must be an integral part of these processes to create added value for the corporation.

Like other functional systems, the global quality system of a multinational firm is impacted by changes to the operating system's structure and new markets to which the business is exposed. The market is dynamic, and the quality system should race to comply. According to a review of the literature on global quality management, a robust Global Quality Management (GQM) philosophy is required, focusing on global quality management and evaluating the necessity of intra-organizational coordination and process management.

Even though the term "GQM" is being used more frequently, no consensus exists over its meaning or the nature of the GQM idea [8].

Following their insight concerning the unmet need for a GQM philosophy, reseachers discuss the challenges facing the quality systems of both parent companies and subsidiaries after M&As, and resulting from the varied strategic partnerships that characterize the corporate processes in a global environment [8]. These expansion steps create a multi-reciprocal network structure and raise questions about how best to manage the multi-interface cumulative process structure.

Expanding and deepening the research on these issues would provide a further foundation for developing a model for global quality management, one that presents the central problems and challenges faced by QMS in the complex reality depicted in the findings from the field study.

3. Research Methodology

This field study adopted a systems perspective for analyzing the operation of global QMS. Eighteen multinational companies at different levels of global expansion were studied intensively. The field data were collected using several qualitative tools described below.

Quality management in global organizations is a developing field that examines themes and phenomena about there are few, if any, theories in current scholarship. Nascent fields are primarily concerned with new phenomena for which researchers are just beginning to develop theories [29]. Grounded Theory [37, 67], a qualitative strategy for creating fledgling theories by spotting emerging patterns in data, serves as this work's theoretical and methodological foundation. The researchers followed the procedures outlined by the past reseach [67] for conducting data analysis, developing conceptual frameworks, identifying critical variables, and creating representative global profiles. Developing generative questions that direct the research is the first step in this intricate, iterative process. Core concepts are identified when data is obtained, and connections between the facts and theoretical core concepts are created. The content analysis, verification, and summary that follow come next.

Knowledge from additional disciplines, including international management and global strategies, mergers and acquisitions, and strategic partnerships, was used to highlight the dynamic changes in global quality systems. The analytical process was further supported by open and complex systems theories [43, 48], which focus on mutual relations and interfaces between organizations and their environments and between organizations and their functional subsystems [6, 54, 59].

The processes of globalization are a comparatively recent phenomenon, and contribute to the understanding of the complexity of its management system dynamics is still in its early stages. Given the paucity of knowledge in the field of research on global quality management, which is defined as research that should be classified as Nascent Theory, the decision to use a qualitative research approach was appropriate. This approach necessitates a thorough study orientation from the field itself in order to provide more details on the phenomenon. One of the key tools for the development of the Nascent Theory was the adoption of the Grounded Theory methodology, a major technique for gathering and evaluating data from the field; the phases of this methodology are described in detail below.

The Grounded Theory methodology was used in the current study as an inductive approach to the data analysis of the findings. The following characteristics are based on the main components of grounded theory study [37, 20, 18, 31].

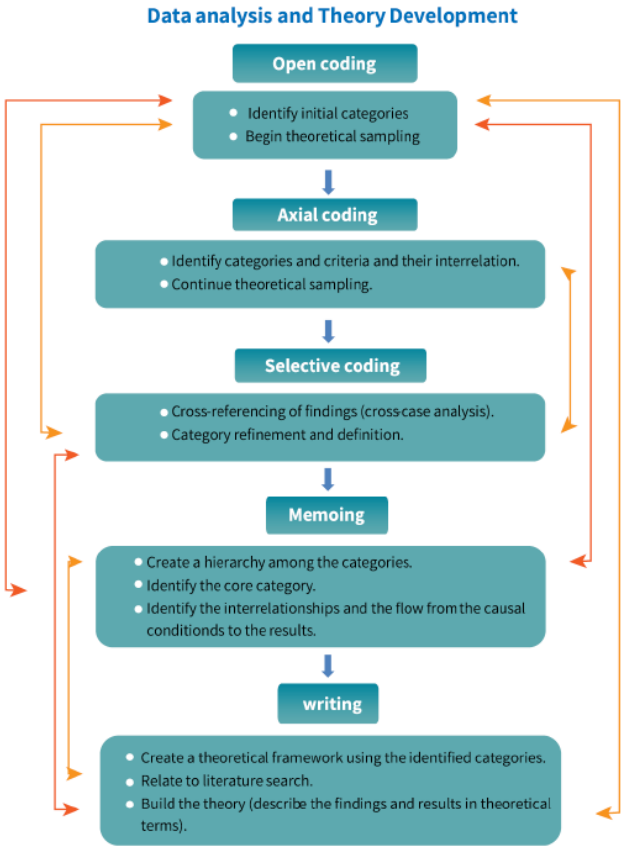
Table 1. *Main components of a grounded theory study.*

Component	Stage	Description	Literature sources
Openness	Throughout the study	Grounded theory methodology is an inductive approach to data analysis. Induction moves from the particular to the general and leads to the development of new theories from many observations. This means that grounded theory studies tend to take an open approach to what is being studied. The emphasis of a grounded theory study may evolve as it becomes apparent to the researcher what is important to the participants. This is important to develop the quality and credibility of the emerging grounded theory.	[18, 20]
Immediate analysis	Analysis and data collection	In a grounded theory study, the researcher does not wait until the data are collected before commencing analysis. Analysis must commence as soon as possible and continue in parallel with data collection to allow theoretical sampling.	[37, 20, 18]
Coding and continuous comparison	Analysis	Data analysis relies on coding – a process of breaking data down into smaller components and labeling these components – and comparison of data with data, case with case, event with event, and code with code, to understand and explain variations in the data. Codes are eventually combined and related to one another	[37, 20, 18]

Component	Stage	Description	Literature sources
		to become abstract and are referred to as categories or concepts	
Memo writing	Analysis	The researcher writes memos during data collection and analysis. Memos can be about events, cases, categories or relationships between categories. Memos are used to stimulate and record the researcher's thinking as it develops, including any comparisons made	[37, 20, 18]
Theoretical sampling	Sampling and data collection	Theoretical sampling is central to grounded theory design. A theoretical sample is informed by coding, comparison and memo writing. Theoretical sampling is designed to serve the developing theory. The analysis raises questions, suggests relationships, highlights gaps in the existing data, and reveals what the researcher does not yet know. By carefully selecting participants and by modifying the questions asked in the data collection, the researcher fills gaps, clarifies uncertainties, tests his or her interpretations, and builds emerging theories.	[37, 20, 18]
Theoretical saturation	Sampling, and data collection and analysis	The qualitative researcher generally seeks to reach saturation in his or her studies. Often, this is interpreted as meaning that the researcher is hearing nothing new from participants. In a grounded theory study, theoretical saturation is sought, but this is a subtly different form of saturation, in which all of the concepts in the substantive theory being developed are understood and can be substantiated from the data.	[37, 20, 18]
Production of a substantive theory	Analysis and interpretation	The results of a grounded theory study are expressed as a substantive theory, that is, as a set of concepts that are related to one another in a cohesive way. This theory is considered to be fallible, dependent on context and never completely final.	[37, 20, 18]

These main components of the grounded theory study were implemented in the field study of the eighteen multinational companies, as shown in Figure 2a and 2b.

(a)



(b)

Figure 2. *(a) Data Gathering, (b) Data Analysis and Theory Development.*

The qualitative tools used in the current study included observations, content analysis, and in-depth interviews with knowledge leaders (CEOs, quality managers, and global managers) in 18 multinational companies. The participating MNCs were selected according to the following criteria:

1. Participating companies have an international footprint, are on Fortune's list of the World's Most Admired Companies, and continuously use M&A to increase their inorganic growth.
2. Compliance with the accepted definitions of an MNC.
3. Representation of both the parent companies and the subsidiaries. Of the 18 MNCs, 11 were parent companies, and 7 were subsidiaries. Additional interviews were held with some representatives to improve the balance between the subsidiaries and parent companies (caused by other research constraints; see below for details). All interviewees had a direct or indirect role in quality management, either at the tactical or strategic level of daily operations.
4. MNCs were chosen from various industries, including food, medical technology, pharmaceuticals, semiconductors, electro-optical technologies, telecom, computerized communication systems, security, power plants, information mining, software-based analytical solutions, etc. A range of business activities, e.g., production, development, and outsourcing, are also represented.

Triangulation was used to validate the study, meaning that at least three sources contributed findings to the analysis. Triangulation further supports drawing truthfulness and accuracy [27, 57].

Data was gathered using the following:

1. In-depth interviews conducted, over three years, with VPs of Quality and VPs of Global Operations from parent and subsidiaries of MNCs. The interviewees were responsible for risk reduction, global quality management, and quality management in integrated and complex processes, suppliers, and customer chains.

In total, 60 interviews of approximately 100 minutes were conducted over three years. To obtain adequate representation for both the subsidiaries and the parent companies, 39 people were interviewed, some more than once. A total of 28 interviews were conducted in the subsidiaries and 32 in the parent company group. Returning to the same people at different times allowed the researchers to examine the change dynamics in the global environment and how they influence the global QMS. The interviews focused on the following topics:

1). Key processes and realms for which the Global Quality Manager is responsible;
2). Distinctions between the global and local activities of corporate quality management;
3). Changes in the quality system's needs and roles and needs when transitioning from a local company to a global company;
4). Principle challenges faced by GQM;
5). The influence of the dynamics created by M&A and strategic partnerships on how the global quality system is managed; and
6). Potential proposals and ideas for developing an innovative approach to meet the needs of functional, international management MNC's quality systems.

2. Multiple Case Studies –multiple case studies are the optimal method for researching contemporary phenomena because they force the researcher to examine reality from several perspectives and have wide-reaching potential to cross-reference data [70]. As noted, this study includes an analysis of scenarios from global expansion processes in 18 MNCs, providing multiple perspectives for cross-referencing.
3. Focus Group – Six global VPs for quality from 6 different MNCs formed an expert panel on global quality management. This allowed the researchers to examine critical topics from diverse angles. The group met three times for 3.5 hours each time. It provided supplementary data to augment that obtained from the interviews and an additional forum for cross-referencing through discussions and knowledge sharing that held refined the research conclusions.
4. Additional data were gathered from minutes of meetings about upgrading operating systems, including GQM and other relevant documents from participating MNCs.

Once the data was collected, the analysis used two qualitative research strategies: the descriptive analysis and interpretations method and constant comparative analysis [25, 37].

The descriptive analysis and interpretations method is founded on the principle that interpretations should emerge from the data, and it should be clearly apparent how the conclusions relate to the observations collected from the participants and their context [47, 69].

Constant comparative analysis is an analytical process that develops the Grounded theory methodology for category coding and development. It is an iterative process that begins with data collection and identification, followed by coding of incidents and then folding the codes into categories [22, 37]. Concurrent data collection and analysis includes initial coding, category identification, and storyline and theoretical coding. The researchers applied this method to generate data from the purposive sample.

During data gathering, we focused on the dynamics of global management and their effect on the strategic and operational levels to lay the foundation for identifying levels of QMS globalization. When it became evident that different QMS patterns might be linked to the dynamics of the global expansion process, it became necessary to map and analyze the global profiles of the participating companies, linking their operational and marketing structures to the strategic steps that characterized their expansion process in recent years. This independent research stage was conducted over eighteen months following the conclusion of the field study.

We coined the term "global profile" for the detailed, comprehensive data gathered on the recent global activity of the

participating MNCs. Numerous sources of information, most prominently the companies' official websites, information on the internet, and professional economic publications, primarily concerning corporate acquisitions and strategic partnerships, were used for the construction of the global profiles, which include information regarding:

1). International geographical spread, distinguishing between production and development sites;
2). Subsidiaries: their locations and fields of activity (products, services, branches);
3). Mergers, acquisitions, and business collaborations in recent years;
4). Global customers and suppliers (site, branch of business, and fields of activity);
5). As reported in professional papers, Business trends are part of their development process.

The global profiles were organized along a continuous temporal axis reflecting principal developments on the global level from the company's founding until the field study. The developmental stages of the operations and management systems were extrapolated from this time axis.

4. Results

ISO 9001 and ISO 9004 are the most popular standards for quality system management and are used worldwide. ISO 9001 is the standard for certification purposes, while ISO 9004 serves mainly as a guideline. ISO 9001 outlines requirements for managing quality systems that serve organizations for internal use, certification, or contractual purposes. It focuses on the effectiveness of QMS in meeting customers' needs and maintaining their trust.

Throughout the field research, it was repeatedly argued that there is a lack of quality management "instruments" appropriate for complex, dynamic supply chains like those characteristics of global organizations. *Inter alia*, participants stated that the ISO quality management standards are irrelevant to the reality of global organizations characterized by dynamically evolving environments, complex interactions within network structures and a globally dispersed supply chain, and multiple QMS based on different models.

The VPs of Quality and quality managers described the issues and challenges they face when managing processes at the global level. These points are based on cross-referencing analysis of the interviews' findings. The data analysis was based on two strategies in qualitative research: constant comparative analysis and descriptive analysis and interpretation methods, as was explained in the methodology section. As part of the interviews, various scenarios related to the global expansion process, the challenges expansion presented to the quality system, and the company's conduct in response to these challenges were examined.

The main points concerning quality management that emerged from the interviews are:

1). The classical, local quality system is almost entirely irrelevant to the global reality; it is too simplistic for global organizations operating in dynamic and complex international environments.
2). Globalization significantly alters the basic supplier-customer relationship when formerly external suppliers and/or customers become part of the organization.
3). The classical approach presented in ISO 9001 and ISO 9004 refers to the organization as a "closed system." Still, the complexity of global reality requires adopting an "open system" approach encompassing cross-organizational processes, with an array of interactions among organizations and between them and their external environments.
4). Global expansion creates an international operations system with varying degrees of relatedness (dependence/interaction) among operational/business units.
5). Expansion processes alter the structure of a multinational organization's supply chain through vertical or horizontal integration, mergers, strategic partnerships, and business models that lead to the development of organization crossing processes. Inter-organizational processes are established between organizations and subsidiaries within a single multinational organization with corporate responsibility for their effective management.
6). Owing to their network structure, multinational organizations must coordinate and integrate their varied components, making it unlikely that a given process can be attributed to just one organization. It is necessary to distinguish between cross-organizational, local, and global processes using strategic, operational, and business insights.
7). Mergers, acquisitions, strategic partnerships, and outsourcing relationships dynamically broaden inter-organizational processes, potentially creating new connections requiring preparation, management, and coordination.
8). Global reality has given rise to novel process structures, including business-oriented global collaborations, strategic partnerships, and international business models. Thus, the process approach must be expanded to encompass these elements, new technologies, and business models.

Findings from the field study point toward the difficulties and challenges inherent in adopting a classical process approach, such as the one articulated by ISO 9001 and ISO 9004. The considerable importance of formulating an appropriate process concept consistent with global organizations' strategic, operational, and marketing characteristics and the research findings led to designing an additional research stage to examine the process approach defined in the standards and test its relevance for global organizations.

The classical process approach articulated in ISO 9001 and ISO 9004 was analyzed in light of the findings and cross-referenced with the global characteristics of the partic-

ipating MNCs, including an international operational system, integrated supply chains, various products and processes conducted at several sites with diverse interactions, cross-organizational processes, a dynamic network structure that is the responsibility of one multinational company, and the global quality system responsible for the coordination and overall effective management.

The analysis of the network structure of the global manufacturing and operational systems presented below is a systemic representation of the classical process concept from which we started. The presentation is supported by maps and charts that sharpen the degree of correlation and gap between the classical approach and the global process approach shown below. It forms the foundation for the conceptual development of a global process approach, to be discussed below.

4.1. The Process Approach According to ISO 9001 and ISO 9004

To develop, implement, and improve the effectiveness of a QMS to enhance customer satisfaction, ISO 9001 (2015) promotes adopting a process approach:

An organization's effective functioning requires establishing and managing a large number of activities, or a set of activities relying upon resources, and conducted to allow the conversion of inputs into outputs, which may be considered a process. The output of one process often directly constitutes the input of the process to follow. Implementing a process system within the organization, identifying those processes and their interactions, and managing them to attain the desired outcome may be viewed as a *process approach.*

A process approach is advantageous because it facilitates controlling how individual processes within the system join together, merge, or interact. For QMS, it emphasizes the importance of the following:

1). Understanding and fulfilling requirements.
2). Considering processes based on their added value.
3). Monitoring process implementation, performance, and effectiveness.
4). Continuing improvement of processes relying upon objective measurement.

ISO 9001-2015 (Introduction) presents a model for a process-based QMS that demonstrates the linkage of processes required for complying with each of the standard's clauses (QMS, board supervision, resource management, product realization, measurement, analysis, and improvement). The model sets requirements but does not determine specific processes.

Customers play a significant role in classifying inputs as requirements. Monitoring customer satisfaction requires assessing customers' perceptions of how well the organization has met their needs. When applying the process approach, the organization must consider the following:

1). What processes are part of the QMS; how is the system implemented within the organization and its branches?
2). What are the consequences of the processes, and how do they interact?
3). What criteria and methods are necessary to guarantee effective operation and control of those processes?
4). Are resources and knowledge required to support the operation and monitoring of available processes?
5). Monitoring, analysis, and measurement of the processes.
6). Implementing activities necessary for constant improvement of processes.

The process approach is also discussed in Clause 8 of ISO 9004 (2018): "Processes are unique for the organization and vary by organization type and its degree of maturity. Thus, the activities included within each process are to be established and adapted to the organization's size and unique characteristics."

Adopting the process approach was intended to support effectiveness through proactive management of processes, including those assigned to external parties. The standard recommends conducting regular surveys to examine processes and their mutual relationships and take appropriate action to improve them. It mandates managing processes as a system by understanding their networks, sequence, and interactions. Consistent implementation of this method is known as a "system approach to management." The process network may be represented as a map of processes and their interfaces. Still, the standard does not provide a specification or example of such a representation or its analysis.

For process planning and control, an organization must determine and plan processes and specify the activities necessary to provide products that comply with customers' and other interested parties' needs and expectations over the long term. Process planning and control should ensure that processes are implementable and correspond to the organization's strategy.

According to ISO 9004, process planning and control should consider the organization's environment, short- and long-term forecasts of market developments, interested parties' needs, and expectations, statutory and regulatory requirements, potential financial and other types of risks, interactions with other processes, etc.

4.2. Expanding Process Approach for the Needs of Global and Multinational Organizations

The flexible definition of the process approach ISO 9001 and ISO 9004 enables each organization to determine the relevant set of processes and interactions to ensure product and service quality. However, globalization processes alter the traditional operational setting and give rise to boundary-crossing processes and products. The generic process approach is insufficient for effectively managing multinational organizations' highly complex processes and interactions.

ISO 9001 (2008) acknowledges the need to expand the process approach to make it applicable to more complex en-

vironments, as Clause 3.0 states:

The revised ISO 9004 edition will provide the board with instructions concerning attaining the long-lasting success of an organization operating within a complex, demanding, fast-changing environment.

Despite this declaration of intent, the current version of ISO 9004, published in 2018, resembles its predecessors and does not provide an adequate response. According to the research findings, these flexible, somewhat ambiguous definitions do not meet the needs of:

1). Organizations deliver value through activities connected within a network of processes.
2). Processes that cross boundaries of function within the organization.
3). Management of processes and interactions, including linkage between the processes.

Therefore, the defined process approach remains ineffective for global organizations. The familiar structures of process systems and quality systems must be linked to newly-emerging global development processes, as well as the management and operation system structures being created. The current analysis attempts to establish links between the operational, strategic, and marketing interactions characteristic of expansion processes and relate to the transition to a global environment from a local one. A System of Systems (SoS) approach, whose principles are suitable for analyzing complex environments with high interrelationships, may aid in this complex and dynamic environment. The SoS approach represents a collection of independent (aggregate systems) integrated into an extensive system that provides unique capabilities. The methods that makeup SoS - are independent systems that cooperate to produce global behavior that they cannot create alone. These systems are characterized by interrelationships and strategic, operational, and marketing interfaces whose implementation is a condition for achieving global value. As a result, the approach is at the center of the analysis process we performed to diagnose the complexity of the global, cross-organizational processes, which require the support of the global quality system at the center of our research.

The analysis of the levels of development of the global quality system as well as the study of the strategic, operational, and marketing interrelationships that characterize them, bring up several key points that can be used to expand and refine the existing process concept in a multi-system structure SoS and adapt it to the global reality [10]. The following table is based on a research who describe different degrees of global development in multinational companies' operational and marketing systems at different levels of their global operational expansion [10]. Expansion transforms the structure of an organization’s supply chain, creating a networked process structure with various operational interfaces that require a broad process concept. As the foundation for the following discussion, Table 2 presents the key operational characteristics of a multinational company as they develop in a global expansion process:

Table 2. *Global Expansion Operational Characteristics.*

Global Feature	Systems structure of a multinational company
International Operational Expansion Beyond the Local System 1. Expansion into international markets via varied strategies 2. International operational systems 3. Global customers 4. Global suppliers ⇩ Expansion into new branches and varied strategic linkages leads to the formation of a multi-site company with multiple mutual relationships: 1. Continuing global expansion via penetration to new areas and expanding strategic cooperation 2. Establish subsidiaries in varied locales 3. International operational systems and branches 4. Global customers and suppliers ⇩ Additional interactions based on strategic partnerships and business models 1. Expanding global partners with a business orientation	Forming a Multinational Organization Multiple products, cross-organizational processes, interfaces, and dependent relationships between various operational units around the globe (form integrated supply chains); distinguishing between related and unrelated operational/business units. ⇩ Develop into a Complex International Organization 1. Increased complexity, difference, and dependence (mutual relations). Possible changes in the level of the operational relatedness due to a broad range of products and dynamic changes in the competitive international environment. 2. Mergers, acquisitions, and strategic agreements for business collaborators as a key phenomenon in the global world. 3. Establishment of branches in developing markets. 4. Expanding product line. 5. Expanding outsourcing links 6. Forming various levels of relatedness between companies and operational/ business units ⇩

2. Strategic partnerships and international business models. Emphasis on innovativeness for global added value.

Multinational Organization with Network Structure

1. Form a flexible network structure from a varied, integrated supply chains with a business orientation.
2. Forma a varied mix of mutual relationships according to business interests.

This stage is exemplified by several "evolving organizational structures" that are becoming increasingly popular among multinational companies, especially networks, spin-offs, and subsidiaries, which facilitate integrating products and transferring added value around the globe.

Operational characteristics derived from strategic expansion steps that dictate the systemic structure of a multinational company.

The dynamic dispersion of multinational companies in networked structures is depicted in Figure 3, which shows the aggregate activity of a global QMS and the new process concept proposed below.

Figure 3. *The aggregate activity of a global QMS.*

The operational and marketing characteristics of the complex, distributed system (networked structure) shown in the figures include:

1). Multiple production and development sites; worldwide deployment
2). Multiple subsidiaries (some with their own subsidiaries)
3). Varied branches
4). Business-oriented partnerships
5). Multiple operational and marketing systems
6). Multiple global customers
7). Multiple global suppliers
8). Multiple infrastructures, resources, and various regulations
9). Frequent, dynamic changes in the company and its environments
10). Great complexity and variety
11). Multiple processes, shifting from a closed process system to an open system
12). Multiple reciprocal, strategic, operational, and marketing interactions
13). Multiple QMS aggregated under the responsibility of a single multinational company.

The following dispersion models depict the complexity of global systems and concretize the move from an operational structure based on a strategic rationale to an aggregate process structure, which is necessary for effective quality management by a global quality system.

4.3. Dispersion #1: The Global Dispersion of an MNC, Its Subsidiaries, and the Network of Processes Can Be Depicted as an Aggregate Structure That Is Similar to the SoS Approach, as Shown in Figure 4

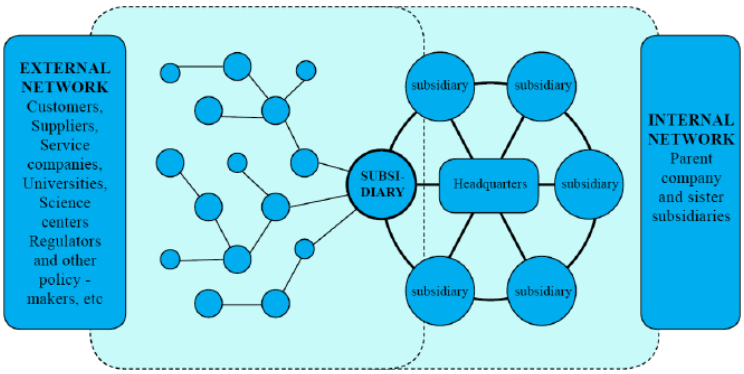


Figure 4. *The aggregate structure of subsidiaries and parent companies representing a multinational company that is similar to the SoS approach.*

Within the aggregate structure of subsidiaries and operating branches of a multinational company, there is a complex, organization-crossing system of processes with a dynamic and changing network structure. For illustration purposes, Figure 5 uses a single process structure, as defined in ISO 9004: 2018, Section 8.2, as the starting point.

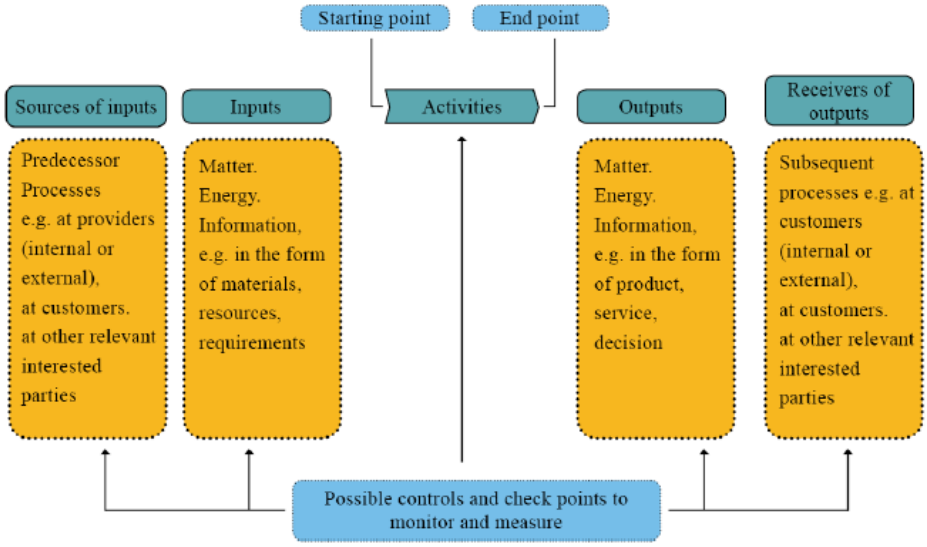


Figure 5. *Schematic representation of the elements of a Single Process Structure according to ISO 9004: 2018.*

Given the multitude of processes within a multinational company, the single process structure described in ISO 9004 must be expanded and presented as an aggregate, multi-interface, reciprocal process network, as shown in Dispersion #2 (Figure 6).

4.4. Dispersion #2: Aggregate Process Structure in a Global Environment

Mergers, acquisitions, and strategic partnerships change the distribution of operations, marketing, and reciprocal interactions, so a multinational company has an aggregate, networked process structure with various exchanges. We expand the single process structure (as in ISO 9004: 2018) to create the multi-process networked structure in Figure 6.

The arrows show possible interactions – strategic, operational, and marketing – between the subsidiaries and the parent company and among themselves, which require systemic consideration of multiple interfaces and relationships. Strategic partnerships, supplier-customer, or even competitive relationships between companies within a single multinational company need joint responsibility and collaborations between subsidiaries and their QMS to manage processes individually or in sets. Global process management is required for a broad systemic perspective favoring shared responsibility by all relevant subsidiary processes and functional systems, including QMS.

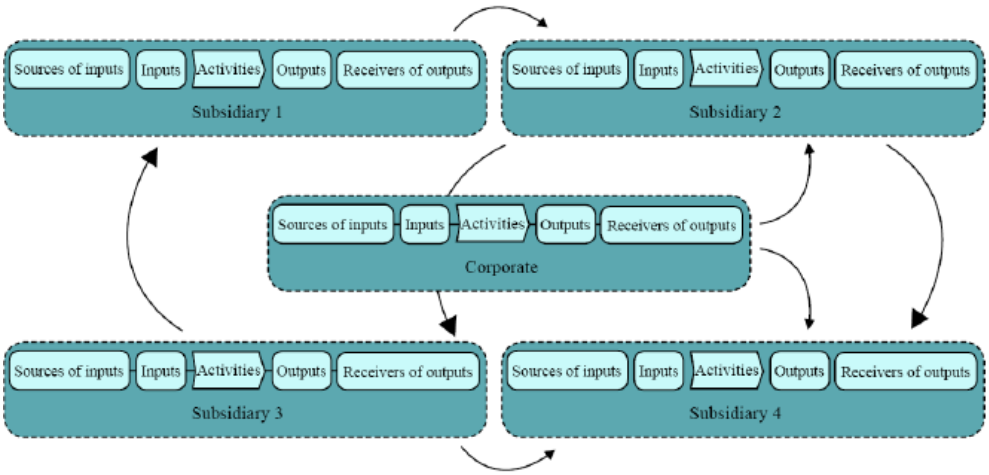


Figure 6. *Multi-process networked structure.*

Figure 7. *Aggregate Process Structure in a Global Environment.*

4.5. Dispersion #3: Aggregate Quality System (Multiple Quality Systems)

The process structure displayed in Dispersion #2 (Figure 7) is again presented in Figure 8, this time as a dispersion map illustrating the aggregate quality system's responsibility for a group of QMS.

Figure 9 shows multiple processes under the responsibility of the aggregate QMS required for collaboration and proper management of a relevant process group. Each point on the grid represents a quality system that is part of an aggregate system responsible for managing reciprocal processes, as shown at the bottom of the chart.

Figure 8. *Aggregate quality system's responsibility for a group of QMS.*

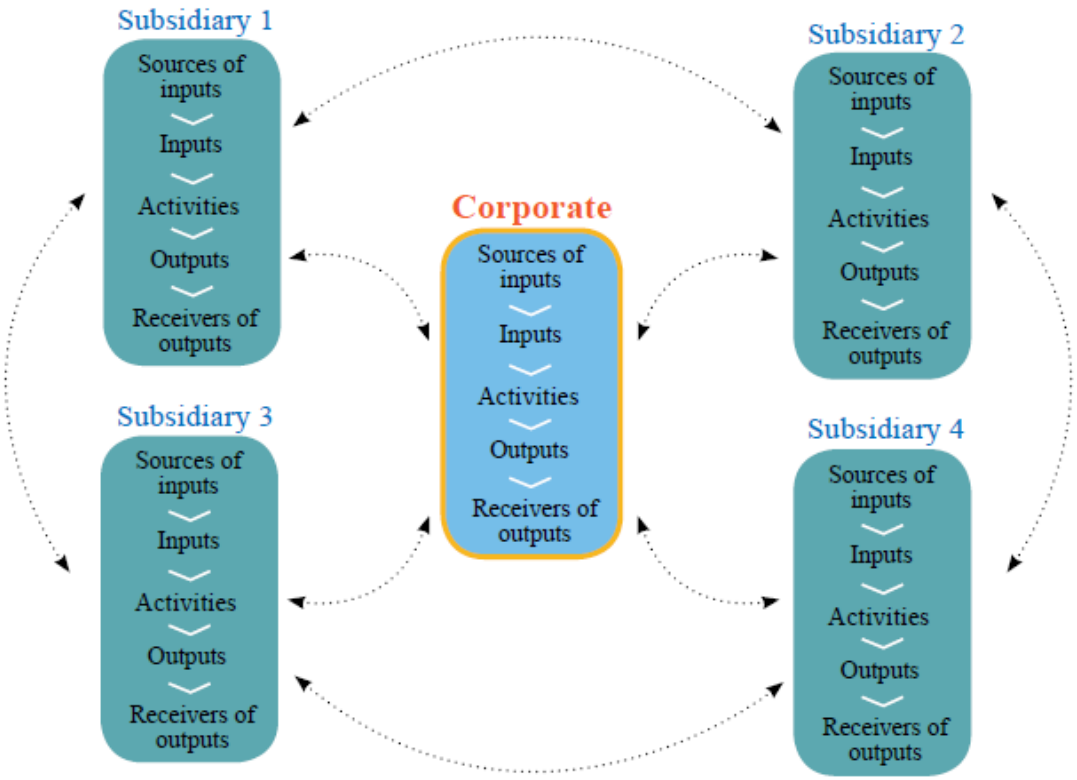


Figure 9. *Multiple processes under the responsibility of the aggregate QMS.*

The network structures presented in Dispersions #1, #2, and #3 illustrate the need to redefine the QMS as a global aggregate quality system produced by the company's strategic steps to achieve competitive advantages. Bringing customers, suppliers, competitors, and global operational units together within a single company increases the need for integra-

tive management and collaboration between QMS.

5. Discussion

Efficiently and effectively managing processes might help to achieve the quality goals of business organizations. In order to ground the link between business process management and quality management, new and interdisciplinary research should be designed. Past research analyzed scientific articles published over the period of the last 20 years and examined the role of business process management in the context of quality management [68]. They found that the integration of business process management into quality management systems creates preconditions for the development of an effective and efficient organization.

The managerial need to act effectively under the constraints of many relevant elements, which characterize the complex global reality and the activity of the global quality system (strategic, operational, marketing constraints), while having a vast number of action options - limited the ability of the linear and statistical tools to provide an adequate answer to the subject of this study. The researchers necessitated the adoption of the non-linear paradigm, which is based on interdisciplinary studies while incorporating additional knowledge disciplines that enable a systemic analysis approach. This approach, supported by the theory of open systems, the theory of complex systems, the SoS approach, and the theory of networks found to be suitable for analyzing the activities of multinational companies in a global environment and providing value for the analysis of the multidimensional functional conduct of the global quality system.

To understand the QMS in a multinational organization—its activities, problems, and managerial challenges—it is crucial to comprehend the degree of the complexity characterizing the environment within which it operates and examine the effects of each local site on the organization's broader activities. The current findings highlight the fact that the networked nature of international production and operational systems has become a critical trait, which requires coordination, integration, and the adoption of an "open system" approach that relates to organization-crossing processes with an array of interfaces and interrelationships between themselves and with the external environment.

As noted above, ISO 9001 and ISO 9004 provide a flexible definition of the process approach, which allows every organization to determine which interactions and processes are relevant for ensuring the quality of their products and services. This finding is consistent with past research findings that discussed the compatibility of the process approach to the complex global competitive environment [11]. They quote Clause 3.0 of ISO 9001 [41], which states explicitly that there is a need to ensure that the process approach applies to a more complex environment: "The revised ISO 9004 edition will provide the board with instructions concerning attaining the long-lasting success of an organization operating within a complex, demanding, fast-changing environment."

Despite this declaration of intent, the most recent update of ISO 9004, from 2018, follows its predecessors by not offering a suitable response. According to our findings, these flexible, somewhat ambiguous definitions do not meet the needs of: organizations delivering value through activities connected within a network of processes. Processes that cross boundaries of function within the organization. Management of processes and interactions, including linkage between the processes.

In light of the repeated claims voiced by global quality managers during the field research that the flexible definition of the process concept contained in ISO 9001/ISO 9004 does not help them address the level of process complexity they face, this article scrutinizes and analyzes key characteristics of the global environment, as they relate to the classic process concepts presented in these standards. These findings facilitate formulating guidelines for expanding and adapting the global process concept and moving from a "closed system" process perspective to an "open system" process perspective.

Adopting an open system process requires transitioning from the traditional functioning of a quality system that works as a single local system, responsible for its own defined set of processes, to a Networked Quality System that requires co-management and joint responsibility for inter-organizational network processes. This system must be suitable for a multinational company in which subsidiaries produce the same (competing) or complementary products or in which subsidiaries have supplier-customer relationships (horizontal or vertical integration). They must have aggregate/integrative management – joint management of a quality systems group – that shares responsibility for an organization-crossing process system. The shift from local quality management to aggregate/global management requires sharing responsibilities, capabilities, and group resources.

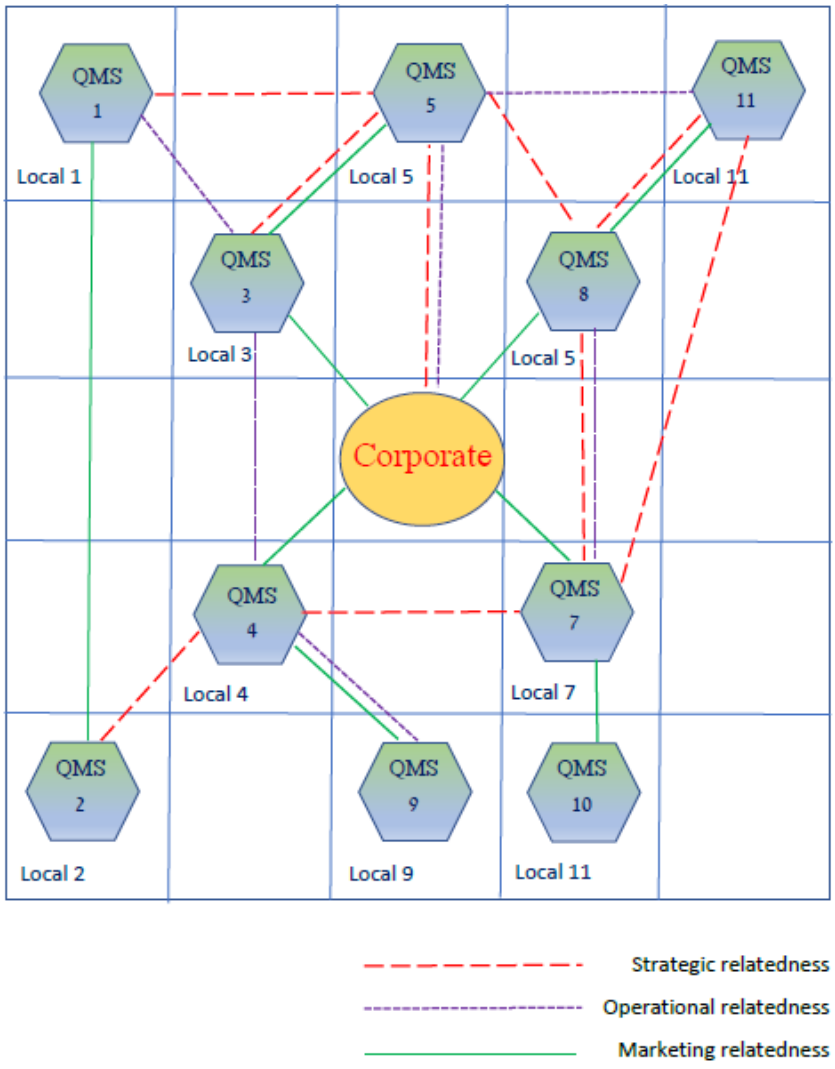
The network structure of a multinational company with integrated supply chains yields a diverse mix of cross-organizational interactions and processes. The structure emerges from newer configurations, including networks, spinoffs, and subsidiaries. Identifying the methods and practical approaches for their management requires strategic and business insights into their connection.

Understanding and intellectual flexibility are required to manage these dynamic, rapidly-changing process structures. The primary recommendation of the current study is that multinational companies' QMSs should be expanded to meet demands for complex business and process orientations by relying on an understanding of their interactions in marketing, operations, and strategy. Thus, The classical approach is extended by a broad perspective for coordinating interdependence within a complex global process system, which is developed by an overall viewpoint perspective for coordinating interdependence within a complex global process system and laying the groundwork for creating a networked global QMS. There should be connections between established processes

and quality systems, expanding operations and management structures, and new global development processes.

In an overall QMS, the proposed concept is essential for the value-oriented coordination of strategic, operational, and marketing interactions. For the efficient, value-adding management of a wide-ranging, complicated, company-spanning variety of processes, integration, collaboration, responsibility division, and use of capabilities are all needed.

The schematic diagram in Figure 10 depicts this level of integration between QMS, shared process systems, and relevant interactions, deployed in multiple regions, plus appropriate local systems required for shared responsibility.



Source: From Aviva Bashan (2017), Globalization. Quality and everything in between, p. 364

Figure 10. *Types of relatedness between the many quality systems of a single multinational company.*

Figure 10 shows that there may be nodes (quality systems) whose interactions with other units are broader and more diverse. Operational, strategic, and/or marketing relatedness may exist simultaneously, reinforcing the need for integration. This concept requires a clear strategy for sharing in relevant areas, dividing responsibility and authority, and establishing coordination mechanisms.

6. Conclusion and Agenda for Future Research

Quality management in global organizations is unique, has not been studied in depth, and has been characterized by research sparseness. It depends on a strategic, managerial, and operational relationship at the international level. This re-

search research combines field findings over years and periods among various multinational companies in different global configurations - over time and subject to different strategic processes. Data collection from the field is dynamic and repeats at different points in time and on various key topics - emerging during the investigation and processing of the data.

Following the major changes in the dynamic global competitive landscape, the need for more research that provides an enhanced understanding of value-creating MNC strategies has never been more essential.

According to the literature review, side by side with the globalization development and the increasing use of the term GQM, there is not a universally agreed upon concept and philosophy of this term.

The current study might advance the knowledge of MNC activities in the global competitive landscape. Examining the challenges, dilemmas, and responsiveness required from the quality system in a reality shaped by M&A, strategic partnerships and global processes supports the need for involvement at the international management level and in strategic steps taken by the company.

This research's main contribution is expanding the existing process approach and adapting to the needs of global organizations and multinational companies, as reflected in the findings from a field study of eighteen al companies. They highlight the need to expand the process approach as a prerequisite for developing an appropriate concept for global quality management of aggregate quality systems linked through strategic, operational, and marketing interactions. The key themes identified in the field research and presented in the discussion section – constitute the cornerstones for developing a body of knowledge in global quality management.

The aggregate concept shifts the focus from processes at an individual plant as a closed system to an open, international network with many branches of intercompany processes, joining subsidiaries, strategic partners, and operational units at different locations through a complex, integrated supply chain. The proposed paradigm expresses this change and recognizes the existence of an inter-organizational, networked process between companies under the responsibility of a single multinational company and a global QMS responsible for overall coordination and effective management.

Expanding the research process and delving into these issues could form a basis for the development of models for quality management in global organizations and management strategies - by knowing the main problems and challenges that the quality system faces in this complex reality, as emerged from the analysis of the findings of the field research.

As a result, the researchers highlight the importance of continuing the research process and developing a strategic approach to a global functional merger of the quality system. This strategic approach can form a basis for developing additional methods and models. Integrating knowledge disciplines from international management and strategic management in the future research process is essential for obtaining an interdisciplinary systemic view, which supports the ability of the quality system to provide global value.

7. Limitations of This Study and Directions for Future Research

This study used purposeful sampling to examine quality management in global organizations. Although participants were selected to be as representative of the population as possible, this form of selection makes it difficult to generalize the qualitative findings to other people and places [34], [46]. The researchers tried to pre-empt this limitation and improve diversity by studying many cases from different multinational companies and various industries, including longitudinal research, selecting interviewees carefully, and using targeted focus groups. Despite this, the researchers recommended enlarging the study to other multinational companies from different industries, cultures, and policies to draw generalizations.

Global reality raises the need to expand the process approach that lies at the heart of QMS. Expansion is necessary for developing an adequate approach to global quality management that encompasses the aggregate activities of QMS in merged organizations, involving strategic, operational, and marketing interactions. Expansion requires transitioning from a focus on single-site processes towards a comprehensive view of an international network, incorporating diverse inter-organizational processes between subsidiaries, strategic partners, and operational units in various geographical regions, which merge to form complex, integrated supply chains. Understanding the mutual dependence within this network structure requires considering multiple disciplines: business, strategies, and operations.

This paper creates a foundation for developing a global management strategy, and provides an appropriate theoretical foundation for future research: mapping additional variables, developing metrics for evaluating performance levels of quality systems in various local and global configurations, developing integration mechanisms for the aggregate management of the global quality system, and examining interactions with other global functional systems.

Therefore, we consider it of great importance to continue the research process in developing a strategic approach to the functional global integration of quality systems, in order to lay the foundations for developing additional processes and models.

Abbreviations

CEO	Chief Executive Officer
QMS	Quality Management System
NPD	New Product Development

M&A	Merger & Acquisition
MNC	Multinational Companies
GST	General System Theory

Author Contributions

Aviva Bashan: Conceptualization, Investigation, Methodology, Resources, Writing – original draft

Amos Notea: Conceptualization, Formal Analysis, Investigation, Supervision, Validation

Alon Ben Jacob: Conceptualization, Formal Analysis, Investigation, Validation, Writing – original draft, Writing – review & editing

Conflicts of Interest

The authors declare no conflicts of interest.

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