

The Future-Proofing of Supply Chain Management Consulting

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MASTER'S THESIS

Packaging Logistics
Lund University



The Future-Proofing of Supply Chain Management Consulting

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Preface

This thesis was written during the spring of 2015, as the final part of our five-year long journey at the Faculty of Engineering at Lund University. There were several people involved in this project that deserve our gratitude.

First, we would like to thank our supervisor from the university, Malin Olander Roesé for giving valuable insights into this work. You were encouraging and infused us with your inspiration and enthusiasm. Thank you for questioning us when we thought we were right and for convincing us we were right when we thought we were wrong.

We would also like to express our gratitude to Anna Hall at ÅF. Thank you for all the time and effort you put in us and in this thesis. You made yourself available to us when we needed guidance and you have always been warm and welcoming. We would also like to thank Lydia Henriksson at ÅF, for the help and enjoyable discussions in the beginning of this project.

Thanks to the division of packaging logistics and especially Annika Olsson, for making this thesis possible. Without Annika, we would never have been given this opportunity. Thanks to Fredrik Nilsson for the valuable comments on the report.

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Last but not least, we also would like to thank our families and close friends for the support and encouragement. As this journey is now ending, we hope that you will follow us on our next.

Sincerely,

Caroline and John

Abstract

- Title in English:** The Future-Proofing of Supply Chain Management Consulting
- Title in Swedish:** Framtidssäkring av konsultverksamhet inom supply chain management
- Authors:** Caroline Hellström
John Karlsson
- Supervisor:** Malin Olander Roese, Ph.D.
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Faculty of Engineering, Lund University
- External Supervisor:** Anna Hall
Supply Chain Management, ÅF
- Issue of study:** The role of supply chain management is changing in the industry and the change will affect companies' processes and needs. In turn, this will have implications for the tasks of consultancy firms. This thesis will provide the reader with insight into future supply chain management challenges raised by academia and industry. Further, the implications of these trends for the consultancy sector are described.
- Purpose:** The academic purpose is to contribute to research on trends and evolving challenges within supply chain management. The academic novelty is the comparison between trend predictions from previous academic research, the industry, and experts. Moreover, a scanning of current supply chain topics is of significant interest, to both consultancy firms and other actors in this business area.
- Method:** The main research approach of this thesis is inductive with some deductive elements, as the researchers already had some knowledge of current supply chain management topics. Method triangulation was used by combining both quantitative and qualitative data collection methods.
- The research was divided into three investigation units, Supply Chain Management Research, Industry, and Experts. Each unit contained different sources of information and was studied by using different data collection methods. These methods included a content analysis of supply chain management journals and interviews with industry representatives and supply chain management experts.
- The data collection resulted in a number of trends identified within each investigation unit. These trends were compared

and analyzed to get valuable insights into a final list of trends. The implications of the trends for consultancy firms were then analyzed. The analysis was made through a gap analysis of the trends and the value proposition of the consultancy firm ÅF.

Conclusion:

The following seven trends were identified:

- Future Scarcity of Talents
- Globalization
- Increased Focus on Risk Management
- Increased Focus on Sustainability
- Increased Need for Operational Tools
- Increased Servicification of Products
- More Distinct Supplier Segmentation

Consultancy firms should provide services connected to these trends, to be competitive in the future. The trends were compared to the services marketed by the consultancy firm ÅF. The conclusion from this comparison is that the future scarcity of talents and the increased focus on sustainability would benefit from having more services connected to them.

Keywords:

Supply chain management, future, trends, futures studies, consulting, ÅF

Sammanfattning

Titel på engelska:	The Future-Proofing of Supply Chain Management Consulting
Titel på svenska:	Framtidssäkring av konsultverksamhet inom supply chain management
Författare:	Caroline Hellström John Karlsson
Handledare:	Malin Olander Roese, fil.dr Institutionen för designvetenskaper Lunds Tekniska Högskola, Lunds Universitet
Extern handledare:	Anna Hall Supply Chain Management, ÅF
Problembeskrivning:	Supply chain management-funktionens roll inom industrin genomgår en förändring och detta kommer troligtvis att påverka företags processer och behov. Denna utveckling kommer i sin tur även att ha inverkan på behovet av konsulter. Detta examensarbete ger läsaren insikter i framtida supply chain management-utmaningar som lyfts fram av akademien och industrin. Vidare beskrivs dessa trenders implikationer för konsultbranschen.
Syfte:	Det akademiska syftet är att bidra till forskningen om trender och kommande utmaningar inom supply chain management. Det akademiska nyhetsvärdet ligger i jämförelsen mellan trendspaningar från tidigare forskning, industrin och experter. Vidare är en undersökning av rådande supply chain management-teman betydelsefullt för både konsultbranschen och andra aktörer inom logistik och inköp.
Metod:	Den huvudsakliga vetenskapliga ansatsen i det här examensarbetet är induktiv med några deduktiva moment, eftersom forskarna hade kunskap inom aktuella ämnen inom supply chain management. Metodtriangulering utfördes genom att kombinera både kvantitativa och kvalitativa datainsamlingsmetoder. Studien delades in i tre undersökningsgrupper, Supply chain management-forskning, Industrin och Experter. Varje enhet innehöll olika informationskällor och studerades genom att använda olika datainsamlingsmetoder. Metoderna som användes var en innehållsanalys av vetenskapliga supply chain management-tidskrifter och intervjuer med industrirepresentanter och supply chain management-expertter.

Informationsinsamlingen resulterade i att trender kunde identifieras inom varje undersökningsgrupp. Trenderna inom varje grupp jämfördes och analyserades och resulterade i en slutlig lista på trender. Därefter analyserades implikationerna av dessa trender för konsultbranschen. Analysen bestod av en GAP-analys mellan de identifierade trenderna och konsultfirman ÅFs kunderbjudande.

Sammanfattning:

Följande sju trender identifierades:

- Framtida brist på talanger
- Globalisering
- Ökat fokus på riskhantering
- Ökat fokus på hållbarhet
- Ökat behov av operationella verktyg
- Ökad tjänstefiering av produkter
- Tydligare leverantörssegmentering

För att vara konkurrenskraftiga i framtiden bör konsultfirmor tillhandahålla tjänster relaterade till dessa trender. Trenderna jämfördes med tjänsterna som marknadsförs av konsultfirman ÅF. Slutsatsen är att ÅF och liknande företag skulle tjäna på att ha tjänster knutna till den framtida bristen på talanger samt det ökade fokuset på hållbarhet.

Nyckelord:

Supply chain management, trender, konsult, framtidsstudie, ÅF, framtid

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1 Introduction

In this chapter, the background and problem formulation of this thesis are presented, together with a description of ÅF, the consultancy firm that has been the collaborating partner. The academic purpose and the value of this study for a consultancy firm are explained. The chapter ends with a description of the focus and delimitations of the thesis and a description of the disposition.

1.1 Background

The concept of supply chain management was first adopted in the early 1980s by consultancy firms as a way of better managing resources and assets. Some years later, research followed and a theoretical definition of supply chain management started to form. (Ellram & Cooper 2014, p.4) Mentzer et al. (2001, p.18) defines supply chain management as *the systemic and strategic coordination of the business processes and functions within and between organizations across the supply chain for the purposes of improving the long term performance of the individual company as well as the supply chain as a whole.*

Today, supply chain management is getting more and more attention in the industry and amongst managers (Rushton et al., 2014, p. 9; Waters & Rinsler, 2014, p. 11; Wisner et al., 2014, p. 20). The focus has shifted from flow of goods and information toward how to mobilize and manage capabilities in supply chain relationships (Van Weele & Van Raaij 2014). Mentzer (2001, p.2) describes increased globalization, increasing competition in quality aspects, and environmental uncertainty as drivers of trends in the early 2000s. Further, Bowersox (2000) identified ten paradigm shifts among industries that was, and still might be, relevant to the capabilities of supply chains. Some of these trends include shifts from customer service to relationship management, from functional integration to process integration, and from information hoarding to information sharing. More recent research highlights trending topics in the industry such as contraction of the supply chain, managing supply chain risk, and increasing supply chain visibility (Wisner et al. 2014, p.20).

These shifts in focus and trending topics in supply chain management are most likely affecting processes in the industry and in turn consultancy firms. According to Abrahamsson (2013, p.4), innovative solutions in logistics demand long-term goals and the most successful businesses are working with broader time horizons. Thus, it is vital for consultancy firms to keep abreast of changes in the industry. This thesis will provide the reader with insight into future supply chain management challenges raised by academia, the manufacturing industry, and supply chain management experts. Further, the academic value of this thesis lies in the unique comparison between the predictions of these three interest groups.

The thesis was made in close collaboration with the consulting firm ÅF. This collaboration provided the researchers with insight into the consulting sector and contacts with the industry.

1.1.1 Company Description

ÅF AB is an engineering and consulting company founded in 1895. The business mostly involves projects in the sectors energy, industry, and infrastructure. Currently, the net sales of the ÅF Group is about 8 billion SEK and they employ about 7,000 people. (ÅF 2015a)

The head office is located in Stockholm, Sweden, and the company has offices in about 20 countries (ÅF 2015f). ÅF offers consulting services in supply chain management and have consultants in this field located in Malmö, Gothenburg, and Stockholm (Anna Hall 2015, pers. comm., May 6). The supply chain management services ÅF are presenting on their web page and in their information brochure are summarized in Appendix I.

1.2 Problem Formulation

The main research question to be answered in this thesis is:

What supply chain management trends and future challenges are likely to appear in the industry, and what implications do these have on the consultancy sector?

1.3 Purpose

The academic purpose is to contribute to research on evolving trends and challenges within supply chain management. The academic novelty is the comparison between trend predictions from academia and the industry. Moreover, a scanning of current supply chain topics is of significant interest, to both consultancy firms and other actors in this business area.

1.4 Focus and Delimitations

The research will focus mainly on two supply chain management areas; purchasing and logistics. Further, the study will only cover trends and challenges in the Swedish manufacturing industry, for the coming five to ten years.

The analysis will examine implications for a consultancy firm through a gap analysis. In this section only the consultancy firm ÅF, will be studied. Moreover, the gap analysis will only cover the value proposition presented on ÅF's web page and in a brochure from the supply chain management department.

1.5 Disposition

Chapter 1 gives an introduction and background to the research question. The purpose of the thesis and its focus and delimitations are also presented.

Chapter 2 is a pre-study, with the purpose of giving a brief overview of existing knowledge of trends in supply chain management.

Chapter 3 describes the methodology of the thesis, gives an outline of the research approach and research design, and explains the research process.

Chapter 4 presents the results obtained for each investigation unit, i.e. the results of the content analysis, and summaries of the conducted interviews.

Chapter 5 consists of analyses of the results, a discussion about the implications of the trends for consultancy firms, and a gap analysis of the identified trends and the services offered by the consultancy firm ÅF.

Chapter 6 presents the conclusion of the thesis.

Chapter 7 gives suggestions for future research on the subject and discusses limitations of the thesis.

2 Pre-study

This chapter includes a pre-study in which written material and a seminar about trends in supply chain management have been analyzed. A summary of discussed megatrends is presented and some trends specific to purchasing and logistics are described.

A pre-study of former trend identifications was made to get an overview of already existing knowledge of trends within supply chain management. This included both a literature review and observations made at a logistics trend seminar.

The literature review in this study included scientific articles in supply chain management journals, articles in supply chain management magazines, reports from both interest organizations and consulting firms, whitepapers, and content from blogs of supply chain management professionals.

The logistics trend seminar, Logistiktrender 2015, was held in Helsingborg April 16 2015 and was arranged by Catena, a logistics real estate agent. Speakers at the seminar included company representatives from ArjoHuntleigh Getinge, Bring, Ocado, Network Logistics, Desso, Copenhagenize, PostNord, ICA, and Narva.

2.1 Megatrends

It is possible to extract similarities in written material regarding trends from different sources. What many reports and articles have in common is describing the impact of megatrends on supply chain management activities in the future. Listed below are the most frequently mentioned megatrends that were found in written material and mentioned during the trend seminar, Logistiktrender 2015.

Globalization

The business environment is changing as globalization is increasing (Abrahamsson et al. 2013, p.21; Spina et al. 2013, p.1202; Straube et al. 2013, p.8). Globalization results in international competition and causes significant impact of international trade policies and protectionism (Abrahamsson et al. 2013, p.21). Further, globalization leads to additional complexity of supply chains due to greater volatility and problems with infrastructure in some regions (Straube et al. 2013, p.8; Abrahamsson et al. 2013, p.21). In a report written by the consulting firm KPMG (2014, p.6) near-shoring is listed as an emerging megatrend and defined as the moving of a business function to a country closer to a company's home country, with regard to either geographic location, time zone, or cultural characteristics. The cultural differences and time zone aspects, together with increasing labor and transportation costs in emerging economies are factors that favor near-shoring (KPMG 2014, p.6; Nabben 2014). Eastern Europe is especially becoming more attractive near-shoring locations (KPMG 2014, p.7).

Urbanization

An increasing number of people are moving into cities (CapGemini 2013, p.11; DNV GL 2015, p.29; KPMG 2014, p.8; Bubner et al. 2014, p.5; Abrahamsson et al. 2013, p.24; Copenhagenize 2015). This process puts an additional pressure on infrastructure and issues such as pollution are becoming more common (DNV GL 2015, p.74).

New consumers and markets

New markets are created as the wealth of emerging economies is rising and the middle class gets more buying power. (Bain & Company 2011, p.3; CapGemini 2013, p.11; KPMG 2014, p.8). According to Bughin et al. (2013, p.2), in 2025 technology developments will have enabled three billion new digital consumers to connect to the global market through the internet.

Aging population

In developed countries population is aging and together with economic development in the east, this will result in a shortage of management talents (CapGemini 2013, p.11; Bain & Company 2011, p.7; KPMG 2014, p.14; DNV GL 2015, p.29). According to Straube et al. (2013, p.8), this scarcity of talent is one of the most important future challenges in logistics, both on operational level and in planning and controlling functions. An aging population will also entail new challenges within public healthcare (Abrahamsson et al. 2013, p.24; DNV GL 2015, p.29).

Sustainability

Customers are focusing more on sustainability and demand products where this aspect has been taken into account (Straube et al. 2013, p.8; CapGemini 2013, p.11; Felgendreher 2014; Nabben 2014). As the pressure increases, both businesses and governments have to comply with transparency legislation as well as demands from consumers on traceability (Sengupta 2013, p.36; DNV GL 2015, p.29; Felgendreher 2014; Abrahamsson et al. 2013, p.23). Bubner (2014, p.6) mentions benefits of the concept circular economy. Because of climate change issues, resource scarcity, and additional governmental regulations, companies will need to develop strategies integrating both business profitability and sustainability. (Bubner et al. 2014, p.6) Circular economy was also discussed at several occasions at the logistics trend seminar (Desso 2015; Narva 2015). Some businesses are already appreciating the financial advantages of adopting a responsible business culture and that the ability to use resources effectively will be essential for future competitiveness (DNV GL 2015, p.29).

Lack of resources

Natural resources, including water, food, and energy are becoming scarce as the middle class in emerging countries is growing. (CapGemini 2013, p.13; DNV GL 2015, p.29; Scott 2015; Bain & Company 2011, p.4; Abrahamsson et al. 2013, p.20)

Regulation

Increased awareness of sustainability issues has affected regulations of business processes and will continue to do so in the future. Regulations regarding protection of scarce resources will be strengthened and the involvement of NGOs in public affairs will be more present (Scott 2015; CapGemini 2013, p.11). Nabben (2014) mentions a growing effect of legislation against bribes and corruption, on supply chains.

Volatility and disruptions

As supply chains are becoming more complex and actors are involved on a global scale, the businesses are more exposed to different disruptions due to global uncertainty and increased volatility of the market (Bubner et al. 2014, p.6; Scott 2015; Straube et al. 2013, p.8). The

effects of climate change are also posing a threat to supply chains (CapGemini 2013, p.11; Scott 2015; Felgendreher 2014). Virtual threats in the form of cyber-attacks will be more common and could affect both information and physical flows in supply chains (Bubner et al. 2014, p.9; Fawcett & Waller 2014, p.161; Martindale 2015).

Social media

There have been changes in consumer behavior due to growing use of social media (Umney 2014, p.38). Consumers are getting more informed about price and value of products and the information exchange between customers and firms is increasing (CapGemini 2013, p.11; Bring 2015). Social media is changing the traditional business models and, as a part of a personalization wave, crowd sourcing and other phenomena that are affecting logistics, have emerged. (Bughin et al. 2013, p.4; CapGemini 2013, p.11; Bubner et al. 2014, p.8; Bring 2015). Companies can use social media to co-create new services or products by crowdsourcing ideas or answers to solve problems (Bughin et al. 2013, p.3f).

Technology developments

New technological developments will continue to affect business practices in the future (Coyle & Ruamsook 2014). Advancements in nanotechnology are showing potential of improving manufacturing processes (Bain & Company 2011, p.6; KPMG 2014, p.16). Additive manufacturing or 3D printing is said to change product design and manufacturing processes as well as the configuration of distribution channels (Fawcett & Waller 2014, p.159; DNV GL 2015, p.29; Coyle & Ruamsook 2014; KPMG 2014, p.22; Network Logistics 2015). Artificial intelligence or intelligent robotics is being embedded in supply chain activities, and implementation costs are decreasing (Sengupta 2013, p.37; Coyle & Ruamsook 2014; Network Logistics 2015). Performance of autonomous vehicles is improving. Adoption constraints are now ethical and legal concerns rather than technological issues. (Fawcett & Waller 2014, p.159; Network Logistics 2015)

Internet of things

Internet of things enables monitoring and control of processes and operations (DNV GL 2015, p.29). Embedded software and sensors are connecting physical items to networks and enable communication between devices (DNV GL 2015, p.29; Martindale 2015; Spina et al. 2013, p.1202; Bughin et al. 2013, p.7; Bubner et al. 2014, p.8; Network Logistics 2015). Supply functions and operations like supply and demand planning as well as movements of goods will most likely benefit from information gained through detailed monitoring (Martindale 2015).

Big data

As the world is becoming more networked, organizations have access to huge amounts of data. Collection of information is possible through various techniques such as RFID and other sensors and storing of data is no longer expensive. The data, which is collected in real time, requires new and advanced tools for interpretation and for making the analyses useful in business processes. (Bughin et al. 2013, p.11; Martindale 2015, p.3; Felgendreher 2014; Straube et al. 2013, p.8; Fawcett & Waller 2014, p.158; Stank et al. 2013, p.45; Abrahamsson et al. 2013, p.21; Network Logistics 2015) Big data can be used in supply chain management to

predict supply and demand needs, when transporting goods and in risk management (Martindale 2015; Felgendreher 2014; Network Logistics 2015).

2.2 Supply Chain Management Specific Trends

It is also possible to identify some trends more specific to logistics and purchasing in written material about trends. Some of these trends were also highlighted during the trend seminar Logistiktrender 2015. A summary of future challenges can be seen in the following sections.

Omni-channels

End-consumers are now buying through multiple channels and are requiring delivery at multiple locations through different transport modes. The customer has the possibility to choose the means of transportation based on factors such as price, convenience, and sustainability issues. This includes everything from buying in regular stores to e-commerce. The supply chains must support this flexibility. (Bubner et al. 2014, p.7; Banker 2014; Umney 2014, p.38; Nabben 2014; Bring 2015)

Customer relationship management

Growing global competition and increasing price pressure push organizations to develop new service driven business models, where companies expand their value proposition with advanced services or complete solutions (KPMG 2014, p.18). There has been a change in focus from providing standardized customer services to establishing unique relationships (Stank et al. 2013, p.7). Today, due to developments such as social media and the internet, customers expect instant access to information and free services (Bughin et al. 2013, p.27; Bring 2015).

Networks and partnerships

According to Stank et al. (2013, p.13) firms are developing more collaborative relationships than a few decades ago. New organizational structures and integrated networks will develop in the future, where shared technology and systems are present (Kemppainen & Vepsäläinen 2003, p.716; Felgendreher 2014). With economies being more networked, companies are forced to collaborate with partners in their extended network and customers and suppliers are expecting a higher degree of integration within systems and processes (Straube et al. 2013, p.8). As resources are getting scarce, partnerships will become more important as a way of securing supply (CapGemini 2013, p.13).

Risk management

As market volatility is increasing and disruptions are becoming more common, risk management and scenario planning will be important parts of a business' activities. Other factors that support adoption of risk management are resource scarcity and changes in regulations or legislations (Bain & Company 2011, p.4; Felgendreher 2014; Scott 2015; Straube et al. 2013, p.8).

Services

At the seminar Logistiktrender 2015, the transformation of processes or products into service offers was mentioned on several occasions. This is known as servitization or servicification and can be seen in many different markets and industries. New business models have been created where for example leasing or third party service solutions are becoming more common. (ArjoHuntleigh Getinge 2015; Desso 2015) According to Bughin et al. (2013, p.16), there are examples of organizations that have realized benefits of migrating their services to shared networks or servers over the internet, i.e. clouds, enabling new business models which requires few assets. Sengupta (2013, p.37) calls it “Software as a service”, where the user will pay for the ability to use capability.

3 Methodology

In this chapter, the methodology of this thesis is presented and motivated. First, the scientific approach is described and the overall design of the study is presented. The means of assuring the quality of the thesis is explained and the used data collection methods are defined theoretically. Lastly, the actual data collection is explained in the research process section.

3.1 Research Approach

There are two main classifications of research approaches, *induction* and *deduction* (Björklund & Paulsson 2014, p.68). Inductive studies examine a case or event to find theories or principles (Patel & Tebelius 1987, p.17). In inductive studies data is collected without any prior knowledge of existing theories and theories are then formulated based on the collected data (Björklund & Paulsson 2014, p.68). This approach is common when studies are exploratory and based on the perceptions and knowledge of a small group of people (Andersen 1998, p.30). As opposed to an inductive study, a deductive study uses general principles or theories to draw conclusions about a single case or event (Patel & Tebelius 1987, p.17). In a deductive study, theories are used to predict results and then data is used to verify the results (Björklund & Paulsson 2014, p.68).

The research question of this study is investigative, without any hypothesis, and the purpose was to obtain a description of current and future issues of supply chain management. Hence, in this thesis, the main research approach is inductive. However, the study contains some elements that are deductive as the researchers already had some knowledge of current supply chain management topics. As suggested by Bell (2006, p.162), a pilot interview can be made to establish important areas or themes within the field of study. Therefore, a pilot interview was conducted February 16, 2015 to get different perspectives of the field of study and to establish appropriate data collection methods. The respondent was associate professor Daniel Hellström, who has insights in both supply chain management and research theory.

In this study, *method triangulation* or *triangulation* was used. Triangulation is the principle of using two or more methods to study the same object to enhance reliability of a study (Björklund & Paulsson 2014, p.85; Andersen 1998, p.160). A *quantitative* study is based on information that can be measured numerically. Studies that make conclusions based on soft data which is less generic are called *qualitative* (Björklund & Paulsson 2014, p.69). According to Andersen (1998, p.60), when using method triangulation by combining both quantitative and qualitative elements in a study, the limitations of one measure are balanced by the other. Therefore, both qualitative and quantitative measures were included when the methods for data collection were chosen.

For trend research in particular, it is important to evaluate if a trend is actually a trend and not just a fad (Letscher 1990, p.23). According to Lindgren & Bandhold (2003, p.62), understanding the future is only possible when changes are studied together and the impact they have on each other is evaluated. A change is more likely to have a long-term impact if it is supported by other trends in other areas. Trends are most often flexible and the more a trend can be adjusted according to its adopter, the better are the chances for a long-term impact, as opposed to a fad, which is most often inflexible in its nature. (Letscher 1990, p.23)

3.2 Research Design

The general design of this study can be seen in Figure 1. The three investigation units used were Supply Chain Management Research, Industry, and Experts. Each unit was investigated by using different methods of data collection. These data collection methods are defined theoretically in 3.2.1.

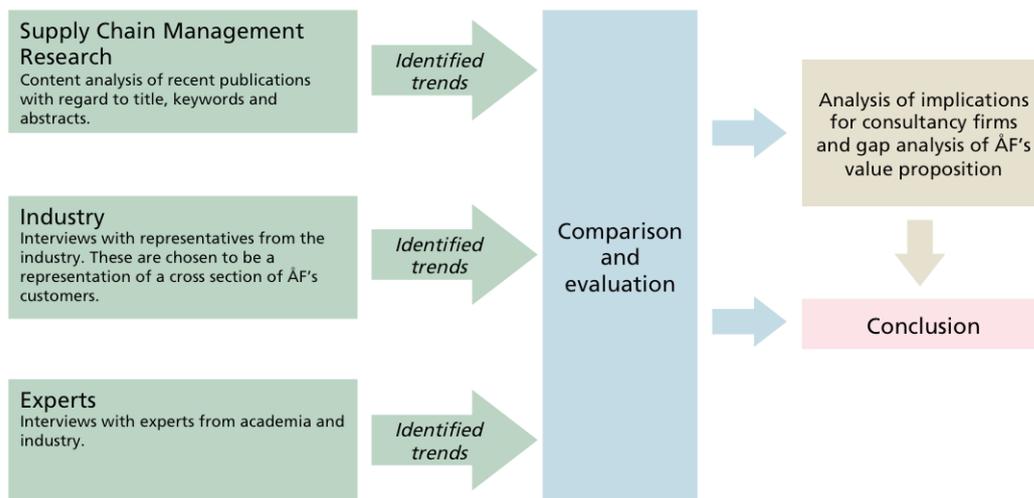


Figure 1. Research design

The method used for investigating Supply Chain Management Research was a content analysis of recent academic publications. The units Industry and Experts were both examined through semi-structured interviews with appropriate respondents. The respondents in the investigation unit Industry represent companies from a cross-section of potential customers of ÅF. The respondents in the unit Experts are known experts within supply chain management, logistics, and purchasing, from either academia or the industry. The practical use of these methods is explained in more detail in chapter 3.4.

The analyses of the three investigation units resulted in both qualitative and quantitative data. The results from each investigation unit were summarized and analyzed separately at first and this resulted in three lists with identified trends. An evaluation was then made where the lists of trends were compared and discussed. The discussion was about which trends supported each other and thereby would most likely have a long-term impact on the industry.

When conclusions had been drawn on the most important trends, these were compared to ÅF's value proposition in a gap analysis. ÅF was used as a representative example of the consulting sector and the implications for ÅF are expected to be representative for similar companies.

3.2.1 Methods of Data Collection

3.2.1.1 Literature Review

A literature review is a study of written and reproduced material, i.e. books, journals, reports, and is a resource effective approach to find a large amount of information and to map existing knowledge within a certain field (Björklund & Paulsson 2014, pp.73, 77). Although, there are some aspects to consider when gathering information by reviewing written sources, like the

trustworthiness of the content and the sources and the author's objectiveness to the subject. (Patel & Tebelius 1987, p.85)

3.2.1.2 Content Analysis

A content analysis is a method where the content of written material is codified to detect patterns in information regarding a subject. Using different keywords to search in databases is a helpful method, for example when studying when an issue was first mentioned and to what extent it was discussed later (Lindgren & Bandhold 2003, p.131). The analysis can also be made by searching for specific sentences or by studying the purpose of written material or media. However, there must be sufficient amount of material to analyze, to be able to draw any feasible conclusions. (Bell 2006, p.129)

3.2.1.3 Interviews

An interview is a technique where information is gathered by asking questions to a respondent. As the questions in an interview can be modified according to the respondent's answers, interviews open up for a deeper level of understanding regarding a subject, organization, or event. However, conducting interviews is time consuming. (Björklund & Paulsson 2014, p.77)

An interview can be either a structured interview, conducted by asking predetermined questions, or an unstructured interview, where questions are asked as the interviewer finds appropriate. Further, the interview can contain questions either with fixed response alternatives, like a survey, or it could contain open questions where the respondent answers freely. (Patel & Tebelius 1987, p.102)

A well performed interview should, according to Lantz (2007, p.10), result in conclusions that are possible to review critically. If the conclusions are presented according to this, the results are reliable and valid. Different forms of interviews provide the study with different types of data and give different results. In an interview with open questions, the obtained data gives information about the respondent's subjective opinions or experiences and the data is qualitative. In a structured interview with fixed response alternatives, the data is quantitative and answers describes a phenomenon in terms of "how much". (Lantz 2007, p.29ff)

3.3 Research Quality

Three measures can be used, when ensuring quality of a study: validity, reliability, and objectivity. *Validity* is the absence of methodological or systematic errors, i.e. are the methods really measuring what is set out to be measured in the purpose or problem formulation. *Reliability* is the trustworthiness of instruments used for measuring, or the credibility of collection and interpretation of information in a qualitative study. *Objectivity* is explained as the level of neutrality or impartiality of the values of the researcher. (Björklund & Paulsson 2014, p.66; Patel & Tebelius 1987, p.68f)

These measures are most often used and defined so that they are more suitable for quantitative studies (Patel & Tebelius 1987, p.68). Patel & Tebelius uses concepts like credibility, reasonableness, and conscientiousness. According to Yin (2003, p.33), other concepts like trustworthiness, credibility, conformability, and data dependability, have been discussed. However, Yin (2003, p.34) argues that validity and reliability are in fact also relevant for any empirical social research, but expands the concepts to construct validity, internal validity,

external validity, and reliability. The quality of this study was controlled by using measures of validity, reliability, and objectivity. These measures were used for both the quantitative and qualitative parts of the thesis.

The knowledge gained in the pre-study acted as a base when discussion points were determined, to make sure the interviews were valid and covered the problem formulation. Patel & Tebelius (1987, p.72) suggest performing and comparing two parallel observations to ensure the reliability of the research. Björklund & Paulsson (2014, p.85) mentions triangulation as a way of ensuring reliability. As both quantitative and qualitative methods were used, reliability of this study was improved through method triangulation. By clarifying and motivating choices and decisions so that an outsider can assess the research, objectivity is obtained (Björklund & Paulsson 2014, p.68).

3.4 Research Process

3.4.1 Supply Chain Management Research

The study of supply chain management research was made through a content analysis of five academic journals. The journals were chosen as they are the top five journals in the ranking done by The Association of Business Schools and have a satisfactory distribution of focus between supply chain management, logistics, and purchasing (Association Of Business Schools 2015, p.38). The journals are presented in Table 1. The articles published between January 2009 and April 2015 were studied.

International Journal of Physical Distribution & Logistics Management
Journal of Business Logistics
Journal of Purchasing and Supply Management
Journal of Supply Chain Management
Supply Chain Management: An International Journal

Table 1. Journals used in the content analysis

The content analysis was made by assigning one or more tags to the articles, mainly based on titles and keywords. In cases of debatable classifications, abstracts and full text articles were also used. A few articles were not classified and tagged at all, as the subject was not relevant for this study. To determine what tags to use, 100 articles were classified independently by both researchers. In this process, a base of tags was built and the divergences between classifications were mapped. The tags that were used are presented in Table 2 and explained briefly in Appendix II. Further, the articles were classified into one of the three categories *Purchasing*, *Supply Chain Management*, or *Logistics*.

Customer
E-commerce
External Relations
Finance
Global
Information Management
Innovation
Internal Organization
Location Management
Negotiation
Operational Tools
Outsourcing
Performance Measurement
Process Reengineering
Public Procurement
Return Flow
Risk Management
Routing
Sourcing Process
Sustainability
Technology

Table 2. Tags used in classification of articles

3.4.2 Industry

The unit Industry was investigated through semi-structured interviews and four representatives were chosen from the industry. The respondents were chosen to represent a cross-section of ÅF's potential customers. The list of respondents within this investigation unit can be seen in Table 3.

Name	Company
Christian Loftorp	Supply Chain Director, Axis
Peter Nordman	Material Project Manager, Kockums
Anders Pålsson	Manager Logistics, Haldex
Anonymous respondent	Supply Chain Director, Food Company

Table 3. List of respondents within the investigation unit Industry.

The respondents were interviewed in person or in a telephone interview. All interviews were conducted in Swedish. Consequently, the quotes in this thesis have been translated. A few points of discussion were used as a basis for the interviews. The observations from the pre-study and pilot interview were used as a basis for the discussion points. The main insights from the pre-study was the importance of understanding the development of supply chain management, starting about ten years ago until ten years into the future. The interview guide used for investigation unit Industry can be found in Appendix III. Sub-questions were also added to the point as to facilitate the discussion during the interview. The discussion points are listed and defined in the following sections.

Former trends

Elaboration of what shifts or developments the respondent has seen in logistics, purchasing, or supply chain management during the last 10 to 15 years. This elaboration could include both changes within or outside the respondent's company.

Planning ahead

Explanation of how well the company and the industry in general are prepared for sudden events. These events could be natural disasters, changes in legislations, and technological developments.

Influencers

Discussion about which actors are influencing the supply chain management strategies of the respondent's company. Actors could be academia, legislators, competitors, or other stakeholders.

Future trends

Elaboration of what the respondent sees as trends or future challenges in supply chain management. Also includes a discussion about what is on the agenda of the respondent's company in the next five to ten years.

Role of supply chain management in organizations

Explanation of what role the logistics, purchasing, and supply chain management function have had within the respondent's organization over time, and predictions on how it will change in the future.

3.4.3 Experts

The unit Experts was also investigated through semi-structured interviews and five experts were chosen from different organizations to bring expertise from within and outside the industry. A list of the experts chosen is presented in Table 4. The interviews were conducted similarly to the interviews with the respondents in the group Industry, albeit the discussion points and sub-questions were focused on the entire industry rather than a specific company. The interview guide used for investigation unit Experts can be seen in Appendix IV.

Name	Position
Mats Abrahamsson	Professor, Logistics Management, Department of Management and Engineering Linköping University and board member at PostNord
Per Hill	CPO, Getinge Group
Mats Johnsson	Associate Professor, Department of Packaging Logistics, Faculty of Engineering, Lund University
Patrik Jonsson	Professor, Division of Logistics and Transportation, Chalmers University of Technology
Erik Westman	Purchasing Director, Tetra Pak

Table 4. List of respondents within the investigation unit Experts

4 Results

In this chapter, the results from the content analysis are presented. The chapter is divided in three main parts according to the three investigation units. The part Supply Chain Management Research mainly refers to tables in the appendix. In the parts Industry and Experts, the interviews are summarized and divided, with one sub-heading per respondent. The results presented will be analyzed in the coming chapters.

4.1 Supply Chain Management Research

The journals were classified as described in 3.4.1. The total number of classified articles were 937. The result is presented in Appendix V and analyzed further in 5.1.

4.2 Industry

4.2.1 Christian Loftorp

Axis is the market leader in network cameras and in the category surveillance cameras. Their main product segment is the video product area which includes network cameras, video encoders, accessories, and application software. Axis employs 1941 people in more than 40 countries and has a turnover of around 5.5 billion SEK. (Axis 2015a). The company was founded in 1984 and put the worlds first network camera on the market in 1996 (Axis 2015b).

Christian Loftorp is Supply Chain Director at Axis and has worked in similar positions at Axis for more than eight years. (Loftorp 2015, pers. comm., April 9)

The interview with Loftorp took place on April 9 2015 at 13:00.

4.2.1.1 Former Trends

Loftorp describes how Axis has worked with outsourcing and offshoring, historically. All production is outsourced except for some final assembly. All Configurations and Logistics Centers (CLC), excluding the one in Lund, are outsourced to third parties. However, unlike the outsourced manufacturing, they strictly follow Axis routines and use software provided by Axis.

“Since I started, we have opened more and more CLCs. It is getting too expensive to have that business in Sweden. To call it a trend might be stretching it, but some things we have always chosen to keep in Sweden. Everything that is new begins in Sweden [...]. We have a certain value add in Sweden: Proximity to R&D, managers, QA that are very centralized to Lund. Everything else [apart from new products] is offshored [...], mainly to Eastern Europe.”

During the last years, Axis has been working with risk management. Loftorp points out that Axis’s supply chain is more agile now than when he started at Axis eight years ago. He also stresses that even if they may not always have six manufacturing sites as they currently do, the number of sites will never be as low as one or two.

4.2.1.2 Planning Ahead

According to Loftorp, the customs department most often know of custom changes in advance. However, the foresight regarding new technology and legislation, is limited.

4.2.1.3 Influencers

According to Loftorp, the main actors that influence Axis's supply chain strategy are competing companies. The supply chain segmentation trend described in 4.2.1.4 was, for example, initiated by observations of competing companies.

4.2.1.4 Future Trends

One strong trend identified by Loftorp is supply chain segmentation. At the moment Axis is providing more or less the same supply chain configuration for all products, markets, and customers.

“Supply chain segmentation is an important trend that we are working with now. Honestly, we have not succeed this far, but we consider it an important trend in the future.”

The idea is to evaluate where the cost driving services are really needed. The main reason for this is, according to Loftorp, to cut costs.

“When is there a need for a late configuration? When is there a need for short lead times? When is there such a value add? [...] We need to identify when there is a need and when we do things out of habit. Activities that drives cost, we may only need to do for certain products or certain customers.”

According to Loftorp, there are cases of this from companies in other sectors. He mentioned Dell as a good example, where the optional extra supply chain costs are passed on to the customers who are willing to pay the price.

Loftorp also points out that there is a trend of outsourcing more of the production to suppliers instead of doing some tasks locally.

“The trend that we see now, is to have more value add for our suppliers and less value add for our CLCs. We look at the cell-phone industry and similar high volume technology products. Ten years ago, they used the same configuration we use now. [...] Now they do not do any customization locally. Everything is done by their suppliers in China. [...] Everything is completed on a sales unit level.”

Loftorp also mentions sustainability as a former and current trend. Axis are working continuously with sustainability matters. One of their current projects aims to develop product specific packaging to increase the number of products at a load carrier and optimize the functionality. With regard to sustainability, their gravest concern at the moment is the air freight.

4.2.1.5 The Role of Supply Chain Management in Organizations

During the interview, Loftorp points out that Axis is a young company that is driven by entrepreneurship. Much is happening and the growth rate is significant. This has made the supply chain more shifting and required a rapid development within supply chain management.

“I have worked in more or less the same position these years. Still, the work has not been the same. The company is not the same now as before. It is very exciting and dynamic. It is almost like a new job every year, because of the changing conditions.”

4.2.2 Peter Nordman

Kockums is a Swedish submarine manufacturer. It was founded in 1742 as a casting shop. During the years, the business gained its naval focus and in 1991 the casting function was phased out. In 2014, SAAB acquired Kockums from its German owners. (Ny Teknik 2014)

Peter Nordman is Material Project Manager at Kockums and has worked at the company for three years. (Nordman 2015, pers. comm., April 21)

The interview with Nordman took place on April 21 2015 at 14:00.

4.2.2.1 Former Trends

The trend that Nordman describes is that companies have pushed much responsibility and authority to their suppliers. The suppliers will get more orders on finished goods and will have an overall commitment instead of only supplying components.

4.2.2.2 Planning Ahead

In the case of Kockums, the work is highly focused on projects, where the customers have very detailed specifications. A result of that, Nordman argues, is that the foresight is limited to only a few areas where it is needed, such as defense and propelling. Nordman adds however, that this may not be representative for companies in other sectors.

The foresight needed with regard to politics may not be as significant as one might expect, Nordman argues.

“Usually we do not deal with countries that are borderline of having sanctions. That way, we do not risk getting startled by politicians that prohibit defense-cooperation efforts with these countries.”

4.2.2.3 Influencers

Even though political changes do not require that much proactive work, Nordman stresses that, since Kockums’s customers are states and agencies, they are highly influenced by political decisions. Governments and legislators may want to be forerunners in transitions at the market. The European Union also pass laws and regulations that affect, for example, environmental considerations.

“There are always the general regulations that the EU have on products and environments. So our customers will always follow the latest legislations. Some countries may even wish to be forerunners and let this type of procurement take some of the costs of implementing new sustainability regulations.”

4.2.2.4 Future Trends

In the future Nordman believes that the trend of letting the suppliers take responsibility over more activities of the production will persist.

“Let us say you are building a ship. Instead of integrating the different components and systems that the sub-contractors supplied, you let one supplier take care of several systems, and integrate them. I believe the reasons for this trend are twofold: Firstly, you do not have to do the job of coordinating as many suppliers and integrating the parts into bigger systems, and secondly, there is an ambition from many suppliers to expand their value proposition upward in the value chain.”

Nordman is slightly reluctant to use the term outsourcing for this trend, but admits that some companies might use the expression, even if Kockums does not.

“I believe that companies in the future will use their suppliers in a better way. It can be control, labeling, and other functions that will be performed at the suppliers, so that, when the goods arrive, these tasks have already been taken care of.”

Nordman believes that Kockums might take more responsibility of the service of the ships. This will be a good thing for everyone involved and will be a better use of the taxpayers’ money as well as the competences.

“I believe that we might climb in the value chain and guarantee that the ships will be functional in, perhaps say 50 years. In that case, we will replace systems that either are dated or broken. You can say that we provide a service agreement to the customers. We see tendencies in that direction.”

When it comes to new technology, Nordman mentions traceability as one big concern in this sector.

“Everything that has to do with labeling, such as RFID, is going to be introduced rather quickly, to be able to increase traceability.”

4.2.2.5 The Role of Supply Chain Management in Organization

The interview was interrupted and the respondent did not answer questions in this area.

4.2.3 Anders Pålsson

Haldex is an international company that produces vehicle brakes. The tasks that are done at the site in Landskrona are machining and assembly. The separation of remits between the logistics and the purchasing function is that purchasing is responsible for finding and selecting suppliers as well as negotiating frame agreements. The logistics function’s responsibility is to order and keep track of the warehouse and goods that arrive. (Pålsson 2015, pers. comm., April 22)

Pålsson is logistics manager at Haldex and reports to the site manager in Landskrona. Sourcing, on the other hand is a global function. (Pålsson 2015, pers. comm., April 22)

The interview with Pålsson took place on April 22 2015 at 14:30.

4.2.3.1 Former Trends

Pålsson mentions the trend of sequential delivery, where the suppliers were located next to the factories and delivered directly to the production line, however, since he does not work directly with such companies, he does not know if this set up is used in factories today.

4.2.3.2 Planning Ahead

Haldex mainly gains knowledge of what happens in the industry through their suppliers. Their 3PLs, for example, usually have knowledge beforehand of coming changes in the transportation sector.

When it comes to technological shifts within supply chain management, Pålsson would not say Haldex is in the forefront.

4.2.3.3 Influencers

Pålsson sees authority regulations as a fundamental factor to consider. Sustainability issues, in particular, are getting more attention now than before.

“Legislation and environmental regulations are of course obeyed. If you want to see a trend, the environment is much more in focus now, than 5, 10, or 20 years ago.”

Pålsson also points out the importance of other factors than sustainability. Costs and reliability both weigh heavier than environmental concerns when choosing means of transportation. However, Pålsson stresses that their transport providers today must be certified in sustainability.

4.2.3.4 Future Trends

Pålsson points out the need to develop ERP systems further.

“The ERP systems are generally rather cumbersome. They should be better. Many companies have their systems based on an Excel-database, which may not be ideal. But I have been saying this for a while.”

The logistics function at Haldex has changed the means of transportation in recent years. Last year, they started to use sea freight on new routes, where they had not used ships before. This change was mainly cost driven. The downside is higher tied up capital and less flexible and reliable deliveries. They are also looking into the possibility to use train transports for urgent orders from Asia, instead of air.

Geographically, Pålsson thinks that the trend of offshoring to China may decrease in importance.

“What I heard, is that the costs in China will increase in the near future. It has to do with currency as well. India is also a country where you have very low labor costs. That is an alternative. I cannot really determine if this is a trend, but it is my gut feeling at the moment.”

The relationships with suppliers are getting closer, according to Pålsson, particularly on strategic items. Partnerships are getting more common.

When asked about the importance of risk management, Pålsson states a belief that the area will be more important in the future.

4.2.3.5 The Role of Supply Chain Management in Organizations

Pålsson has a clear perception of the importance of purchasing and logistics.

“Sourcing has during the last five to ten years become more important in the industry. Logistics has started that journey. I have got the feeling that more and more people have an understanding that logistics is an important function.”

4.2.4 Supply Chain Director at Food Company¹

The company is a mid-sized Swedish food company and is present both on the consumer market with several food brands, as well as in the large-scale segment.

The respondent is Supply Chain Director at the company.

The interview took place on April 14 2015 at 13:00.

4.2.4.1 Former Trends

According to the respondent, purchasing has gained focus in companies during the last ten years. He also mentions that production processes have changed from lean to agile.

4.2.4.2 Planning Ahead

According to the respondent, most companies have a contingency plan but often not all aspects are covered.

“The most critical elements are covered in our contingency plans and actions are thought through. [...] These plans are managed and followed up on a yearly basis.”

In some niche areas important to the company, the respondent reckons that they are covering changes in legislation.

“We do not have surveillance of all legal areas but industry specific questions, work environment issues and matters like that. We keep track on things that are important to us.”

4.2.4.3 Influencers

The respondent thinks that they get a lot of input from their suppliers, especially when it comes to new technologies, and that it is probably so in other companies and industries as well. Further, the respondent adds that the food industry is possibly not early adopters when it comes to for example new IT systems.

4.2.4.4 Future Trends

In the future, there will be a focus on reducing costs and increasing sales at the food company, according to the respondent. This could be done through new IT platforms or new product solutions.

¹ The respondent has requested anonymity for himself and the company.

When asked what the company's relationships will look like in the future, the respondent mentions that they will continue to develop their customer relationships. According to the respondent, this is done to reduce costs and increase value throughout the supply chain.

“We have not been as active toward suppliers as toward our customers. In our case, I think this is because we have a very fragmented supplier base but few large customers. This makes it more value adding to work with our customers, as it is there we have large volumes. [...] But in some specific areas, will we definitely develop our supplier relationships too.”

4.2.4.5 The Role of Supply Chain Management in Organizations

On the question of the future role of supply chain management in organizations, the respondent says that it is hard to predict.

“It is often macroeconomic changes that are affecting the actions of organizations. In 2009 when there was a lack of capital, organizations started to focus on tied up capital. So the very simple answer would be to say that there will be a continued focus on finding solutions that will enable us to reduce cost in the system. That is something I think will be important, regardless if it is about purchasing or logistics.”

When it comes to the supply chain management function at the food company, the respondent has seen a development where the function has gained greater focus in the organization.

“We have had a journey since 2008, when we created the supply chain management function, until today, where the function has gained greater focus and more tasks have been added to it. So, if you extrapolate this, you will see that there will be an even greater focus on the supply chain function in the future.”

4.3 Experts

4.3.1 Mats Abrahamsson

Mats Abrahamsson has been professor at the Department of Logistics at the Institute of Technology at Linköping University since 2000. His research interests are flow based business models, dynamic capabilities, supply chain management, and the restructuring of international distribution channels. He is also working as a strategy consultant and is a member of the board of PostNord. (Linköping University 2015)

The interview took place on March 25 2015 at 14:00.

4.3.1.1 Former Trends

According to Abrahamsson, there has been a shift in focus from costs to customers and markets.

“This means that, when organizations are designing their supply chains, but also when they are thinking about the future, their aim is to ensure customer service. And this has become more important than ensuring low cost.”

Further, Abrahamsson points out that it is important to understand that supply chain management means different things for different companies.

“Essentially, it is about a long-term, tenacious work. I always get a little bit uncomfortable when someone talks about this year’s trend. There is no ‘this year’s trend’; it is rather a constant work. To have this focus on customers that I mentioned, you have to start with controlling your costs. [...] And then you can take the next step. It is more of a long-term development process.”

Abrahamsson is asked to comment on the analysis of the supply chain management research, presented in 5.1. Regarding research on operational activities, Abrahamsson thinks that the research is more ahead in these matters, compared to 20 years ago, when research was looking at what the industry were doing.

“That is probably why it is possible to see that decreasing interest in operational research. Because the industry is not assimilating the knowledge at the same pace as research is progressing, you let go of the subject. There is no need to develop more models if there is no use of them.”

4.3.1.2 Planning Ahead

According to Abrahamsson, it varies a lot between organizations whether they are prepared for, e.g. natural disasters, or changes in legislation.

“Most companies have little forward planning in place, they do not think in that way. Then there are exceptions, like Ericsson. They have just been nominated to the PostNord Logistics Award², because of their resilience work, which they have done for ten years. In case of a natural disaster, they have a special unit with a commando central, which keeps track of suppliers, the effect on them, and the appropriate actions. They have a whole battery of actions that they can choose from, already prepared. [...] Ericsson is a very good example, but these examples are rare.”

When asked about preparedness for changes in other areas, such as legislation or technical developments, Abrahamsson points out that it might be more important for a company to be responsive and flexible rather than to know what is coming.

“More generally, they are strengthening their ability to react faster, rather than planning forward. So when there is a new law or maybe a new technology that changes the conditions on which they do business, they are better at reacting quickly. [...] But most companies have a long journey before they get to that point.”

4.3.1.3 Influencers

According to Abrahamsson, academia is influencing the industry more and more when it comes to supply chain management questions, but it is not what motivates or drives the organizations. Legislators are not at all effecting the industry.

² The prize Abrahamsson is referring to, is awarded by the logistics service provider PostNord Logistics to bring attention to good logistics practice (PostNord Logistics 2015).

“If there is something that effects the industry today, it is definitely the globalization. It is not only how to find new markets, but rather that globalization means that you get new competitors on your own home turf. In other words, it is becoming easier and easier to enter the Nordic or Swedish market, because this market is now considered big enough to be interesting.”

According to Abrahamsson, organizations are examining the supply chain to find collaborations with suppliers and to incorporate them as a part of the value proposition.

“Then we come back to the customer focus. To meet new customer requirements, perhaps you have to offer more than you can do yourself. In this case, you need to develop your supplier base.”

4.3.1.4 Future Trends

Abrahamsson mentions that he sees a pattern of increased importance of implementation processes in the future.

“There will be more focus on implementing already known logistics knowledge.”

Further, Abrahamsson mentions health care logistics and city logistics as important areas in the future where knowledge in logistics will be applied.

There will also be a much more deliberate development of suppliers, to be able to take advantage of their abilities and resources as a part of the value proposition, according to Abrahamsson.

Otherwise, Abrahamsson does not see any other huge revolutions. He mentions the concept of big data and explains it as the ability to capture huge amounts of information to get better insight into the market and how to manage flows.

“This is something I believe will develop during the next five to ten years. And this is to get better precision and avoid uncertainties. I usually say that we are pressuring our logistics systems to the breaking point, as we are demanding shorter lead times than we actually need. This is an example of what we could gain with more information. We could plan our flows more economically and sustainably, if we had more information.”

When asked about how different types of collaborations will look in the future, Abrahamsson answers that customers will have more influence in the future. In some cases, there will be very clear buyer-seller relationships. In other cases, when the products are more complicated, he thinks that deeper relationships will exist.

Regarding supplier relationships, Abrahamsson explains that if the suppliers are becoming part of the offer, naturally these relationships will demand more commitment. According to Abrahamsson, this will entail investments in the relationship with the suppliers and this is something that is occurring more often today.

4.3.1.5 The Role of Supply Chain Management in Organizations

According to Abrahamsson, organizations are now trying to connect logistics and purchasing, and by this creating a supply chain management function.

“Then it is not only the sourcing costs that are examined, but also the logistics costs and the means of bringing home goods. For example, it could be to build a hub in Asia, where goods flows from both China and India are consolidated, to reduce logistics cost later. So these types of coordinated activities are something we see more of today.”

In some industries, the supply chain management function is becoming more of an executive function, according to Abrahamsson. Further, he explains that purchasing and logistics managers are becoming part of the board of directors, to a higher extent than before.

4.3.2 Per Hill

Getinge Group AB is a medical technology company, providing equipment and systems within the healthcare industry. Getinge had a net sales of about 27 billion SEK in 2014 and employs about 16,000 people. The company was founded in 1904 in Getinge, Sweden and today the head office is located in Gothenburg, Sweden. (Getinge 2015)

Per Hill is CPO at Getinge Group. Until recently, he was CPO at Lantmännen. Hill has had similar positions at Skanska, AstraZeneca, and ABB. (LinkedIn 2015b)

The interview with Hill took place on April 28 2015 at 08:00.

4.3.2.1 Former Trends

According to Hill, many organizations have increased their purchasing focus on indirect material and services. Further, Hill mentions a shift from purchasing being an operational function toward today, being a strategic function.

On the direct question if he has seen any technical developments within the purchasing function, Hill mentions that most organizations now have some kind of procurement IT system in place. Moreover, Hill argues that there is still a need for developing and integrating these systems further.

4.3.2.2 Planning Ahead

When it comes to supplier risks and direct material, Hill thinks that organizations are generally good at planning ahead. Regarding indirect material, there are some work done in predicting risks but not to the same extent.

On the direct question regarding how prepared the industry is for changes in legislation, Hill thinks that this is much dependent on the type of industry, where some businesses are not at all concerned about impending laws and others even have lobby groups or have functions that are monitoring changes in legislation.

4.3.2.3 Influencers

There are four main influencers of purchasing practices, according to Hill.

“First of all, it is the own experience. Many managers with similar roles as me have worked in the business for many years. You look at academia to some extent, but that is not a dominant influencer. Then there is benchmarking where you look at how others are working. You also use a lot of management consultants that push for some matters.”

4.3.2.4 Future Trends

According to Hill, as a consequence of working more strategically with purchasing, it will be more natural to differentiate collaborations and relationships with suppliers in the future.

The purchasing function will most likely work more with risk management in the future, according to Hill. Moreover, Hill mentions the most recent financial crises and earthquakes in California and Japan as incidents that made organizations realize that it is important to work with risk management.

Hill also highlights an ongoing and future need of purchasers with the right competences, i.e. higher education and more experience.

4.3.2.5 The Role of Supply Chain Management in Organizations

Generally, the purchasing function has changed during the last 10 to 15 years, to become a more strategic function rather than operational, according to Hill. Moreover, Hill discusses that this change has had consequences on the competence need in organizations.

4.3.3 Mats Johansson

Mats Johansson is associate professor at the Division of Packaging Logistics at the Faculty of Engineering at Lund University. Johansson is board member of the logistics and IT network CELIT and has been involved in several EU projects in logistics and packaging logistics, such as Log2020 and SoCool. (Johansson & Sternberg 2013; Log2020 2015)

The interview with Johansson took place on April 23 2015 at 09:00.

4.3.3.1 Former Trends

According to Johansson, Information and Communication Technologies (ICT) have contributed to the shift from physical warehouses to virtual warehouses, and this has in turn changed stock keeping strategies.

“New flows of goods have been created. [...] Instead of having multiple warehouses, the shift toward ICT has made it possible to handle and distribute centralized stock.”

Further, Johansson mentions an increased interest in traceability.

“Traceability has been an important issue in the nuclear energy industry as well as the aviation industry for a long time. Now organizations in other industries have started to realize the benefits of knowing the path of your product. It is now possible to answer questions about product origin from the customer much easier.”

Another, more recent development detected by Johansson, is the discussion about slower logistics.

“The delivery toward consumers still has to be fast. But the shipments between the organization’s own hubs or centralized warehouses no longer have to be fast, but instead more accurate and on time.”

Johnsson is asked to comment on the analysis of the supply chain management research, presented in 5.1. Johnsson argues that there is probably less research about operational questions because many models and programs already exist for solving these problems.

4.3.3.2 Planning Ahead

According to Johnsson, the industry does not plan ahead when it comes to changes in legislation.

“There is a mind-set in the industry where changes in legislation is something you deal with when it happens.”

When it comes to dealing with natural disasters, many organizations have well-structured systems and elaborate regulations, according to Johnsson.

Some actors are fast when it comes to adopting new technological solutions and others are not, according to Johnsson. Further, he argues that it is often economic factors that discourages organizations from implementing new technologies and cost-carrying questions are not always resolvable.

4.3.3.3 Influencers

The largest influencer on organizations today is the consumer, with some differences depending on industry and size of organization, according to Johnsson. Other important influencers mentioned by Johnsson are environmental organizations and shareholders.

On the direct question on whether academia plays any role in the industry, Johnsson answers that when it comes to logistics the industry is somewhat influenced by current research. However, Johnsson still wishes for more collaboration.

“Logistics does not have the tradition of being very research intense, rather than consultant intense. [...] It is easier for academia to influence organizations through collaboration with consultancy firms. [...] Organizations are looking more at what the competitor does.”

Johnsson mentions an increased research focus on integration of external actors in the future.

Further, Johnsson mentions that, except for organizations that own their entire supply chain, it is often only the largest companies that have the ability to make any significant changes.

On the direct question on what Johnsson believes are the strongest influencers of the supply chain management agenda in the EU, he answers that organizations and lobbyists are important influencers. Further, Johnsson mentions that the interests of government representatives are strongly affecting the agenda as well.

“Organizations are very important drivers of focus points in the EU. For instance, I believe that it was the industry that drove the green corridors debate. [...] In the past, politicians had the most effect on the agenda, but today organizations are becoming more noticeable.”

Further, Johnsson explains that one reason for why the industry is not more involved in EU projects is the complicated administration behind it. As the EU is currently trying to simplify some regulatory systems, the involvement of businesses is increasing, according to Johnsson.

4.3.3.4 Future Trends

In the future, everyone will be more connected, according to Johnsson. He mentions the concept internet of things.

“We will distribute management to smaller units. [...] Smartphones will have a more fundamental role in decision making, rather than centralized servers.”

According to Johnsson, the internet will keep changing purchasing functions and e-commerce platforms will continue to develop.

In supply chain management research, external and internal integration is still a current topic, according to Johnsson.

“Many organizations are claiming that they have integrated their supply chain, but actually if you look closer, it is mostly just talk. [...] There is still room for improvement when it comes to sending and receiving information within supply chains.”

Another future challenge Johnsson mentions, is to know what type of supply chain management competences that will be needed in the future.

On the direct question of what supply chain management topics are current in the EU, Johnsson answers that supply chain management still has not been accepted as a concept in the EU. Focus is instead more on infrastructural matters.

“There is still a strong focus on mobility, city logistics, the debate around green corridors, and these types of infrastructural issues. The concept of supply chain management has not yet caught on. [...] This is changing, although slowly, and recently we have seen discussions about packaging logistics.”

When Johnsson is asked about technical developments in the future, he answers that there will be an increased level of automation in warehouses, with robots and automatic palletization.

Johnsson also believes that there is an ambition from the industry to implement more operational tools.

“We all know the Wilson formula. But Stig-Arne Mattsson and Patrik Jonsson made a study a few years ago, that concluded that less than 50% of the respondents in the Swedish industry used some kind of scientific model to estimate order quantities.³ Instead, they used spreadsheets, Fingerspitzengefühl, and ‘we ordered this much last time, lets order that again’. That makes me wonder how things really are. I believe large companies are using planning tools, but many smaller companies are certainly not.”

³ The study Johnsson refers to is PLAN 2005 (Jonsson & Mattsson 2005). The conclusion he mentions is that 41 % of the companies responding to the survey used some kind of optimization method when determining order quantities.

4.3.3.5 The Role of Supply Chain Management in Organizations

According to Jonsson, logistics is climbing higher in organizations. As for both logistics and purchasing, Jonsson argues that in some cases these functions are very much integrated and in others not.

4.3.4 Patrik Jonsson

Patrik Jonsson is professor in Operations and Supply Chain Management at Chalmers University. He is senior associate editor for the International Journal of Physical distribution and Logistics Management. Jonsson is also active in the editorial advisory board for the European Business Review and the editorial review board for the Journal of Purchasing and Supply Management. (Chalmers University of Technology 2015)

The interview with Jonsson took place on March 5 2015 at 10:00.

4.3.4.1 Former Trends

Jonsson says that one former trend in supply chain management is that organizations started to implement their own business systems about fifteen years ago. Today, most companies have systems in place and are starting to take steps toward further integrated business systems.

Further, Jonsson mentions a previous focus on making processes more efficient and working with concepts like lean, whereas today most businesses have relatively efficient processes. Since the last financial crisis a focus on flexibility has developed, e.g. in staffing issues with the use of more part time employments.

Other previous trends mentioned by Jonsson, are location management issues, with a shift from low cost establishments to locations closer to markets.

“If you look back ten years, there was a lot of decisions from boards of directors to establish their businesses in low cost countries. Today, I think organizations are more structured and a bit more strategic in their thinking and are analyzing before establishing their production. Today, it is more important to stay close to new or existing markets and development centers.”

Jonsson is asked to comment on the results regarding operation management in the content analysis, presented in 5.1. Jonsson thinks that there is still a lack of competence and poor performance in the industry in areas like, for example, inventory management. He thinks that there are still many improvements to be made concerning operational activities.

4.3.4.2 Planning Ahead

According to Jonsson, larger organizations have business intelligence functions that are up to date with current events. Changes, in for example legislation, are generally not surprising.

“We are rather early with keeping up with for example, environmental requirements and legislation, in Sweden, as well as other requirements. I do not think that industries are late in reacting.”

However, when it comes to other changes Jonsson argues that the industry has a slow adoption process.

“There are things that we have seen in academic literature during the last 30 years that the industry has yet to adopt. But that is because it is extremely complex issues and demands a lot of work.”

4.3.4.3 Influencers

According to Jonsson, actors affecting supply chains of organizations are mostly the business environment and factors like crises and disasters.

“Organizations are now realizing that you need to have flexibility and make risk assessments. Especially when you are acting on a global market.”

On the question whether legislators like governments or the EU have any effect on supply chains, Jonsson says that they do not have a direct influence. Further, Jonsson mentions that the EU is focusing mostly on transportation issues and is not working with purchasing and supply chain management.

“It is rather so that organizations are looking at what the competitors are doing and that they are benchmarking against them.”

4.3.4.4 Future Trends

Jonsson mentions globalization as an ongoing development that will continue in the future.

According to Jonsson, most organizations have existing processes and systems for the integration of demand planning with supply planning. Jonsson also mentions that there is now a development toward solutions that are more complex and that solutions in Excel are phased out.

“This is something we have thought for 30 years in books, and now everyone have established these processes. Today, organizations are working more proactively. It is this integration that is now driving business planning rather than the opposite, which in turn gives supply chain management a more central role.”

Regarding operational activities like warehousing, Jonsson says that there is still a lack of competence and that there are many improvements to be made within the industry.

According to Jonsson, large organizations within the industry are working more with risk management.

“It is becoming more common to look at the risk profile of suppliers, especially after recent events like floods and the nuclear disaster in Japan.”

Jonsson mentions that development of IT systems is still a very central part of future changes within supply chain management. Further, Jonsson mentions technology developments like additive manufacturing and 3D printing, but questions if it is a utopia rather than technologies that will actually come in use.

According to Jonsson, there is now a strong focus on environmental issues within logistics and especially regarding transportation. On the direct question about whether sustainability is a trending topic or not, Jonsson answers that sustainability is a word with an unclear definition.

“Sustainability is now a word everyone have to use. [...] It is an issue that is raised today, and everyone have to have it on their agenda or in their annual reports, but it is still very unclear what it involves.”

4.3.4.5 The Role of Supply Chain Management in Organizations

As outsourcing is becoming more common, purchasing is becoming more important in organizations, according to Jonsson.

“This is a change that we have seen during many years. Also, as companies are becoming larger and more global, the coordination of supply chains is becoming more important.”

Further, Jonsson mentions that the organization of internal functions is becoming more important.

“Cross-functionality in organizations is more important. It is no longer only about one process that a consultant could do, but it is ultimately about organizational issues and the integration between them.”

4.3.5 Erik Westman

Tetra Pak was founded in Lund in the early 1950s and have during the years grown to be a global market leader in paper packaging (Tetra Pak 2015). Around 70 % of their turnover is procured. (Westman 2015, pers. comm., May 8)

Erik Westman has worked with supply management at Tetra Pak for 13 years. He has been purchasing director for over a year. (LinkedIn 2015a)

The interview with Westman took place on March 7 2015 at 10:00.

4.3.5.1 Former Trends

The major previous trend that Westman identifies is an increased degree of automation in procurement. The IT systems are either designated for one of the tasks in the procurement process or covering multiple activities.

“If you register an order, the right information is pulled from the system, the information is transferred to a spend analysis on which strategic decisions can be based.”

4.3.5.2 Planning Ahead

On the question of the industries foresight when it comes to legislation and regulations, Westman points out that many larger corporations are lobbying for and against EU-regulations, as well as regulations by Swedish agencies. However, he points out that it may be hard for smaller companies to stay attuned to the latest external changes and decisions.

When it comes to new technology, Westman is confident that specialized logistics companies are in the forefront when it comes to technological initiatives. But once again, small and mid-cap companies may not have the same foresight.

4.3.5.3 Influencers

Westman thinks that Tetra Pak is influenced by both the Swedish government as well as the EU. He also mentions competing companies. When it comes to the supply chain function, the increased competition has forced the purchasing departments to have better control of the entire supply chain. Competence in purchasing has also been spreading to other product categories than packaging material, which previously was the main focus.

4.3.5.4 Future Trends

Westman believes that the trend of a more automated procurement process described above will be persistent. This will also be related to information management and analysis of large quantities of data.

Westman relates the automation of procurement processes to the Kraljic-matrix and believes that open, virtual markets with full competition will be more common for commodity items. Other product categories in the Kraljic-matrix will also get more well defined strategies.

Westman identifies a transformation of products into services. That trend applies both to Tetra Pak's value proposition to its customers as well as to Tetra Pak's suppliers. More and more purchases are procured as subscriptions and leasing plans and many customers are paying only for what they are using. The supplier also takes more responsibility of service and maintenance and has a responsibility to fulfill service level agreements.

A centralization trend is also identified by Westman. Centralization, he points out, does not necessarily mean relocating functions to the same place; increased central monitoring and optimization will lead to better possibilities to be flexible and adapt to external influences.

Westman also believes the focus on risk management will increase in the future. The global environment, in which the companies of today are operating, demands much work with mitigating risks in diverse regions. Westman describes two types of risk management:

“There is the part of securing supply, but there are also many corporate governance factors such as CSR. The purpose is to verify that the supply chain upstream meets the requirements with regard to, for example child labor or the right to form unions. I believe many companies, including Tetra Pak, see this as a competitive advantage.”

4.3.5.5 The Role of Supply Chain Management in Organizations

Westman points out that supply chain management has become a much more prioritized function than before. This demands a new knowledge profile for the employees.

“Purchasing is now much more focused on helping other functions of the company. You are involved in the contact with service providers. It could be a finance department that wants to outsource their invoicing. [...] It can also be a function that is kept in-house but is centralized. In those cases, you need some kind of support from the purchasing function. So purchasing is not limited to the supply of products as it might have been historically.”

5 Analysis

In this chapter, the results from the previous chapter are analyzed and trends are identified. First, the results are analyzed for each unit separately and then the identified trends are compared between the units. The comparison results in a final list of identified trends. This chapter further contains a discussion about implications of the identified trends for a consultancy firm. Lastly, a gap analysis is made where the value proposition of a consultancy firm is compared with the trends.

5.1 Supply Chain Management Research

Trends were identified based on the assigned area (Purchasing, Supply Chain Management and Logistics) and tags. The result is presented in 4.1. Trends with a p-value lower than 0.05 were discarded as statistically insignificant, as described by Anderson et al. (2013, p.300). Data points with less than ten articles were also omitted from the analysis, since an alternative classification for one of the articles would change the result notably. With this method of assessing reliability, it was possible to derive statistically significant trends for three of the twenty-one tags used. These trends are presented below, together with descriptions.

Regarding the number of articles published each year within the three areas (Purchasing, Supply Chain Management and Logistics), it was not possible to draw any statistically significant conclusions. Therefore, it is not possible to determine if there is an increased or decreased publishing rate for articles within any area.

5.1.1 Increased Focus on External Relations

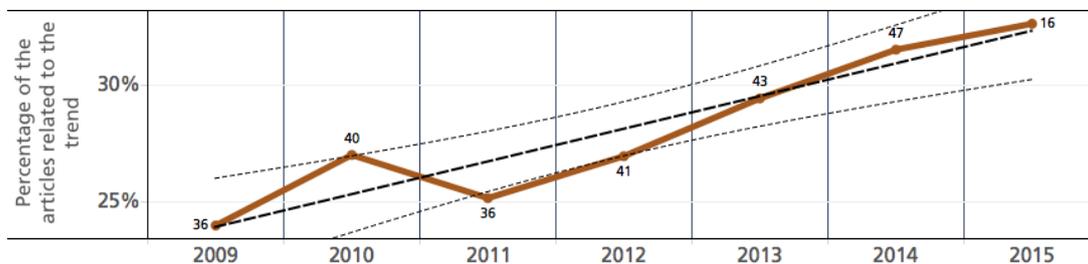


Figure 2. Percentage of articles tagged with External Relations. Label represents number of articles for each tag. Trends and confidence bands are shown.

Articles related to inter-organizational issues were tagged with External Relations. These issues include inter-organizational collaboration, supplier integration, supplier involvement, networks, buyer-supplier relationships, customer integration, customer relationships, and governmental involvement.

A positive trend has been identified when it comes to External Relations. The percentage of articles tagged with External Relations increases from around 24 % in 2009 to around 33% in 2015. The results are presented in Figure 2.

Most of the articles tagged with External Relations were focused on buyer-supplier relationships or had a holistic approach of how to manage external relations in the entire value chain.

5.1.2 Decreased Focus on Operational Tools

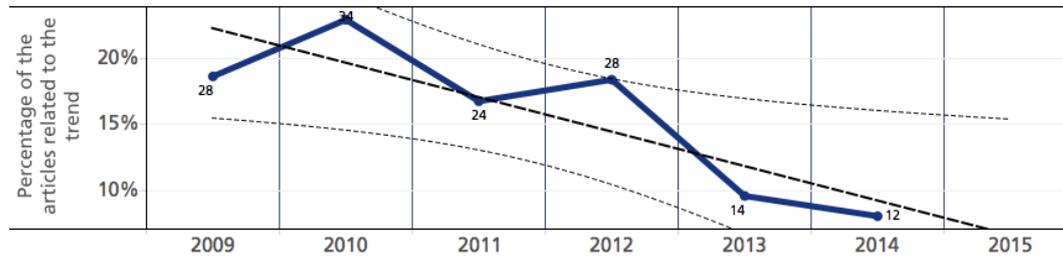


Figure 3. Percentage of articles tagged with Operational Tools. Label represents number of articles for each tag. Trends and confidence bands are shown. Data point for 2015 is excluded because of too few articles.

Articles related to operational issues including inventory management, transportation, distribution, planning and forecasting, were tagged with Operational Tools.

A negative trend can be seen in the coverage of Operational Tools. The percentage of articles tagged with Operational Tools decreases from around 20 % in 2009 to around 10 % in 2014. The results are presented in Figure 3.

Within Operational Tools, a strong focus can be seen in issues of transportation, inventory, and demand planning. The percentage of articles regarding transportation issues is decreasing the most. The percentage of articles with a demand planning focus is also decreasing. However, inventory questions are stable over the years. Articles about Operational Tools with a sustainability aspect are stable over the years and does not show any development in either direction. Information management as well as humanitarian logistics are areas within the tag Operational Tools that show a strong decreasing trend.

5.1.3 Increased Focus on Sustainability

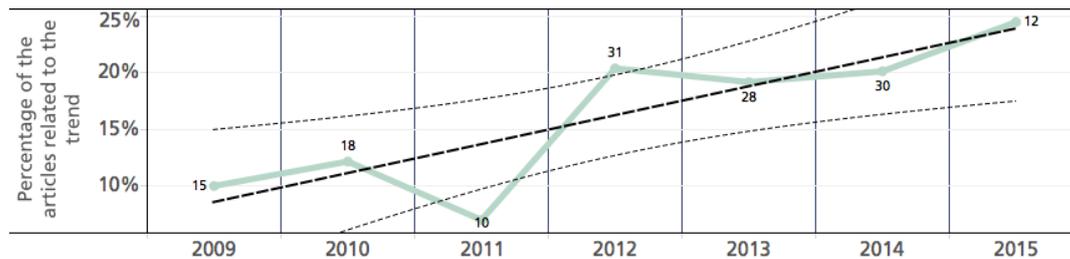


Figure 4. Percentage of articles tagged with Sustainability. Label represents number of articles for each tag. Trends and confidence bands are shown.

All articles related to economic, social, and environmental sustainability as well as corporate social responsibility were classified with the tag Sustainability.

A strong positive trend can be seen with regard to sustainability. The percentage of articles tagged with Sustainability increases from around 10 % in 2009 to around 25 % in 2015. The results are presented in Figure 4.

Articles tagged with Sustainability have a strong and stable focus on sustainability within purchasing. Further, the percentage of articles touching both sustainability and supply chain

integration is increasing the most. Only a very small group of articles concerned sustainable transports.

5.2 Industry

The responses from the industry representatives were analyzed and in the following section a list of trends is presented. A trend was found by comparing the themes of the answers and if several respondents brought up an area or theme as more important in the future, it was considered a trend.

5.2.1 Increased Focus on Risk Management

The responses from the respondents in this investigation unit indicate that there is a strong focus in the industry on the handling of risks and that this trend will continue in the future. There is a wish to improve contingency plans and make supply chains more flexible in the future. Loftorp, Pålsson, and the anonymous responder in the food industry, mention an increasing importance of risk management. Axis have risk management activities in place and their supply chain is now more agile than before, according to Loftorp. The anonymous responder also mentions that they have a contingency plan but that it is only covering the most critical elements of their business.

5.2.2 Increased Focus on Sustainability

The answers from the respondents within the unit Industry indicate that sustainable processes and activities are only done in the industry if the costs are not increased. Both Loftorp and Pålsson point out that there is an increased focus on sustainability issues. Pålsson stresses that regulations and legislation are complied with, but cost and reliability are still determinant factors when it comes to choosing means of transportation. Loftorp gives examples of sustainability work done at Axis, like developing packaging that enables increased fill rate in load carries. Sustainability is important for both respondents and to comply with regulations and laws is crucial in the industry.

5.3 Experts

The responses from the investigation unit Experts were analyzed and in the following section, a list of trends is presented. The trends were found in a similar way as trends in the investigation unit Industry.

5.3.1 Future Scarcity of Talents

The respondents within the investigation unit Experts all agree that the role of supply chain management is changing. All respondents stresses a trend of supply chain management rising in organizations' hierarchies and gaining a much more strategic focus than before. More logistics and purchasing managers are recruited to boards of directors. Abrahamsson also mentions a trend of further integrating purchasing and logistics under the banner of supply chain management.

According to the responses, this new role of supply chain management demands new competences. In particular strategic experience and higher education. To be able to further integrate traditionally isolated departments, experience from different functions is also required.

Westman and Hill point out the purchasing departments' increased focus on new areas. Purchasing departments that previously only focused on the procurement of raw material and products for the core activity, are now looking into indirect material, services, and in-house support with internal purchasing between departments. These new areas also calls for competences that were not needed before.

5.3.2 Globalization

The respondents in the investigation unit Experts indicate that globalization is a trend. Abrahamsson says that "if there is something affecting the industry today, it is definitely the globalization." Further, globalization will have spill-over effects on how businesses work in the future, for example with risk management and the handling of new competitors. Abrahamsson mentions an increased pressure of new competitors on the home markets of businesses. Jonsson mentions that globalization is an on-going development that will continue in the future. The global environment that companies are operating in demands more focus on risk mitigation, according to Westman.

5.3.3 Increased Focus on Risk Management

All experts mention that there is an increased interest in risk management in the industry. Hill and Jonsson both mention recent natural disasters and the last financial crisis as a starting point for an increased focus on risk management. Westman explains that the global environment they are working in demands a focus on mitigating risks and that risk management will become more important in the future. However, it varies a lot between organizations if they have any contingency plans or risk assessments.

It is also indicated by the experts that it is not the prediction of risks that is most important, rather than having a flexible supply chain. Jonsson says that "organizations are now realizing that you need to have flexibility and make risk assessments. Especially when you are acting on a global market."

5.3.4 Increased Focus on Sustainability

As indicated by the responses, sustainability matters are getting an increased focus. Further, some companies think of it as a way of gaining competitive advantage. Jonsson mentions environmental organizations as important influencers for companies. According to Jonsson, environmental issues have a strong focus in logistics and especially in transportation. CSR and social factors of sustainability are mentioned by Westman as ways of gaining competitive advantage.

5.3.5 Increased Need for Operational Tools

Many experts state that the industry, in general, has a slow adoption process when it comes to operational tools. The areas where development is most needed are warehouse management

and sales and operations planning. The experts are convinced there will be more focus in the future on implementing known models and theories. The study PLAN 2005 by Jonsson and Mattson (2005) shows significant potential in working with operational issues, and according to the respondents, more and more companies identify the possible cost-savings.

The operational tools used are often IT solutions. The responses are indicating that most companies have IT systems in place and that there is a trend in integrating these further. Large quantities of data will need to be handled in the future and this will demand more complex systems. Johnsson, Abrahamsson, and Westman mention technology related to internet of things or big data as interesting tools to improve operational functions. The respondents also indicate how the ability to get more information will change purchasing functions, e-commerce platforms and give better insights into markets and flow of goods.

5.3.6 Increased Servicification of Products

Both Hill and Westman are stressing a trend of restructuring products into services. Leasing plans and subscriptions will be more common payment schemes. Westman explains that this will mean new tasks for the purchasing function, where purchasing will be supporting other functions and also more involved in the contact with service providers. A central part in procurement will be the service level agreement, which the supplier's performance will be measured against.

5.3.7 More Distinct Supplier Segmentation

All respondents in the investigation unit Experts bring up the relationship with suppliers. Many mention closer collaborations more focused on supplier development. Abrahamson stresses a trend of supplier involvement and to include the suppliers in the value proposition. At the same time, some respondents are stressing a trend of more automated procurement for some products. Westman mentions that "open, virtual markets with full competition will be more common for commodity items."

These diverging tendencies can be interpreted as a trend of increased segmentation of suppliers, where the segments get more well defined strategies. There will be close partnerships to some suppliers while transactional relationships will exist with suppliers in other segments, active on virtual commodity markets. This trend of polarizing the supplier segmentation is mentioned specifically by Hill, Westman, and Abrahamsson.

5.4 Comparison of Analyses

The following sections present a comparison between the identified trends of each investigation unit. As mentioned in 3.1, changes must be considered together to be able to understand the future. Further, the theory about trend evaluation says that a trend is more likely to have a long-term impact if it is supported by trends in other areas. Hence, the comparison is made to discuss which trends support each other.

5.4.1 Increased Focus on External Relations

According to the content analysis of previous supply chain management research, more studies are now conducted on the relationship to external actors such as suppliers, customers, and governments. This trend was not identified in the other two investigation units.

It was possible to detect a focus on buyer-supplier relationships in the content analysis. The focus on relationships with suppliers was also possible to detect in both of the units Experts and Industry. However, the experts and industry representatives were mainly discussing topics related to a more distinct supplier segmentation. Thus, the trend of a more distinct supplier segmentation will henceforth include the trend increased focus on external relations. Consequently, the trend increased focus on external relations will not be considered on its own.

5.4.2 More Distinct Supplier Segmentation

The trend of more distinct supplier segmentation could be clearly identified in the responses from the investigation unit Experts. The trend could also be seen in the investigation unit Industry, although not as clearly.

As discussed above, the trend of more distinct supplier segmentation is also supported by the results from the content analysis regarding External Relations.

5.4.3 Increased Servicification of Products

The trend of converting products into services is identified among the experts. The trend can also be seen within the investigation unit Industry, although not as clearly.

Increased servicification of products is, to some extent, supported by an increased focus on external relations, as increasing servicification of products demands a development of the relations to customers and suppliers.

5.4.4 Globalization

According to the experts, globalization is a strong trend. The investigation units Supply Chain Management Research and Industry did not show the same result.

5.4.5 Increased Need for Operational Tools

Regarding operational tools, the analyses of the three units showed different results. There is a decreasing interest in research about operational issues. However, the experts are convinced that in the future there will be more focus on implementing more complex systems and theories in the industry. There were no signs of this as a trend within the unit Industry, although, during these interviews a need of better IT systems was clearly stated.

5.4.6 Increased Focus on Risk Management

Representatives from the industry as well as all experts think that risk management will become more important in the future. Experts are indicating that risk management is becoming more important as companies are getting bigger and are, to a greater extent,

operating in global environments. The industry also mentions a wish to improve contingency plans and, together with experts, talk about a wish for more flexible supply chains to handle risks.

5.4.7 Future Scarcity of Talents

In the investigation unit Experts, all respondents indicated that the supply chain management function is rising in organizational structures and is gaining a strategic focus. This will in turn change the competence need in companies and the experts are indicating that there will be a lack of experienced people with the right education.

5.4.8 Increased Focus on Sustainability

Increased focus on sustainability was indicated as a trend in all three investigation units. However, the three groups had slightly different focuses within the area. In research, most articles mentioning sustainability were also concerning purchasing or supply chain integration. In the industry, sustainability work is done if costs are not increased. The respondents in the industry also stress the need to achieve minimum levels of sustainability and get certifications, to meet customer requirements. The experts rather saw sustainability activities as ways of gaining competitive advantage.

5.5 Implications for Consultancy Firms

In the previous chapter, seven trends were established as likely to appear in the industry. All of the trends have relevance for the consultancy sector. Examples of possible consultancy services related to each trend can be seen in Figure 5. These are services or areas found in the pre-study or mentioned in the interviews.



Figure 5. Examples of services related to the seven trends

To determine which, if any, of the seven trends that are not covered by supply chain consultancy firms a gap analysis was made of ÅF's value proposition compared to the trends. The four sources of information used, were the webpages with services in logistics from both the division Industry (ÅF 2015b) and the division Technology (ÅF 2015c). The webpage from

the division Technology with services in sourcing and procurement (ÅF 2015d) was also used, as well as the folder from the division Technology with services in supply chain management (ÅF 2015e). The goal of the gap analysis is to identify future trends that are not covered by the four analyzed marketing channels. However, the analysis does not map the number of services that are not connected to any trend. Since the industry may have some needs for long periods of time, it is possible for areas to be profitable for ÅF but not connected to any trend.

Figure 6 is a chart showing the percentage of the advertised services in each source, connected to the trends. For example, of the services advertised on the Industry Divisions webpage for logistics, 17 % were connected to the trend Increased Focus on Risk Management.

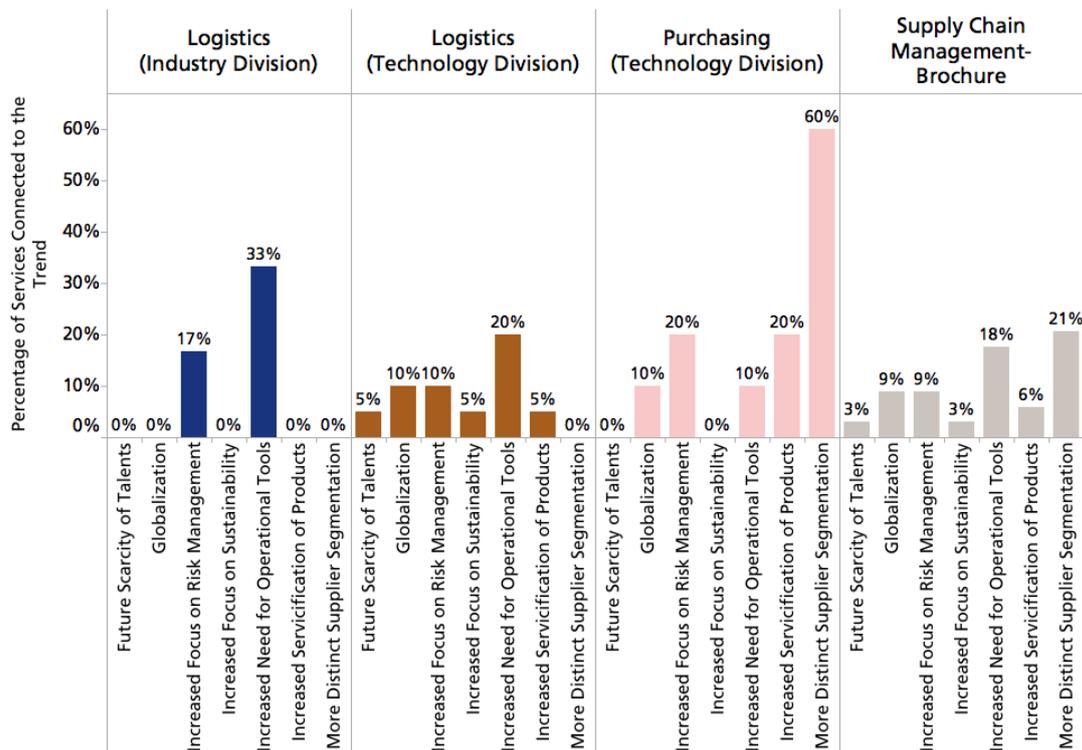


Figure 6. Percentages of the advertised services connected to the five trends for each of the four sources

A level of 10 % was decided, above which the trend is considered covered in a marketing channel. The brochure, for example, which contains 34 bullet points of services, should have at least four services connected to a trend to have that trend considered covered. From this method of evaluation, Table 5 was produced. Each trend has, for each source, been classified as either not relevant for the source, having sufficient focus, or having a need for more focus.

Trend \ Source	Logistics- web page	Logistics-web page	Purchasing- web page	Supply Chain Management Brochure
	<i>Industry Division</i>	<i>Technology Division</i>	<i>Technology Division</i>	<i>Technology Division</i>
Future Scarcity of Talents	More focus needed	More focus needed	More focus needed	More focus needed
Globalization	More focus needed	Sufficient focus	Sufficient focus	More focus needed
Increased Focus on Risk Management	Sufficient focus	Sufficient focus	Sufficient focus	More focus needed
Increased Focus on Sustainability	More focus needed	More focus needed	More focus needed	More focus needed
Increased Need for Operational Tools	Sufficient focus	Sufficient focus	Sufficient focus	Sufficient focus
Increased Servicification of Products	Not relevant for source	Not relevant for source	Sufficient focus	More focus needed
More Distinct Supplier Segmentation	Not relevant for source	Not relevant for source	Sufficient focus	Sufficient focus

Table 5. Evaluation of trends and sources

A number of conclusions can be drawn from Table 5:

- The four sources differ much in what is presented. However, some of the differences are deliberate, and a result of focusing, for example, one marketing channel on purchasing and another one on logistics.
- There are few services presented in the analyzed channels that are related to the future scarcity of talent. In one way, ÅF can be seen as addressing this need already in its core business; the main service is to provide the customers with talents. However, it is still possible for a consultancy firm to develop specific services that will satisfy the need for talents. Examples of such services are education or mentoring programs.
- Sustainability is another area that is not covered sufficiently in the analyzed marketing channels. In all four sources, less than 10 % of the specified services are relatable to sustainability.
- Servicification, globalization, and risk management are also areas that would benefit from having additional services connected to them.
- Services connected to supplier segmentation and operational tools appear in all relevant marketing channels and are considered to be sufficiently covered.
- The trends identified in this thesis are considered likely to appear in the industry in five to ten years. Therefore, these may not benefit from being marketed just yet, since a need in the industry for these services may not yet have emerged.

6 Conclusion

In this chapter, the conclusions from this thesis are summarized.

The research question for this thesis is presented again below:

What supply chain management trends and future challenges are likely to appear in the industry, and what implications do these have on the consultancy sector?

The trends that are likely to appear in the industry are the seven trends identified in chapter 5. These are:

Future Scarcity of Talents: The changing role of supply chain management in organizations demands new competences. In particular, strategic experience and higher education are needed. To be able to integrate traditionally isolated departments, experience from different functions is also required in the future.

Globalization: Businesses are moving into new markets and operate in an increasingly international environment. Globalization is an on-going development that will continue in the future and will have spill-over effects on companies' activities. For example, risk management will be more important and there will be an increased pressure of new competitors on the home markets of businesses.

Increased Focus on Risk Management: The global environment that companies are working in demands an increased focus on mitigating risks, such as natural disasters or financial crises. Risk management will also include configuration of more flexible supply chains.

Increased Focus on Sustainability: There will be a continued focus on sustainability in the future. In the industry, sustainable processes and activities are done if costs are not increased. However, companies are starting to recognize sustainable processes as a way of gaining competitive advantage.

Increased Need for Operational Tools: Most companies have IT systems in place and integrating these further will become more common in the future. The industry is still behind in implementing known theories. Large quantities of data will need to be handled in the future and this will demand more complex systems. Internet of things or big data will improve operational functions and change purchasing functions.

Increased Servicification of Products: There is a trend of restructuring products into services. Leasing plans and subscriptions will be more common payment schemes. This will mean more complex relationships with service providers and customers.

More Distinct Supplier Segmentation: In the future, relationships with suppliers will become more differentiated and polarized. There will be closer partnerships with some suppliers, while transactional relationships will exist with suppliers in other segments, active on virtual commodity markets.

All of the seven trends are likely to affect the consultancy sector and it is therefore important to offer services within these areas. To investigate how this is fulfilled today, a comparison was made between the trends and the value proposition of one consultancy firm, ÅF. ÅF was used as a representative example of the consulting sector and the implications for ÅF are expected

to be representative for similar companies. An analysis of four of ÅF's marketing channels showed that there are discrepancies between the trends and the presented services. The services which have the most need to be further promoted in the future, are services connected to the future scarcity of talents and the increased focus on sustainability. Servicification, globalization and risk management are also areas that would benefit from having services connected to them. The trends increased need of operational tools and more distinct supplier segmentation are well met in ÅF's value proposition.

The academic purpose of this thesis was to contribute to research on evolving trends in supply chain management. The list of the seven identified trends is a current exploration of coming challenges. A further outcome of this thesis is the strengthening of the important bond between academia and the consultancy sector. One respondent in academia commented on the importance of this collaboration, during an interview.

“It is easier for academia to influence organizations through collaboration with consultancy firms.”

7 Future Research

In this chapter, suggestions are made on studies that would supplement this thesis. The suggested studies would cover areas that are not analyzed in this thesis or use other methods that might further confirm the results of this study.

Three investigation units were used in this study. This was done to capture differences in trend predictions between the units and to capture several perspectives. This method also gives the thesis a unique angle and an academic novelty. However, as the results from each unit were also analyzed separately this could lead to the discarding of some topics that should have been considered trends. For example, if a topic was only mentioned by one respondent in one of the units, it was perhaps overlooked. Although, if the results from all of the respondents were analyzed together, it might have been possible to detect a pattern and therefore the topic would have been recognized as a trend. Hence, it could be of academic value to make a similar study where the three units are investigated as one group.

The focus of this thesis was to investigate trends and challenges for the coming five to ten years. It would be valuable to also look at previous trends and look at what topics have been considered as trends for a long time. It is possible that some topics have been discussed for many years, but have not had any impact on the industry. These topics might have lower probability of affecting the industry in the future.

Regarding the discussion about implications for consultancy firms, the analysis is not a complete analysis of ÅF's value proposition. It is only the services presented on ÅF's web page and in a brochure from the supply chain management department that are considered in this thesis. It could be of value to look into what services are offered through other channels, such as interviews or sales data, to give the analysis further depth.

Other suggestions for future research are to investigate the applicability of the obtained results by making similar gap analyses for other consultancy firms. This would further ensure the accuracy of the results. Moreover, similar investigations of trend predictions could be done on other industries than the manufacturing industry.

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Appendices

Appendix I

The lists of services presented in the four sources, that were used in the gap analysis.

Supply Chain Management Brochure (Technology Division)

Logistics: Green Supply Chain Management
Logistics: International Distribution
Logistics: Supply Chain Planning
Logistics: Supply Flow Simulation
Logistics: Transport Planning & Agreements
Logistics: Warehouse Management
Processes: Continuous Improvement Projects
Processes: Key Performance Indicators
Processes: Process Development
Processes: Product & Services Development
Processes: Projects
Processes: Risk Management
Production: Flow Simulation
Production: Manufacturing and Supply Flow Optimization
Production: Plant Supply Chain Design
Production: Production Facility Movement
Sourcing and Procurement: Audits & Assessments
Sourcing and Procurement: Contract Management
Sourcing and Procurement: Law On Public Procurement
Sourcing and Procurement: Order Management
Sourcing and Procurement: Product & Category Management
Sourcing and Procurement: Product Life Cycle Sourcing and Supply Management
Sourcing and Procurement: Quality Management
Sourcing and Procurement: Supplier Management and Development
Strategic and Operational: Cross Functional Team
Strategic and Operational: Investment Projects
Strategic and Operational: Lean Management
Strategic and Operational: Sales and Operations Planning
Strategic and Operational: Spare Part Management
Strategic and Operational: Support Function
Strategic and Operational: Trouble-Shooting
Strategic and Operational: Value Analysis/Value Engineering
Strategic and Operational: Value Stream Mapping
Strategic and Operational: Workshop & Training

Logistics-web page (Technology Division)

Processes: Risk Management
Processes: Projects
Processes: Product & Services Development
Processes: Process Development
Processes: Key Performance Indicators
Processes: Continuous Improvement Projects

Process optimization: New Plant Design
Process optimization: Manufacturing Flow Optimization
Process optimization: Flow Simulation
Operations & Strategy: Workshop & Training
Operations & Strategy: Trouble-Shooting
Operations & Strategy: Support Function
Operations & Strategy: Lean Management
Operations & Strategy: Investment Projects
Operations & Strategy: Cross Functional Team
Logistics: Warehouse Management
Logistics: Transport Planning & Agreements
Logistics: Supply Flow Simulation
Logistics: International Distribution
Logistics: Green Supply Chain Management

Purchasing (Industry Division)

Agreements & Order
Audits & Assessments
Continuous Improvement Projects
Key Performance Indicators
Law On Public Procurement
Process Development
Product & Category Management
Quality Management
Risk Management
Supplier Management and Development

Logistics web page (Industry Division)

Static or dynamic flow analyzes
Purchasing of equipment and information systems
Project management of pre studies and implementations
Production assessment and planning
Layout design
3D visualization

Appendix II

List of the tags used in the content analysis. The definition of each tag is presented in the right column.

Tag	Definition
Customer	Articles related to customer value, customer integration, customer relationships and customer interactions.
E-commerce	Articles related to electronic commerce, i.e. trade of products or services by using computer networks like the internet.
External Relations	Articles related to inter-organizational issues like collaboration, supplier integration, supplier involvement, networks, buyer-supplier relationships, customer integration, customer relationships and governmental involvement.
Finance	Articles related to financial performance.
Global	Articles related to international and global issues, like globalization or global trade.
Information Management	Articles related to information sharing inside and outside organizations and information systems.
Innovation	Articles related to innovation in businesses, supply chains or processes.
Internal Organization	Articles related to intra-organizational issues, including human resources, social capital, organizational structure and business strategy.
Location Management	Articles related to location strategies like offshoring and near-shoring.
Negotiation	Articles related to negotiation issues.
Operational Tools	Articles related to operational issues like inventory management, transportation, distribution, planning and forecasting.
Outsourcing	Articles related to outsourcing.
Performance Measurement	Articles related to key performance indicators or other measurements of business performance.
Process Reengineering	Articles related to process improvement concepts like lean and six sigma.
Public Procurement	Articles related to public procurement issues.
Reverse Logistics	Articles related to returns handling and reuse of products and material.
Risk Management	Articles related to supply chain risk management, including disruptions in the supply chain and supplier risks.
Routing	Articles related to routing optimization or solving other routing problems.
Sourcing Activities	Articles related to sourcing activities, like vendor-rating, supplier selection, bidding processes and pricing.
Sustainability	Articles related to economic, social and environmental sustainability as well as corporate social responsibility.
Technology	Articles related to technological issues.

Appendix III

The interview guide used for investigation unit Industry. Here are the main discussion points presented. Questions written in italic are sub-questions that were not necessarily asked. These questions only acted as facilitators of the conversation if the respondent only discussed the points very briefly.

- What shifts or developments have you seen in logistics, purchasing, and/or supply chain management during the last 10 to 15 years? What shifts have you seen specifically in your company?
- In your opinion, how well is your company prepared for sudden events or changes, like natural disasters, changes in legislations, and technological developments? How well prepared is the industry generally?
- Which actors are influencing your company's supply chain management strategies? Actors could be academia, legislators, competitors or other stakeholders.
- What is ahead of you in logistics, purchasing, and/or supply chain management the next five to ten years? What trends and developments can you see?
 - *Technical developments?*
 - *Geographical tendencies?*
 - *Changes in legislation?*
- What role have the logistics, purchasing, and/or supply chain management functions had in your company over the years?
 - *Representation in boards of directors?*
 - *Responsibilities added to the function?*

Appendix IV

The interview guide used for investigation unit Experts. Here are the main discussion points presented. Questions written in italic are sub-questions that were not necessarily asked. These questions only acted as facilitators of the conversation if the respondent only discussed the points very briefly.

- What shifts or developments have you seen in logistics, purchasing, and/or supply chain management during the last 10 to 15 years?
- In your opinion, how well is the industry prepared for sudden events or changes, like natural disasters, changes in legislations, and technological developments?
- Which actors are influencing organizations' supply chain management strategies?
Actors could be academia, legislators, competitors or other stakeholders.
- What is ahead in logistics, purchasing, and/or supply chain management the next five to ten years? What trends and developments can you see?
 - *Technical developments?*
 - *Geographical tendencies?*
 - *Changes in legislation?*
- What role have the logistics, purchasing, and/or supply chain management functions had in the industry over the years?
 - *Representation in boards of directors?*
 - *Responsibilities added to the function?*

Appendix V

The following tables present the results from the content analysis in detail. The first table shows the number of articles with each tag, each year. In the second table, the statistical information about the trend lines for each tag is presented.

Tag	2009	2010	2011	2012	2013	2014	2015
Customer	12		11	14			
External Relations	36	40	36	41	43	47	16
Global	15				11	17	
Information Management		19				12	
Innovation					16		
Internal Organization	21	15	19	23	19	30	
Operational Tools	28	34	24	28	14	12	
Outsourcing	10						
Performance Measurement					13		
Risk Management	11		15		20	16	
Sourcing Process	16	18	18	19	19	14	
Sustainability	15	18	10	31	28	30	12
Technology	13	15	11				

Number of articles with tag each year

Keyword	p-value	DF	Value	StdErr	t-value	p-value
Customer	0.577161	1	0.0032389	0.0041373	0.782848	0.577161
			-6.42927	8.31871	-0.772869	0.581119
External Relations	0.001574	5	0.0140249	0.0022561	6.21633	0.0015746
			-27.9368	4.53934	-6.15438	0.0016473
Global	0.978341	1	0.0002522	0.0074092	0.0340348	0.978341
			-0.410888	14.9073	-0.0275628	0.982457
Information Management	Too few data points to find trend line					
Innovation	Too few data points to find trend line					
Internal Organization	0.150249	4	0.0117576	0.0066174	1.77677	0.150249
			-23.5076	13.311	-1.76604	0.152141
Operational Tools	0.032323	4	-0.0261654	0.0081294	-3.21861	0.0323233
			52.7891	16.3523	3.22824	0.0320291
Outsourcing	Too few data points to find trend line					
Performance Measurement	Too few data points to find trend line					
Risk Management	0.234226	2	0.0089834	0.0053347	1.68396	0.234226
			-17.9668	10.7321	-1.67411	0.236087
Sourcing Process	0.778403	4	-0.0011104	0.0036888	-0.301013	0.778403
			2.35071	7.41992	0.31681	0.767234
Sustainability	0.014089	5	0.0255709	0.0069226	3.69382	0.0140896
			-51.2868	13.9283	-3.68219	0.0142611
Technology	0.740676	1	-0.0048718	0.0112909	-0.431478	0.740676
			9.88062	22.6948	0.43537	0.738591

Information about generated trend lines