Chapter 5: Data analysis using NVivo

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5. Data analysis using NVivo

This section begins by describing the use of the NVivo toolkit (QSR International) for data analysis. It details the data analysis procedure in four different stages, including descriptive analysis, drawing conclusions and developing theories. A picture for data analysis was developed using resources such as in-depth interviews, voice recordings, transcriptions, pictures, memos and research articles. The data analysis procedures followed ranged from developing resources, to coding by nodes and running queries to produce conclusions enabling the verification and development of theories. This was carried out at three levels: intra-case analysis, within-industry cross-case analysis and analysis across all cases. Graphs and charts developed by running code matrix queries were transferred directly to Microsoft Word. Some classification sheets were developed using Microsoft Excel, and some were developed using NVivo. A new feature, N-Capture, was useful for storing materials such as web pages and research articles from an Endnote library directly in NVivo.

There is a growing trend for researchers to use NVivo as a data analysis tool to achieve accuracy, generalisation to other contexts and complexity (O'Neill, 2012). The computer-based qualitative software (CQDAS) in a popular package, NUD*IST, was first introduced in the mid-1980s (Ozkan, 2004). The updated version of NUD*IST is used most often in qualitative research; however, NVivo has now also introduced quantitative tools for data analysis, such as Survey Monkey (QSR International). NVivo enables researchers to create rich data with more authenticity. It also facilitates the management of a huge amount of data in one place. With the help of NVivo, researchers are able to explore qualitative data using different approaches, such as a

grounded theory approach, constant comparative method and case study method (Ozkan, 2004).

NVivo as a qualitative analysis tool can also be used with a literature review(Di Gregorio, 2000). It allows researchers to deal with large amounts of data with more accuracy and easy accessibility to available resources. Handling data with NVivo add rigour to the process (Ozkan, 2004). NVivo covers three major aspects of the research process: analysis of data, theoretical development and presentation of findings (Hutchison et al., 2010).Previous researchers have used NVivo in qualitative research using the case study method (Ozkan, 2004, O'Neill, 2012). There is clear evidence that NVivo can also be used for the multiple case study method.

The research for the current study encompasses fourteen case studies from four different industries. Data were gathered in a variety of ways. For example, in-depth interviews were used to gather primary data, while secondary data were collected from the internet, from the sample firms and from interviewees in the form of pictures, documents, pdf files, etc. Notes were also taken during the interviews. The interviews were recorded using a Sony voice recorder and were later transferred and transcribed in NVivo. The interviews were conducted using the local language, Urdu, and were converted into English during the transcription process. A theoretical sampling method was considered for data collection. Analysis of pilot cases enabled an iterative process whereby early data collection and analysis informed subsequent sampling and analysis procedures. This process enabled a back-and-forth approach and necessitated concurrent involvement in data collection and data analysis (Hutchison et al., 2010). The questions in the interview guide were modified following the pilot case analysis Using the iterative process approach. The pharmaceutical firms were excluded from the sample as they have purely standardised, high-tech products compared with the

other sample firms from low-tech industries with a diverse range of products offered in international markets.

Gradually moving from lower-order to higher-order themes, NVivo enabled constant comparisons to be made. Making systematic comparisons at every stage of the analysis (e.g. within and between cases, and over time) helped to establish analytical distinctions by identifying variations in patterns found in the data (Hutchison et al., 2010:284). The data analysis process continued until theoretical saturation, or theoretical density was reached.

Stages of data analysis

It is essential, that the techniques are presented in a logical manner to enable the reader to follow the analytical procedure (Hutchison et al., 2010) . Various procedures have been proposed for data analysis using QSR NVivo. For this research, O'Neill's (2012) toolkit was found to be useful, and therefore a similar data analysis procedure is followed throughout the chapter.

The stages followed in the data analysis using the NVivo toolkit (O'Neill, 2012) are shown in Table 5.1 .

Table 5. 1: Stages of data analysis in this research study

Stages of NVivo	Processes involved in each stage
Stage 1: Descriptive	Project details and research design
	Sources
	Attributes
	Values
	Classifications
Stage 2: Topic	Identifying obvious topics
	Creating initial nodes
Stage 3: Analytic	Merging nodes into hierarchies

	Data sets
	Models and relationships
	Using queries
	Running queries
	Matrix coding query
	Cross-case query analysis
Stage 4: Drawing conclusions	Verification
	Developing theories

Source: Adapted from Edhlund (2011:13)

5.1 Stage 1: Descriptive

The first stage of data analysis with NVivo is the design and development of a database for the research study. The sources in NVivo contain sub-sections for internals, memos and externals (O'Neill, 2013).

In-depth interviews were conducted with owner-managers who predominantly influence the marketing decisions of companies in each industry (sports goods, surgical goods, textiles and food). The interviews for primary cases were conducted with owner-managers, marketing managers, export managers and directors of marketing, as well as actors in the networks of these sample SMEs from Pakistan. The interviews with owner-managers and directors of focal firms lasted between 35 minutes and one hour, and those with actors in the network, such as suppliers and distributors, lasted between 10 and 15 minutes.

In the interview process, a semi-structured, open-ended Interview guide was initially developed from the literature, and then, following the pilot cases, this was modified and finalised with the consent of the research supervisor. Company names are used with the prior permission and consent of the SME owners.

Various sources of data were used for SMEs from Pakistan in industrial networks. These included the Economic Survey of Pakistan 2009-10, the Small and Medium Enterprises Development Authority (SMEDA) 2007, the Census of Establishments (Government of Pakistan, 1998), and a Survey of Small and Household Manufacturing Industries (SHMI) conducted by the Federal Bureau of Statistics, 2005-06. Major within-firm sources used for the purpose of collecting primary data included in-depth interviews with owner-managers.

5.1.1 Sources

This section in NVivo consists of internals, memos and externals (O'Neill, 2013).

5.1.1.1 Internals

Internals are primary research details that are imported or created in NVivo, such as documents, pdfs, audio, video, pictures and data sets (O'Neill, 2013). The internals for this research comprised audio files of interviews, transcriptions and twenty interviews with participants as primary data, research articles and any additional information such as images related to this study, and literature from an established Endnote bibliography program. Table 4.8 lists the sample firms with participant demographics.

5.1.1.2 Memos

Memos are an important tool for analysis of qualitative data. According to Gibbs (2002), memos are documents containing commentary on primary data or nodes of a project. They are used to keep records of activities, decisions and thoughts on ongoing analysis, changes in the project and links between items. In this research study, memos were also used to record comparisons and conclusions extracted from primary data analysis.

Table 5. 2 Case selection and data collection for primary cases for primary data collection

Unit of Analysis (Industry)	Companies	1st Interview	2nd Interview	3rd Interview from Network	**Secondary Data Sources**
Food Manufacturing SMEs	FM1	Owner-manager	Marketing Manager	Supplier	Company website Company profile documents Memos Other documents
	FM2	Marketing manager	Plant Manager	Supplier	
Leather and Textile Manufacturing SMEs	LM3	Owner-manager	Marketing Manager	Supplier	Leather textile associations Export promotion bureau Pakistan Leather Garments Manufacturers Association International Textile Manufacturers Federation
	LM4	Export manager	--	--	
	LM5	Merchandiser	Export Manager	Supplier	
	LM6	Owner-manager	--	Cargo Agent	
Sports Goods Manufacturing SMEs	SM7	Owner-manager	--	Supplier	Pakistan Sports Goods Manufacturers and Exporters Association All Pakistan Textile Manufacturers Association www.alibaba.com
	SM8	Owner-manager /CEO	--	Cargo Agent	
	SM9	Owner-manager	Export Manager	--	
	SM10	Owner-manager	--	--	
Surgical Goods Manufacturing SMEs	SuM11	Director of Marketing	Finance Manager	Supplier/ Vendor	The Surgical Instrument Manufacturers Association of Pakistan Export Promotion Bureau www.sialkotexport.com
	SuM12	Director of Marketing	Export Manager	Vendor/ Cargo Agent	
	SuM13	Owner-manager	Export Manager	--	
	SuM14	Owner-manager	Merchandizer	--	
Total	14	14	10	9	

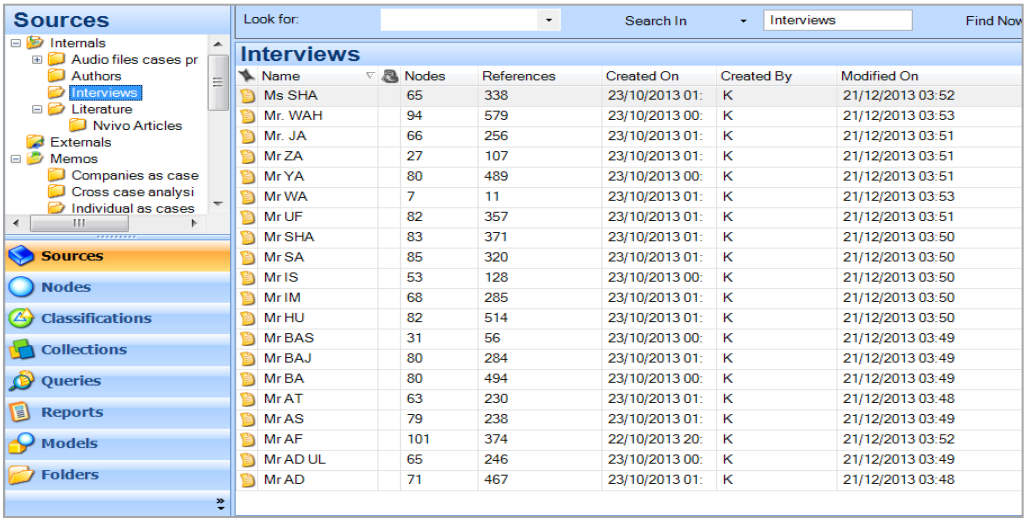


Figure 5. 1 Sample of internals for interviews transcribed and coded

These memos were linked with nodes or sources to create a summary of these nodes and sources. They were also used to record observations.

Figure 5. 2: Samples of memos from this research study

Various types of memos are commonly used by researchers, such as research diaries, reflective notes, and conceptual, emergent questions-related, explanatory, literature-related, technical or model-describing memos (Hutchison et al., 2010). NVivo memos in the sources section of the program allow researchers to record any ideas developed during the analysis process, replacing footnotes and annotations. Memos were created

for all fourteen firms and all interviewees. Memos related to the findings from the data analysis were created for all cases.

5.1.1.3 Externals

Externals are proxies representing research material that cannot be imported into NVivo. They usually comprise documents such as diaries, early research journals, and documents too large to be imported or where access to the whole document is not required (Bazeley and Jackson, 2013). Externals usually create a record within the NVivo program indicating a link to a source that needs to be kept in NVivo and providing an opportunity to the user to code, annotate and link a number of references for that source (Bazeley and Jackson, 20v13). In this research study, externals were created for transcribed interviews.

5.1.2 Attributes, values and classifications

A case is a core structural element in NVivo (Bazeley and Jackson, 2013:52). In this research, the cases comprised both individuals and organisations. Each individual and each organisation or sample firm was considered to be a separate case. In NVivo, cases are managed by creating case nodes, with each case node acting as a ‘container’ that holds all types of data for each case, regardless of source.

Attributes

According to the Edhlund (2011:123), the characteristics or properties of a source item or node will have an impact when analysing data. Attributes such as age, group and location, and attribute values such as 30s, 40s, 50s or rural/urban are related to either individual or organisational cases.

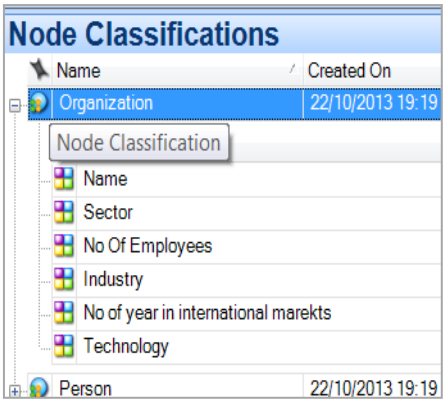


Figure 5.3: Attributes used for organizational cases in this research

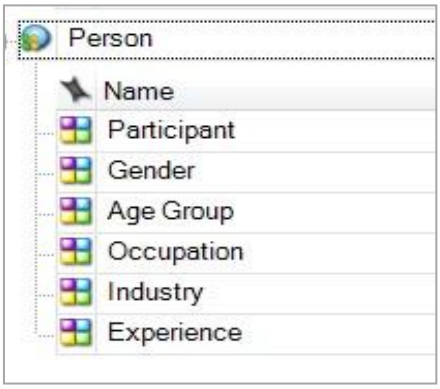


Figure 5.4: Attributes used for individual cases in this research

Values

Each attribute listed above has a value attached, as shown in Tables 5.2 and 5.3.

Table 5. 3: Attributes and values for organisational cases

Attribute	Values
Name	Not applicable, Unassigned, FM1, FM2, LM3, LM4, LM5, LM6, SM7, SM8, SM9, SM10, SuM11, SuM12, SuM13, SuM14
Sector	Not applicable, Unassigned, Public Sector, Private Sector, Semi-government Sector
Number of employees	0-49, 50-99, 100-49, 150-200, 200-250.
Industry	Food industry, sports goods industry, surgical goods industry, leather goods manufacturing industry.

Number of years in local markets	0-5, 5-10, 15-20, 20-25, etc.
Number of years in foreign markets	5-10, 15-20, 20-25, 25-30,30-35, 35-40 years plus, etc.

Table 5.4: Attributes and values for individual cases

Attribute	Values
Participant	Not applicable, unassigned, company names
Gender	Not applicable, unassigned, male, female
Age Group	0-10, 10-20, 20-30, 30-40
Industry	Sports goods industry, surgical goods industry, leather goods industry, food industry
Experience	0-5, 5-10,10-15, 15-20,20-25,25-30, 30-35, 35-40, etc.

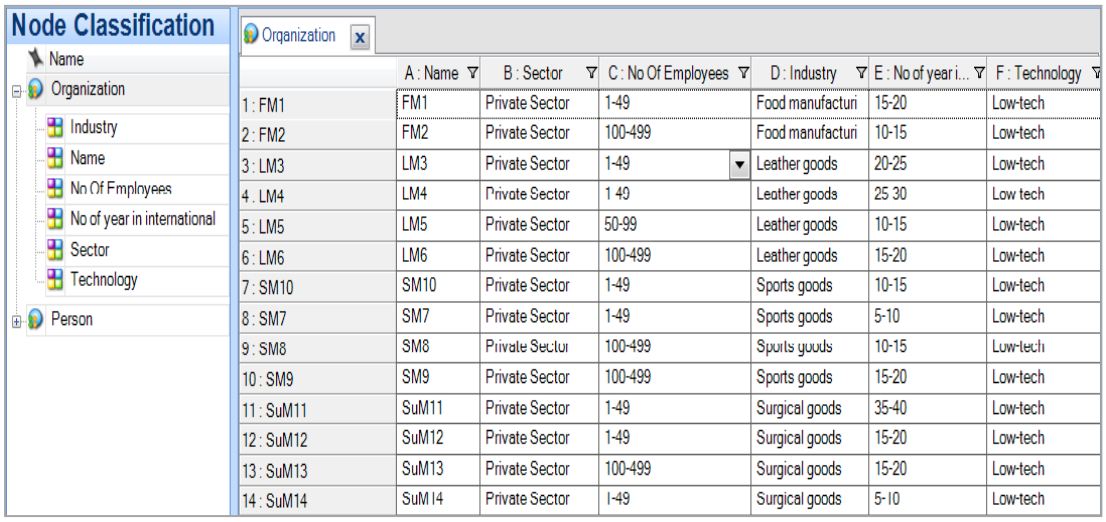
Classification

Table 5.5: Details of participant firms

Unit	Product	Technology	No. of Employees	No. of Years' Experience	**Key Decision-Maker**	**Customers**
FM1	Confectionery products such as biscuits, candy, bubble gum	Low-tech	0-49	18 years	Director of Marketing Department (DMD) of FM1	UK, USA, Australia and African countries
FM2	Food-confectionery products such as biscuits in flavours such as sandwich, plain, chocolate cream, energy/glucose and crackers	Low-tech	0-250	11 years in local market and 5 years in international markets	Sales and Marketing Manager and Operations Manager	UK, USA, Australia and African countries, domestic customers
LM3	Leather jackets and motor bike products such as racing wear, motor bike suits, gloves and safety equipment	Low-tech	0-49	22 years	Owner-manager with 4-5 years of hands-on experience	Canada and European countries such as Germany
LM4	Leather motor bike garments and accessories, leather jackets, trousers, leather shirts, caps, face masks, hats and belts	Low-tech	0-50	28 years in local market and 24 years in international market	Owner-manager	South Africa, Spain, Germany, Latvia and subsidiary office in England
LM5	Leather and motor bike garments	Low-tech	50-99	15 years	Owner-manager/ Export Manager	Europe (targets are Germany and

						France), Australia and New Zealand
LM6	Leather garments, Leather gloves, Leather products	Low-tech	0-50	19 years	Director of Marketing	Europe, South Africa, Canada, USA and Australia
SM7	Sports products such as soccer balls, tennis balls and sports wear	Low-tech	0-50	10 years	Owner-manager	UK, Ireland
SM8	Basketball and soccer kits, martial arts uniforms, tracksuits and other suit apparel.	Low-tech	0-150	15 years	Owner-manager	Australia, USA, England and Europe
SM9	Sportswear, soccer/hand/indoor/ volley/rugby balls, goalkeeper gloves, shin guards, team bags, soccer apparel; soccer kits, goal keeper and referee outfits, rainwear and tracksuits	Low-tech	0-300	20 years	Owner-manager	Europe, North America
SM10	Boxing and fitness, cycling gear, martial arts, fishing, outdoor, sailing and motocross gear	Low-tech	0-50	13 years	Owner-manager with 5 years' experience	UK, Australia
SuM11	Surgical instruments, veterinary instruments,	Low-tech	0-10	40 years	Owner-manager	England, America, South America,

	orthopaedic implants and instruments, equine dental instruments and dental instruments.					Spain, Korea, Australia and Europe
SuM12	Scissors, manicure/pedicure, orthopaedic, ophthalmic instruments, dental, surgical and medical, hollowware, cutlery, knives, etc.	Low-tech	0-49	18 years	Owner-manager	USA, Central America, Asia (e.g. Indonesia, Malaysia, Singapore), Ghana, Italy, France, Germany, Holland.
SuM13	Barber and household scissors, tweezers, cuticle and nail nippers, nail care instruments, manicure kits, fishing tools and other instruments	Low-tech	200	24 years	Owner-manager with 6 years' experience in the field (family business)	USA, UK, European countries, Middle and Far East and Latin America
SuM14	Manicure and pedicure instruments, tweezers and eye-lash curlers, cuticle and nail nippers, fancy and household scissors	Low-tech	0-50	23 years	Marketing -Manager	Europe (Germany, Italy, France, Belgium, Holland, Greece and Cyprus), USA, UK, Korea, Turkey



	A : Name	B : Sector	C : No Of Employees	D : Industry	E : No of year i...	F : Technology
1 : FM1	FM1	Private Sector	1-49	Food manufacturi	15-20	Low-tech
2 : FM2	FM2	Private Sector	100-499	Food manufacturi	10-15	Low-tech
3 : LM3	LM3	Private Sector	1-49	Leather goods	20-25	Low-tech
4 : LM4	LM4	Private Sector	1 49	Leather goods	25 30	Low tech
5 : LM5	LM5	Private Sector	50-99	Leather goods	10-15	Low-tech
6 : LM6	LM6	Private Sector	100-499	Leather goods	15-20	Low-tech
7 : SM10	SM10	Private Sector	1-49	Sports goods	10-15	Low-tech
8 : SM7	SM7	Private Sector	1-49	Sports goods	5-10	Low-tech
9 : SM8	SM8	Private Sector	100-499	Sports goods	10-15	Low-tech
10 : SM9	SM9	Private Sector	100-499	Sports goods	15-20	Low-tech
11 : SuM11	SuM11	Private Sector	1-49	Surgical goods	35-40	Low-tech
12 : SuM12	SuM12	Private Sector	1-49	Surgical goods	15-20	Low-tech
13 : SuM13	SuM13	Private Sector	100-499	Surgical goods	15-20	Low-tech
14 : SuM14	SuM14	Private Sector	1-49	Surgical goods	5-10	Low-tech

Figure 5.5: Sample of case classification sheet-case attributes and values

Stage 2: Topic

Stage two involved the development of themes from the transcripts. It also included coding interview material and grouping related concepts under a single heading called a ‘node’ to be used for later data analysis. After coding the material, NVivo helps the user in highlighting selected text and giving a particular colour to coding stripes. Coding stripes are used to provide a visual overview of how nodes might relate to each another and to display emergent concepts (Hutchison et al., 2010). For this research study, initial themes were developed from the literature review and interviews. Coding stripes were used for theme modification.

The node cluster diagram (Figure 5.6) shows high-order themes. These themes clearly show trends which also appear in the propositions. For example, the first circle shows that confidentiality and relationship factors are closely related to standardisation of distribution. Another point shows that the nature of the product may also result in product adaptations. This can also be used as content analysis where the researchers aim at developing themes/categories/classifications from the available data.

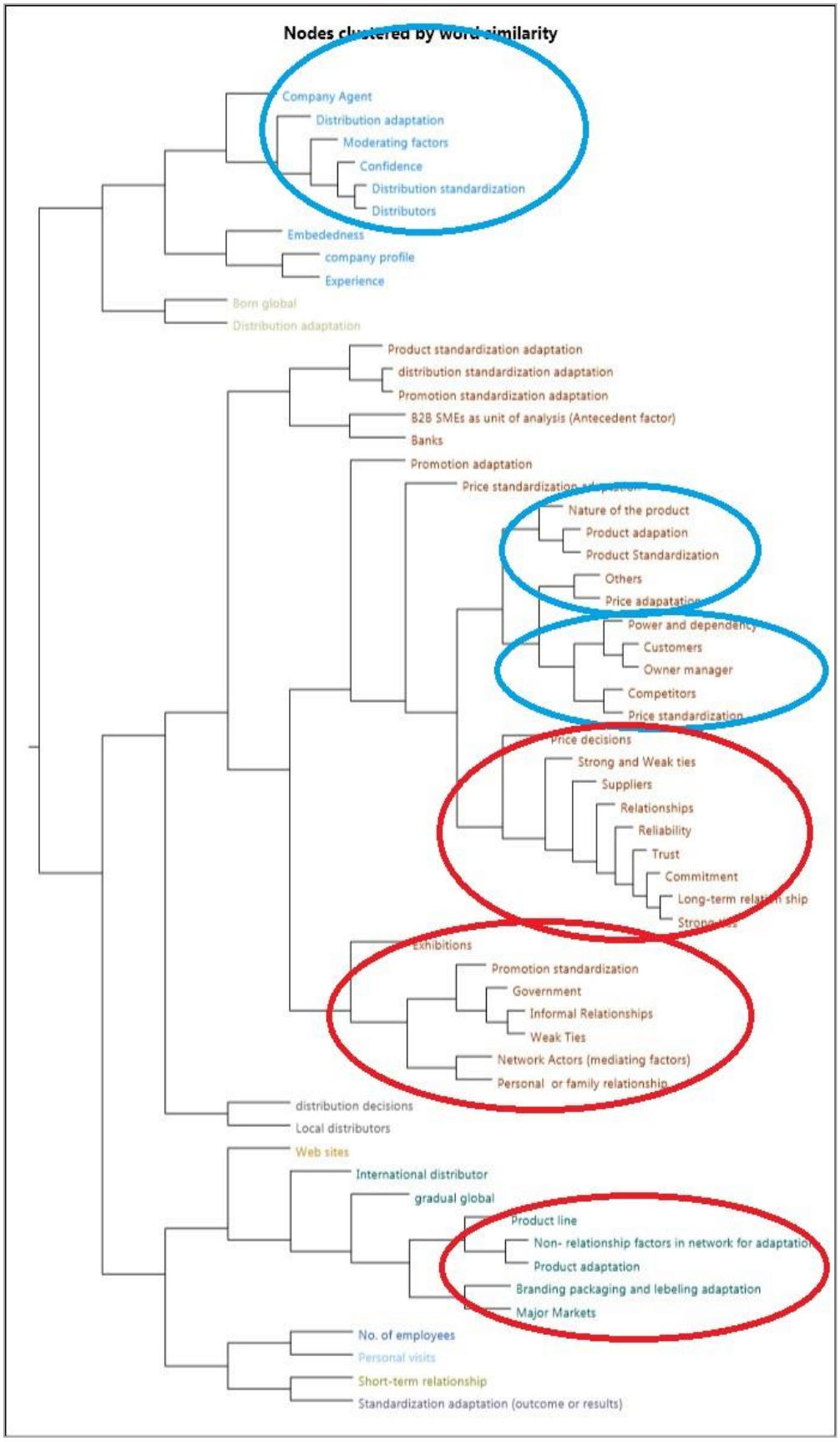


Figure 5.6: Cluster Analysis of coded material using word similarity

third circle shows that in customer and competitor relationships with a focal firm, power and dependency relationship factors are more influential and closely related to price standardisation.

This cluster analysis covers almost all the propositions developed after analysis. For example, that government, as an actor, may influence standardisation of promotion yet have weak ties with focal firms. Cluster analysis was used to identify the major themes emerging from the coded material using word similarity in the sources. Cluster analysis provides an overview of the structure and a thematic understanding of the data, and similarities are then presented as a horizontal and vertical dendrogram, graphed in two- or three-dimensional space (Bazeley, 2009).

Creation of initial coding

Coding is the 'process of identifying and recording one or more discrete passages of text or other data items , that, in some sense, exemplify the same theoretical or descriptive idea' (Gibbs, 2002:57). In NVivo, coding is carried out by connecting each passage or item to a node. Miles and Huberman (1994) make no distinction between the terms 'variable' and 'code', using the terms interchangeably. During the coding process, meaning labels are usually attached to segments of data (Charmaz, 2006). NVivo allows users to create nodes and store relevant text in these nodes (Bazeley, 2007). Therefore, every time a new concept is found, a new node is developed. With every new node, a memo is created to add notes and record findings from this particular node. When using NVivo for data analysis, it is important to associate data with each source to enable queries to be generated: a node classification sheet is created in the relevant section of the program (O'Neill, 2013). In this study, a source and reference were created with the names of participants and sample firms. According to O'Neill (2013), this enables the generation of queries.

5.1.2.1 Open coding

At an early stage of qualitative data analysis, initial or open coding is used to open the text to intensive scrutiny(Corbin and Holt, 2004). Open and axial coding procedures involve breaking down data, conceptualising it, and putting it back together in novel ways to build theories from data (Strauss and Carbon, 1990, Patton, 2002). In this research study, some coding was carried out manually before using NVivo. The interview guide was also used for coding purposes, as the questions were developed with consideration for particular themes of standardisation/adaptation of marketing strategies. Actors were located in the SMEs' business networks, and a separate node was created for each actor in the industrial networks of all sample firms to explore the facts and impacts of these actors embedded in the interviews.

During the coding process, some relationship factors were found to affect the interaction of SMEs with actors in the networks. At this stage, the available data were also scrutinised from the perspective of standardisation/adaptation in general, and it was found that specific actors in business networks have an impact only on particular strategic decisions of SMEs, and not all actors affect all decisions taken by the firm.

5.1.2.2 Axial coding

According to Strauss and Corbin (1998), axial coding is the process of relating categories to their sub-categories. Axial coding occurs around the axis of the category, linking categories to its properties or dimensions. Four major themes were identified across all the cases: 1) how SMEs interact; 2) how interaction between firms and actors influences strategic decisions; 3) the relationship factors as moderators for standardisation/adaptation strategies 4) what strategic decisions along the continuum of standardisation/adaptation are most influenced by interaction between actors and SMEs. As some moderating factors also emerged during the coding process, axial coding was carried out on these four major themes, and the focus was to explore the dimensions of all four themes.

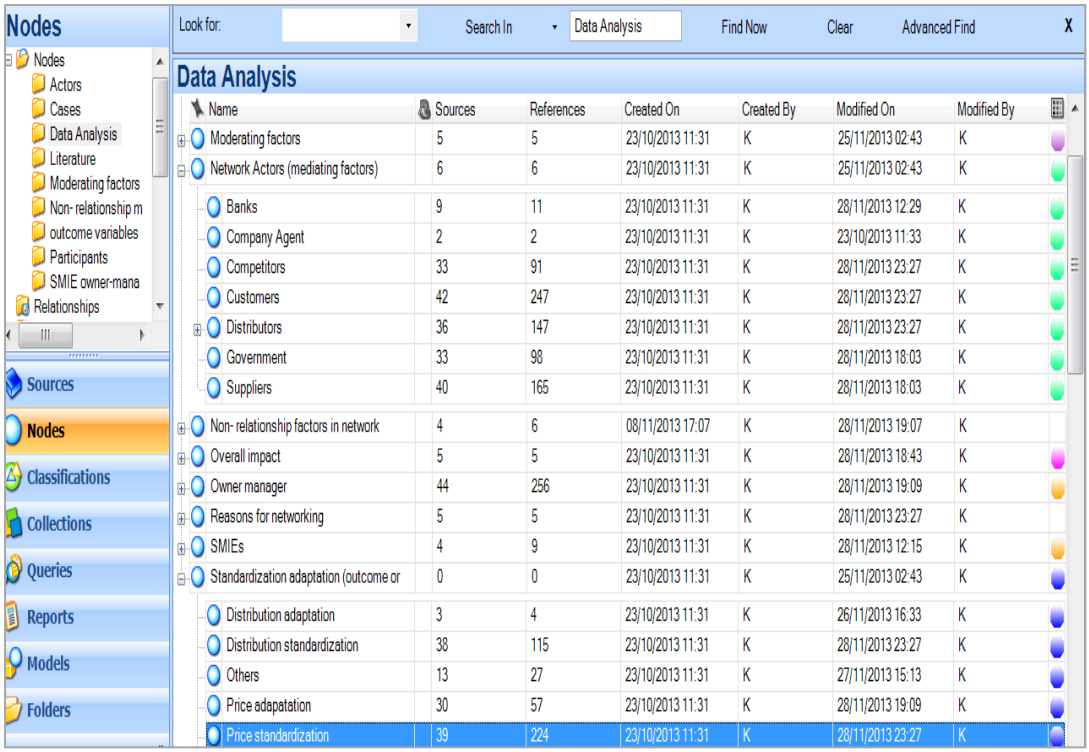


Figure 5.7: Nodes developed during data analysis

The purpose of axial coding was to reassemble data that had been fractured during the process of open coding (Corbin and Strauss, 2008). Advanced comparative procedures and analytical techniques were used to examine relationships between concepts, higher-order categories and dimensions such as conditions, contexts and processes with outcomes relating to the phenomenon (Hutchison et al., 2010).

5.2 Stage 3: Analytic using content analysis

The aim of data analysis is to look for patterns, hypotheses and ideas that can be tested and will form the basis for further research (Marshall and Rossman, 1995). Data analysis is based on an exploratory research strategy for the purposes of theory generation (Gerring, 2004). According to Yin (2009), analysis of case study evidence is one of the least developed and most difficult aspects of case study work. In order to overcome weaknesses in case study analysis, protocols were developed prior to data analysis: (a) open and axial coding methods were to be used for data analysis; (b) NVivo software was to be used for coding and analysis

purposes; and (c) intra-case and cross-case analysis methods were to be used for data analysis (Miles and Huberman, 1994, Yin, 2009).

Content analysis has been considered a research methodology that observes textual data for patterns and structures single out the key features, develop categories and aggregate them into perceptible constructs in order to seize the text meaning (Gray and Densten, 1998). For the purpose of conducting content analysis, the researcher uses the NVivo software. According to Bytheway (2013), there are various tools available in NVivo software to conduct content analysis such as automatic coding, coding 'stripes', coding density assessment, content linking, creating memos and annotations etc.

Following are the steps used for content analysis using NVivo Toolkit by (O'Neill, 2012)

- Merging nodes into hierarchies
- Developing data set
- Creating models
- Visualization
- Visualization such as cluster analysis
- Using queries and running such as word query

For the purpose conducting content analysis, first the recorded interviews were transcribed, and then the data were coded based on the factors defined in Chapter 3. In addition to primary data collected from in-depth interviews, the data analysis included secondary data sources such as company websites, company profile documents and other material provided by the companies, such as product samples, catalogues and other documents. The coding was carried out using NVivo, which is the latest version of the software available for qualitative research. NVivo was used not only for transcription of the interviews but also for developing themes from the data by coding and creating nodes. These nodes were compared across all cases.

The researcher has performed all these tasks using NVivo such as creating nodes, running queries, cluster analysis, creating sets and developing models. Following are the extracts for conducting content analysis for this research project from NVivo.

5.2.1 Merging nodes into hierarchies

At this stage of data analysis, using NVivo the initial nodes were moved, merged or renamed into eight nodes: SMEs, owner-managers, network actors, relationship factors (also called moderating variables, such as trust, commitment, ties), non-relationship factors (such as size of the firm or nature of the product), output factors (such as standardisation/adaptation of marketing mix elements), overall impact and reasons for networking.

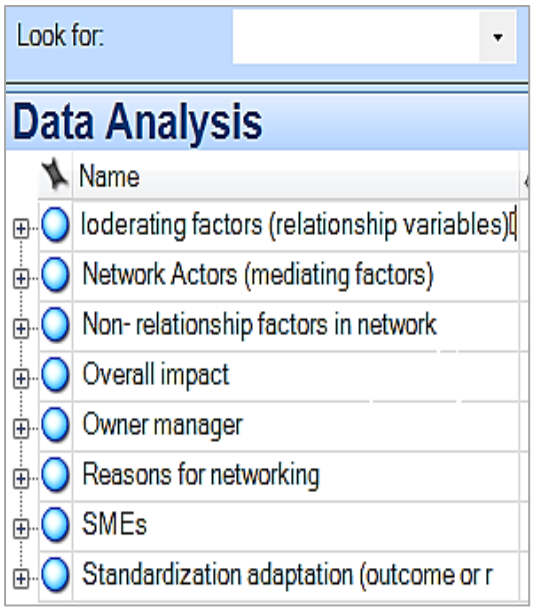


Figure 5.8: Formation of merged and renamed nodes in the research study

Some nodes created initially were later excluded from the research. For example, banks were initially included in the 'actor' nodes as part of the business network, but it was later found that they did not directly or indirectly influence SMEs' decisions on standardisation or adaptation of the marketing mix. Other nodes, such as embeddedness of business networks, were considered to be an important aspect of the research but were later omitted because the analysis was of relational variables in dyadic relationships in business networks, whereas embeddedness

is related more closely to geographical and structural aspects of networks. These were therefore left for exploration in a future project.

5.2.1.1 Data sets

Data sets were developed using themes from the coding material. According to Hutchison et al. (2010), data sets are valuable tools for advancing theoretical development and are used for grouping nodes. Creating data sets in NVivo does not change the node structure or duplicate items, but simply relates two different nodes to each other (Bazeley, 2007). These data sets are used in queries as a single unit of data, enabling the user to generate queries with broader concepts or categories.

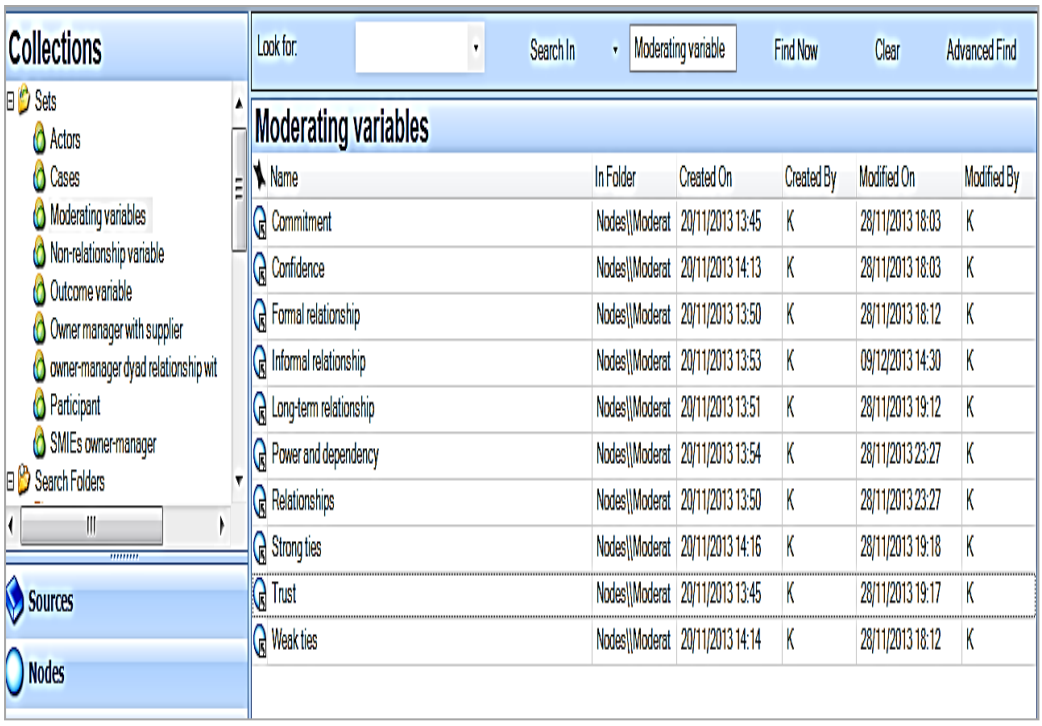


Figure 5.9: Data sets in the collections section of the research study

The data sets were created using four major categories: actors, moderating variables, outcome variables, and SME owner-managers' dyadic relationships with actors and cases. For node hierarchies or broad categories, cluster analysis was used and the main themes, along with their closely related nodes, were shown in a cluster analysis diagram.

5.2.1.2 Models and relationships

Models are used as techniques to enrich a theory (Holt and Dunn, 2004). NVivo facilitates model creation as it contains a model building tool which allows users to present nodes, relationships and data sets for conceptual development (Hutchison, Johnston et al. 2010). These models are later used to examine analytical observations. With the help of a model, it becomes easier to conceptualise relationships between concepts and categories and how they relate or interact. NVivo offers two different modes for the development of models: dynamic and static (O'Neill, 2013). These models can also be created with the help of already created sets. Entire data sets, including text, summary and references, can be exported to an external file or copied and pasted into the 'model' section of the program (O'Neill, 2013:111).

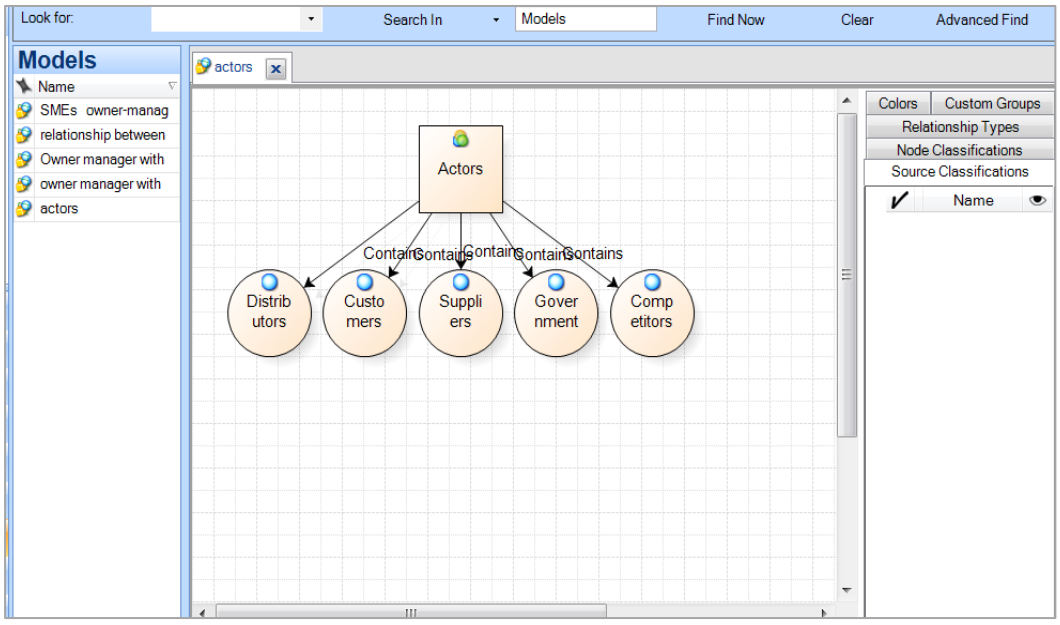


Figure 5.10: Model of the data set for actors in the business network-actors

Figure 5.10 clearly delineates all coded nodes for 'actors' in the research work. These are actors identified from the resources in the business networks of focal (sample) firms. These models are also used to show all available resources for a given set in a single place. For example, a set for price standardisation would contain all possible resources attached to price standardisation, such as interviews, voice recordings, participants, individual firms, etc. A more

advanced model can also easily depict relationships between these developed sets to explore concepts or higher-order categories and relationships between these concepts. Therefore, model development using sources and coded material allows the definition of concepts and relationships.

5.2.1.3 Visualisation

The visualisation tool in NVivo enables researchers to obtain a clear picture of the research themes emerging during recording, coding and analysis. Charts showing the percentage coverage of the concepts or codes under study help visualise the contribution of each sample firm and extract the results across cases. For example, Figure 5.11 shows the percentage coverage of nodes by attribute value, clearly highlighting similarities between the coded nodes across the industries used as samples.

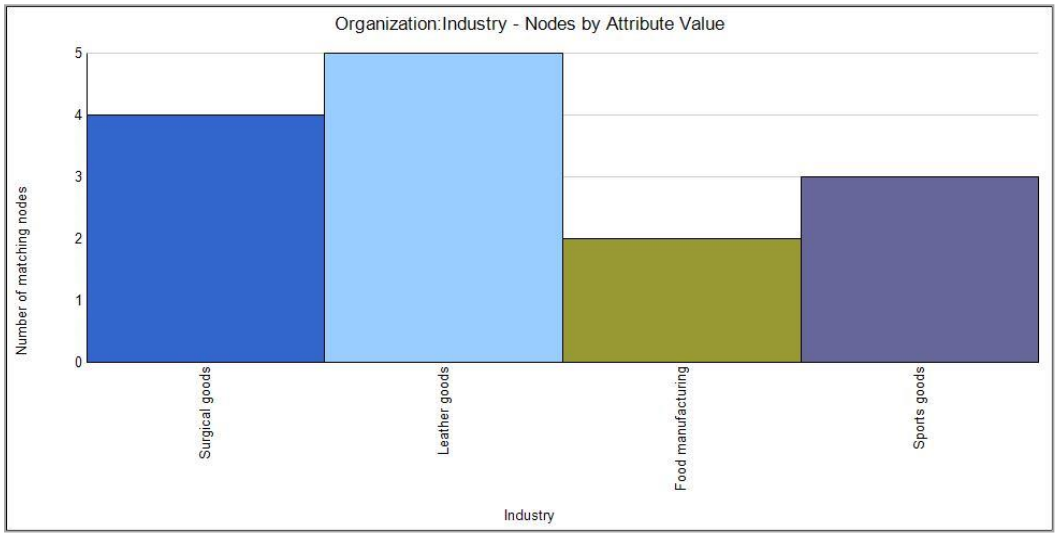


Figure 5.11: Organisation/industry nodes by attribute value

Figure 5.11 shows the similarity of node codes for all focal firms across the four industries. It clearly shows that the food industry has slightly different coding attributes and values from the other three industries, for which there are several reasons. Within the given context it has been found that the food industry sells its products in local as well as international markets, while the other three industries only sell their products in international markets. The three industries

with a similar pattern of coding are ‘born global’ firms while the firms in the food industry are ‘gradually global’ firms. Firms in the food industry sell more than 70% of their products in local markets. Hence, it was easy to compare the decisions made by firms in the food industry between home markets and international markets.

In addition, owing to local sales, firms in the food industry have relationships with local distributors such as wholesalers and retailers. These firms rely on these distributors for the distribution and sale of their products in local markets and do not directly sell products to their customers. Firms in the food industry have slightly different strategies for home and international markets, as in their pricing strategy which differs between home and international markets, whereas firms in the other three industries develop their strategies specifically for international markets. The born global firms also have subsidiaries in foreign markets; for example, SuM12 runs a subsidiary in Latvia. In such cases, the firms compare their home strategies with those of their subsidiaries which sell only in international markets. The food industry firms sell in local as well as in international markets, but their strategies are developed only in their home location.

Similarly, charts of percentage coverage were developed for all four major themes across the cases to visualise the concepts and clarify differences between cases.

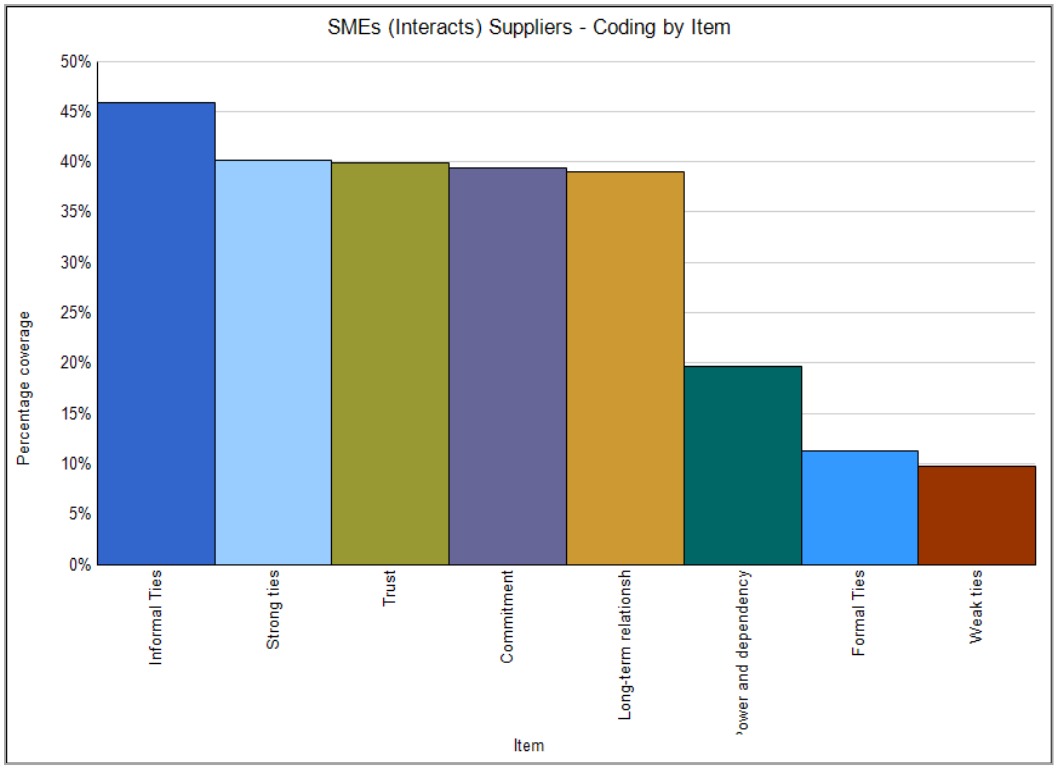


Figure 5.12: SMEs interacts suppliers-coding by item (Relationship factors)

NVivo enables users to establish the percentage coverage of nodes from two different sources to show the relationship between concepts. Such charts can show the percentage coverage of moderating variables, such as reliability, personal relationships, trust, commitment, and strong or weak ties, using two different sources or dimensions, such as owner-manager and suppliers, or owner-manager and customers. Figure 5.12 shows the percentage coverage of codes for trust, commitment, strong and weak ties, and power or dependency between owner-managers and suppliers. Similarly, a chart can easily be created for owner-manager interaction with competitors and for moderating factors with most codes in that context.

These charts can be created for individual cases, for all cases across the four industries, or for focal firms in a specific industry.

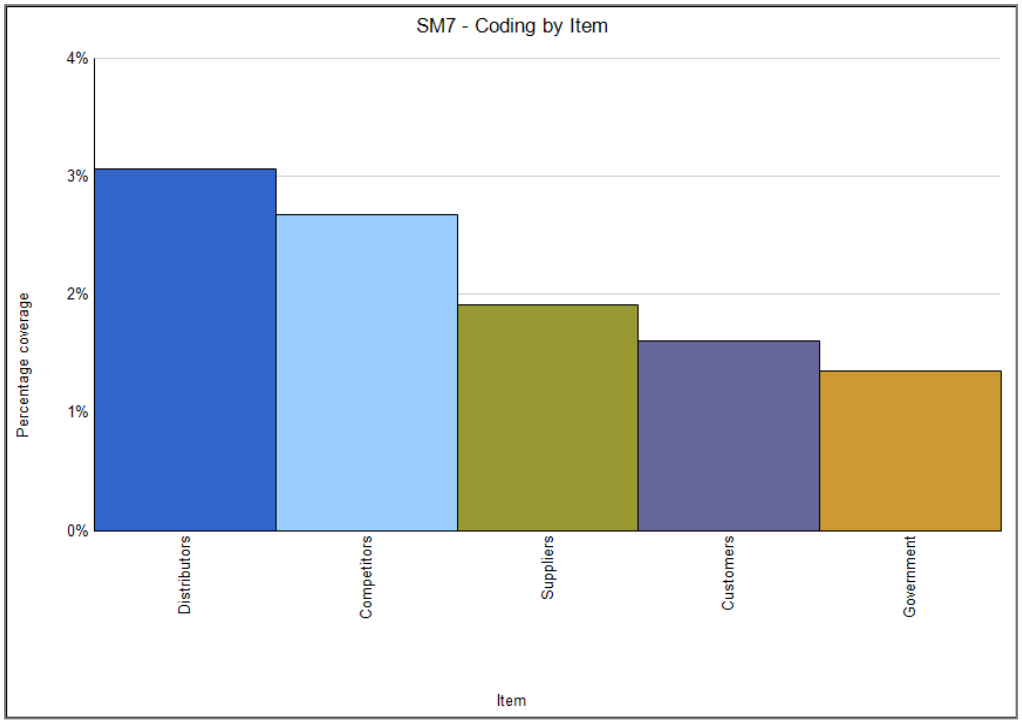


Figure 5.3: Actors for SM7 coding by item

Figure 5.13 shows the percentage coverage of actors in interviews for focal firm SM7 in the sports industry. Several other charts were developed for individual cases, cross-case analysis and overall results from all cases.

5.2.1.4 Using queries

Queries are used to search and ask question s of the data (Bazeley and Jackson, 2013) . This allows the researcher to investigate relationships between concepts and categories by searching for data coded to multiple pairs of items simultaneously (Hutchison, Johnston et al., 2010). NVivo offers seven different types of query for this purpose: a query wizard, text search, word frequency, coding queries, matrix coding, coding comparison (when coding is being carried out by two people in a project) and compound or group queries (see Figure 5.14).

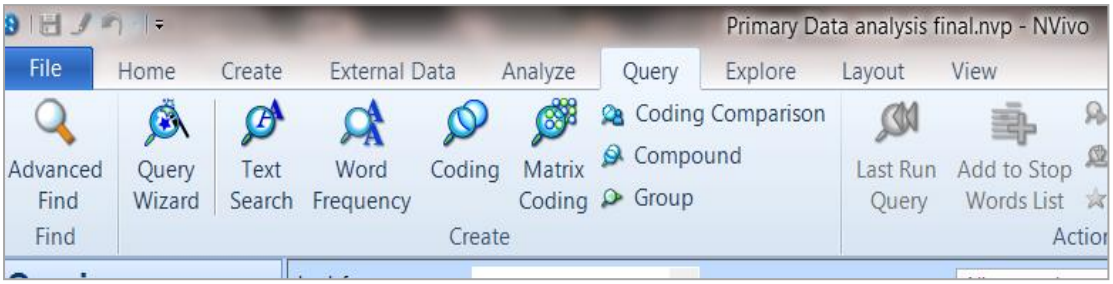


Figure 5.14: Kinds of query in NVivo

A simple query is generated by clicking on a node (Bazeley and Jackson, 2013). For example, a simple coding query for 'price standardisation' shows the sources and percentage coverage of the price standardisation node from each source. Such coding queries are helpful in establishing in how many cases price standardisation is covered (see Figure 5.15).

Price standardization cod

Name	In Folder	Refer	Covera
Mr AD	Internals\\Inter	10	17.44
Mr AD UL	Internals\\Inter	2	2.38%
Mr AF	Internals\\Inter	5	3.62%
Mr AS	Internals\\Inter	5	8.13%
Mr AT	Internals\\Inter	3	6.47%
Mr BA	Internals\\Inter	5	8.11%
Mr BAJ	Internals\\Inter	5	13.17
Mr HU	Internals\\Inter	11	16.90
Mr IM	Internals\\Inter	7	16.90
Mr IS	Internals\\Inter	2	8.03%
Mr Ishaq	Internals\\Audi	2	6.91%
Mr SA	Internals\\Inter	7	12.69
Mr SHA	Internals\\Inter	7	19.29
Mr UF	Internals\\Inter	5	8.55%
Mr Waheed p-	Internals\\Audi	2	7.43%
Mr YA	Internals\\Inter	10	7.19%
Mr. JA	Internals\\Inter	8	12.68
Mr. WAH	Internals\\Inter	7	8.18%
Mr. Waheed c	Internals\\Audi	7	9.91%
Ms SHA	Internals\\Inter	7	9.81%

Summary
Reference
Text

Figure 5.15: Coding query for price standardisation node

5.2.1.5 Running queries

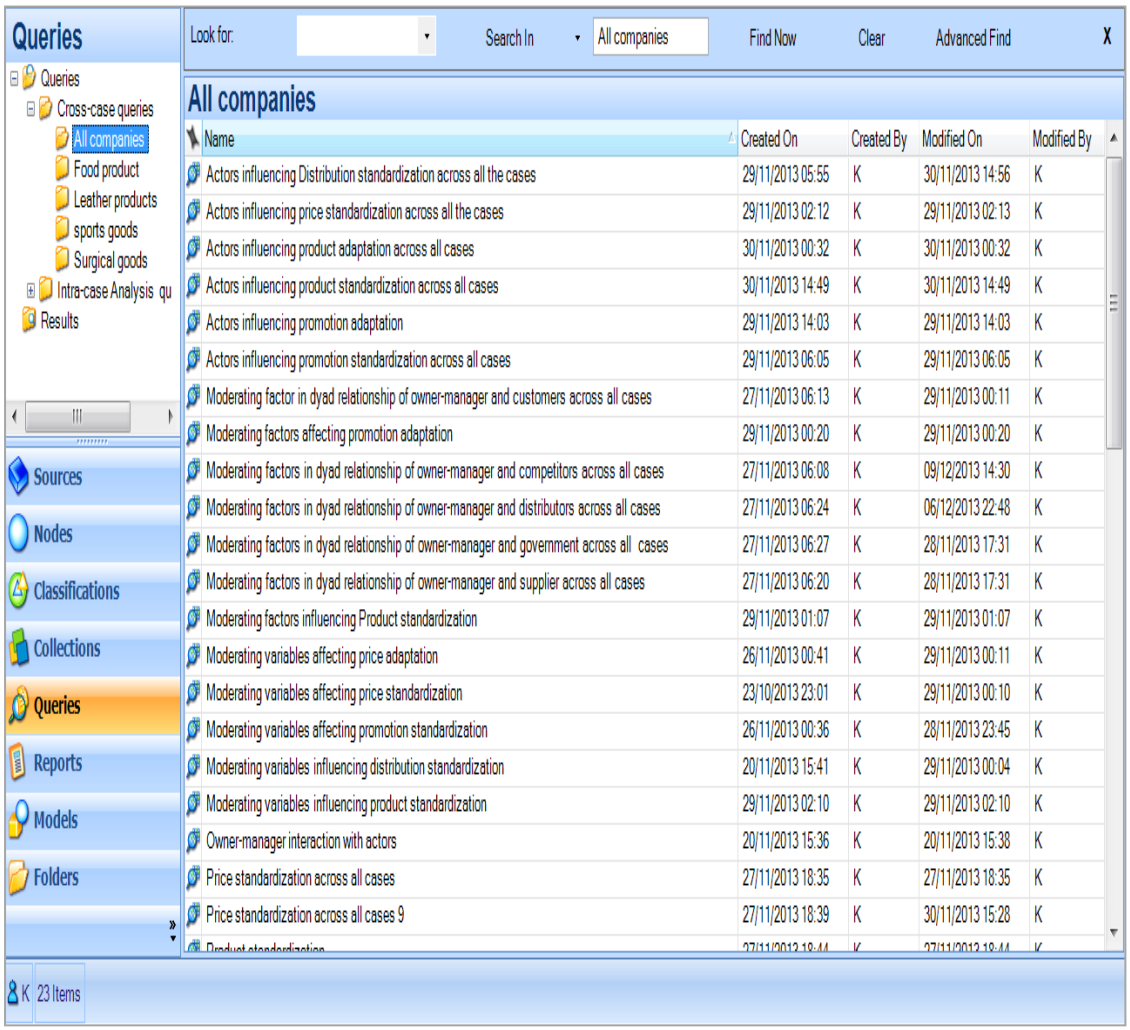


Figure 5.4: Sample of matrix coding queries run in this research study

This research study used coding queries and matrix coding queries. Matrix coding queries are more useful for exploring the data from different dimensions and on different axes. Figure 5.16 displays queries based on comparison of data across all the cases.

While running queries, the columns were used for explanatory factors and rows demonstrated the response or outcomes. The results of these queries can be stored on separate nodes, which help researchers to use an iterative process for data analysis (Bazeley and Jackson, 2013).

NVivo results were used in this study to strengthen the research results. The outcomes were similar to those already obtained through manual coding and manual data analysis, except that some elements were clearly distinguished in NVivo charts and queries. One non-relationship

element, size of firm, was added as it was found to influence the standardisation/adaptation of marketing mix elements.

5.2.2 Theory-building queries

5.2.2.1 Matrix coding queries

Matrix coding queries are a tool for conceptual and theoretical development (Hutchison et al., 2010). The matrix coding query function enables researchers to look for information directly from the perspective of the research questions. They are also helpful for identifying multidimensional aspects and sub-categories of a research study. In this research study, matrix coding queries were used to find the answers to the research questions. For example, the extent of interaction of the owner-manager of LM3 with actors in the network. Figure 5.17 shows that the owner-manager usually has most interaction with customers, or that customers are the top priority in relationships within the business network.

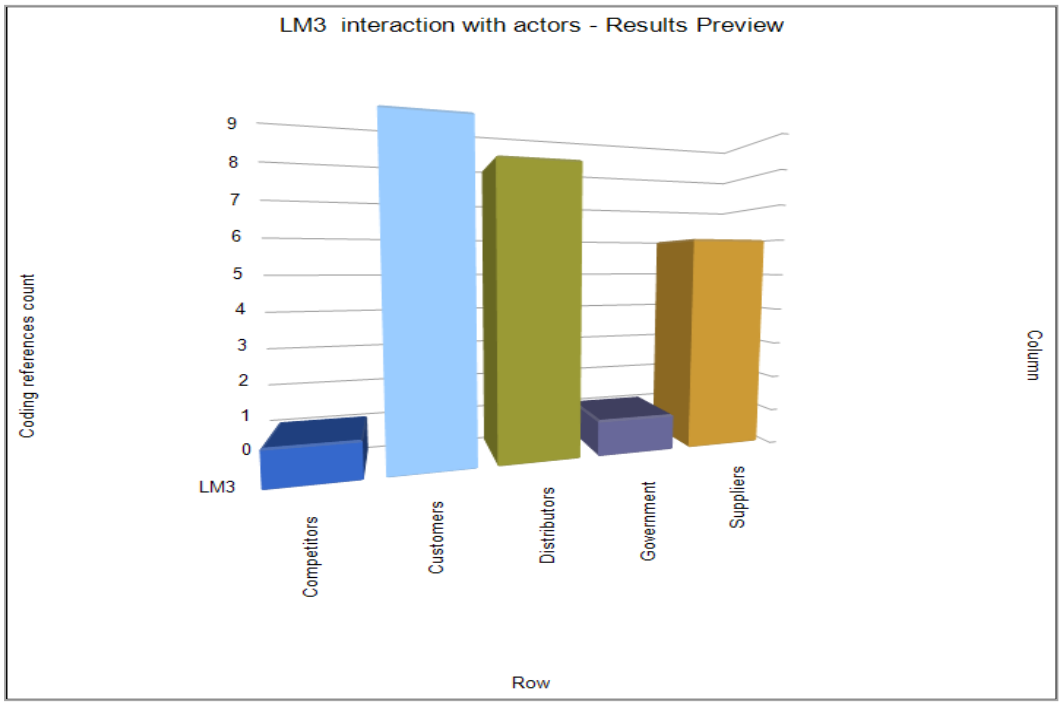


Figure 5.17: Results for LM3 interaction with its actors in the business network

These matrix coding queries were used to identify and explore the interaction of actors with all sample firms, individually and collectively. Figure 5.17 shows that the owner-manager interacts more frequently with distributors and suppliers than with competitors and government. NVivo displays the matrix coding results in three different ways: in chart format, in table format, or in text coded in a particular node. Clicking on a bar shown in a chart reveals what text is coded under that node and how it is relevant to the results extracted through the matrix coding query.

5.2.2.2 Cross-case analysis using matrix coding queries

A cross-case query allows researchers to discern group commonalities of nodes across cases (Bazeley and Jackson, 2013). Therefore, cross-case queries were used in this research study. Queries were produced as a matrix in chart or table form, represented as coded references, sources and/or percentage data in each node cell (Edhlund, 2011). Cross-case analysis using a matrix query enables researchers to compare cases for specific factors, and then refine the search to reconsider and compare the factors for another case on an additional dimension (Bazeley and Jackson, 2013).

In this research study, queries were developed based on the research questions and the findings from the pilot cases. Initially, the focus was to establish how interaction between SMEs and actors in a business network influences the standardisation/adaptation strategies of these firms. Later, using the pilot case findings, moderating factors were added which had a direct or indirect impact on the sample firms.

Therefore, the queries were grouped as follows:

1. SMEs' interactions with actors in business networks

2. Relationship factors as intervening factors in dyadic relationships between SMEs and different actors
3. Actors influencing standardisation/adaptation of SMEs
4. The relationship factors reducing or aggravating factors affecting standardisation/adaptation as strategic outcomes of SME's interaction with actors in business networks.
5. Standardization/adaptation of marketing programs as strategic decision outcomes of relationship between SMEs and actors in business network.

The above-mentioned queries were repeated for each actor interacting with the sample firm in the business network. Similarly, queries relating to moderating factors in dyadic relationships between SMEs and actors were repeated for every actor in the network. The important aspect of moderating and mediating relationships is that a third variable/factor plays an important role in governing the relationship between two other variables (Baron and Kenny, 1986). The queries were repeated for standardisation/adaptation of product, price, promotion and distribution to explore the different dimensions of the research questions. Matrix queries were used taking attributes and values from the classification sheets to find differences between firms within the same industry and across industries. The sample firms were divided into four industries using the classification sheets, and the attributes of sample firms in the classification sheets were used for cross-case analysis. These matrix coding queries were applied to all fourteen sample firms. Owing to the large number of queries generated for each actor, for each moderating factor and for every marketing mix element, only a few examples are given in this chapter. For example, the first matrix coding query was run fourteen times for individual case analysis, four times for within-industry, cross-case analysis and three times for cross-industry, cross-case analysis. Therefore, the first query was repeated 21 times. The results of some queries, such as the promotion standardisation query, were omitted as they were found to have

no impact on standardisation or adaptation. A model of the conceptual framework was developed using the NVivo results from coding across all the cases available for data analysis. Comparative graphs exhibiting the case study outcomes were also developed using NVivo software.

5.2.2.3 Query for interaction between cases and their actors

In order to address the research question of how firms in a network influence the standardisation/adaptation of SMEs, the first matrix coding query was based on interaction between SMEs and their actors in business networks. Nodes were created for each actor, such as suppliers, customers, distributors, competitors, government agents and the company itself. Data from the in-depth interviews for these cases were coded on these nodes.

First, NVivo was used to identify interaction between focal firms and actors, and on the basis of coded material, the following results were extracted using a matrix coding query.

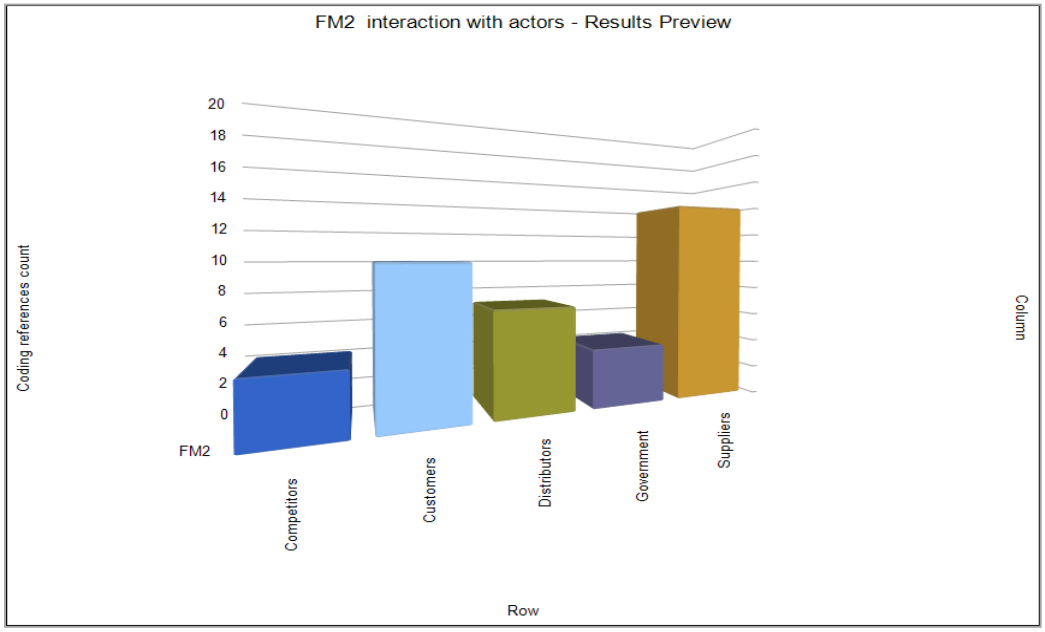


Figure 5.18: FM2 interaction with actors – Results preview.'

Figure 5.18 shows that FM2 interacts with customers, suppliers and distributors more frequently than with competitors and government agencies. Three interviews were conducted for FM2, with the marketing manager, the operations manager and a supplier. Figure 5.18 also

reveals that SMEs may interact more frequently with suppliers than with customers. Similar queries were created for all fourteen cases and for cross-case analysis, as mentioned above. NVivo also helps in the creation of charts based on the text contributed by each case.

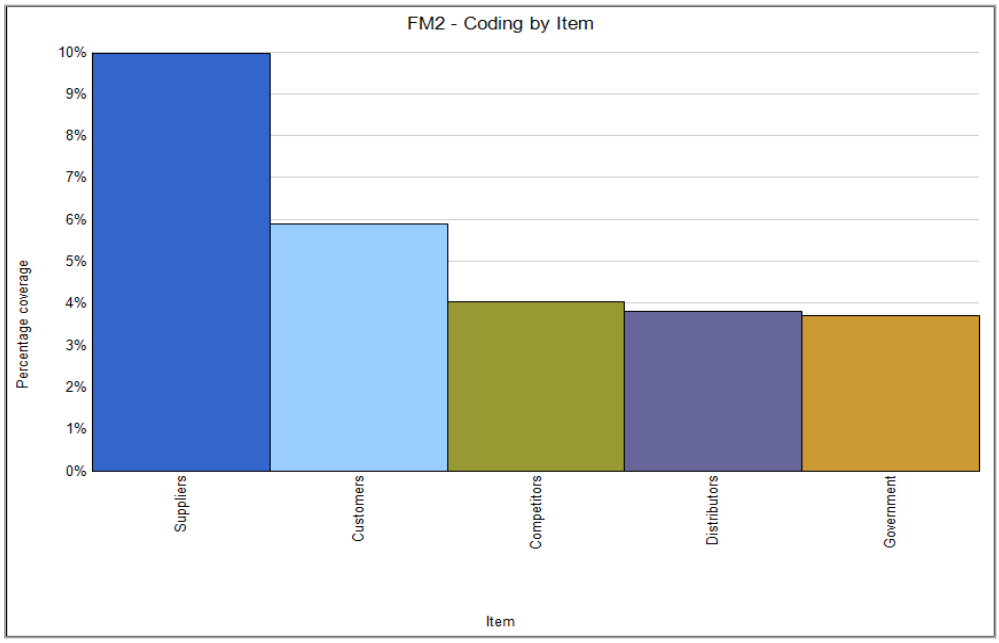


Figure 5.19: FM2'Actors'- Coding by item

The above chart was created using data from a sample firm in the food industry and was repeated for all sample firms. This shows that network actors are mentioned in almost all cases.

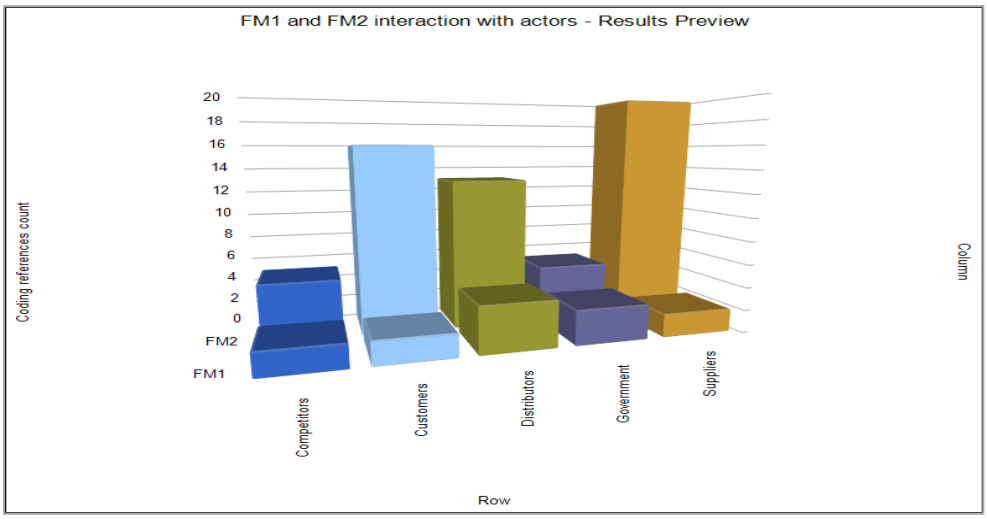


Figure 5. 5: FM1 and FM2 interaction with actors – Result preview

Figure 5.20 shows interactions of actors in both firms in the food industry. It illustrates that firms belonging to the same industry may have different priorities in relationships with actors in an industrial network. It also raises the issue that if something remains uncoded, there may be an opportunity to explore relationships in more detail by revisiting the in-depth interviews conducted with both firms.

SMEs develop and maintain relationships with actors such as suppliers, customers, distributors, competitors and government (Easton and Araujo, 1992). Most of the actors identified during data analysis of the business network for FM1 (Case I) have dyadic relationships with the focal firm, and therefore analysis was carried out on relationships between the two nodes (Fombrun, 1982). FM1 also has triadic relationships with freight forwarders and suppliers nominated by customers. These triadic relationships show weak ties between the nodes, but they also influence the marketing mix decisions made by FM1. Similar kinds of actors are found in FM2's business network, influencing its marketing decisions. Figure 5.20 clearly shows that in the dyadic relationships of FM1 and FM2 interaction with the actors may vary depending on the kinds of relationship these firms wish to have with their actors.

5.2.2.4 Query for moderating factors in dyadic relationships of SMEs with different actors

This query was run to identify moderating factors in dyadic relationships between sample case firms and actors identified in previous queries. The percentage coverage of moderating factors was charted across all firms in the sample.

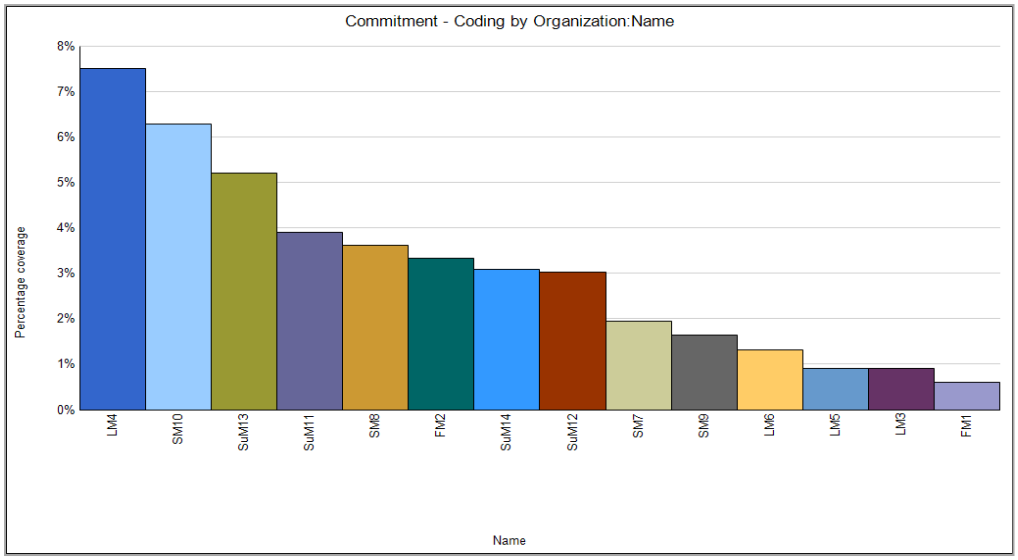


Figure 5.6: Higher-order theme of commitment

shows that commitment, as a moderating factor was found in dyadic relationships between SMEs and actors in business networks in all fourteen cases. Similar charts were created for almost all moderating factors found during analysis, including trust, power and dependency, confidence, and strong or weak ties, in order to establish the percentage coverage from the data.

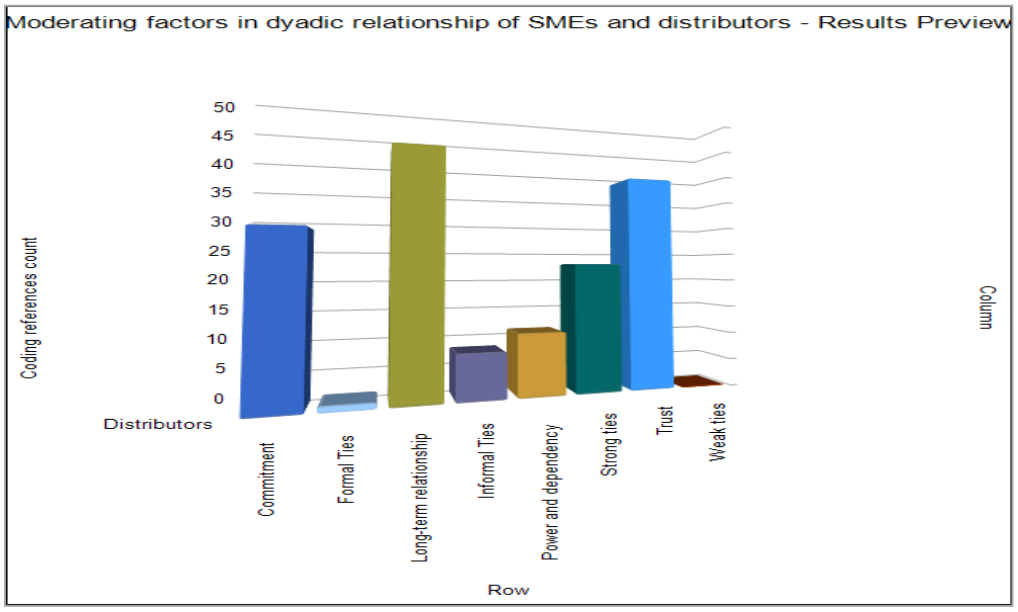


Figure 5.7: Relationship factors in dyadic relationships between SMEs and distributors- Result preview

According to Thorelli (1986:41), trust may be defined as ‘confidence in the continuation of a mutually satisfying relationship and in the awareness of other parties of what this requires of

their performance as network members'. Conceptually, confidence seems to form part of having trust in another party in a network relationship, and hence is not considered as a separate moderating variable; therefore, the two themes were merged into a single node named 'trust'. As the two nodes were merged, NVivo automatically added all the referenced material of the 'confidence' node to the combined node 'trust', and new queries showed the combined 'trust' node with all the coded material in that node.

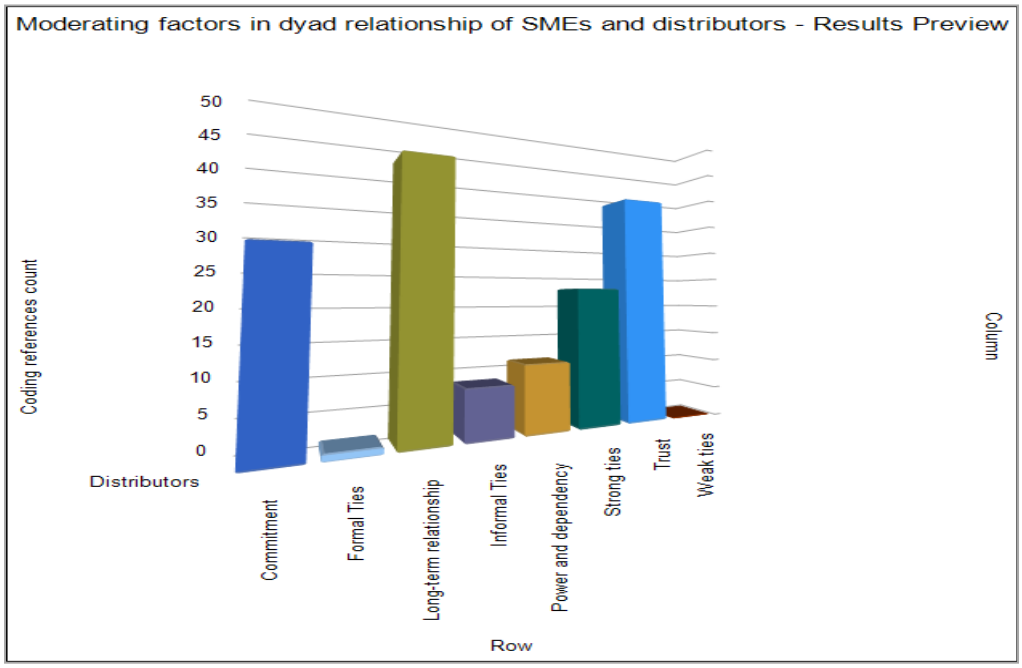


Figure 5. 238: Relationship factors in dyad relationships between SMEs and distributors-Result Preview

Figure 5.23 was created after merging the two nodes with a similar query to that shown above. Another node created with the name 'reliability' is also merged with trust based on the literature review which strongly suggests 'reliability' as part of the trust. According to Blois (1999:207), it may, though, be possible to prove one's reliability which is sometimes a first step towards gaining another's trust.

From this query, it was concluded that the sample case firms prefer to have long-running relationships with their distributors. Almost all the sample firms tend to have long-running

relationships with their distributors or cargo agents. Some sample firms have worked with the same cargo agent for the last 10-15 years, and over time the firms have developed trust and commitment in dyadic relationships with their cargo agents. For example, according to the owner-manager of SuM13:

> For the last 17-20 years, we have been using FedEx for our business because the manager of FedEx or the people in sales have family relationships. As this is a small town [Sialkot], whatever the company is, you might find someone who knows you very well, and you know them very well. Mostly, relationships are based on personal bases.

It is clear that SMEs in the surgical industry are keen to have long-running relationships with cargo agents so as to reap the benefits of more trustworthy relationships and greater commitment to each other. Confidentiality is another moderating factor affecting dyadic relationships between owner-managers and distributors. These SMEs face very high competition from other firms selling in local markets and therefore do not want their cargo agents to share their customers' information with anyone else. Similarly, queries were generated based on owner-manager interactions with cargo agents in different cases.

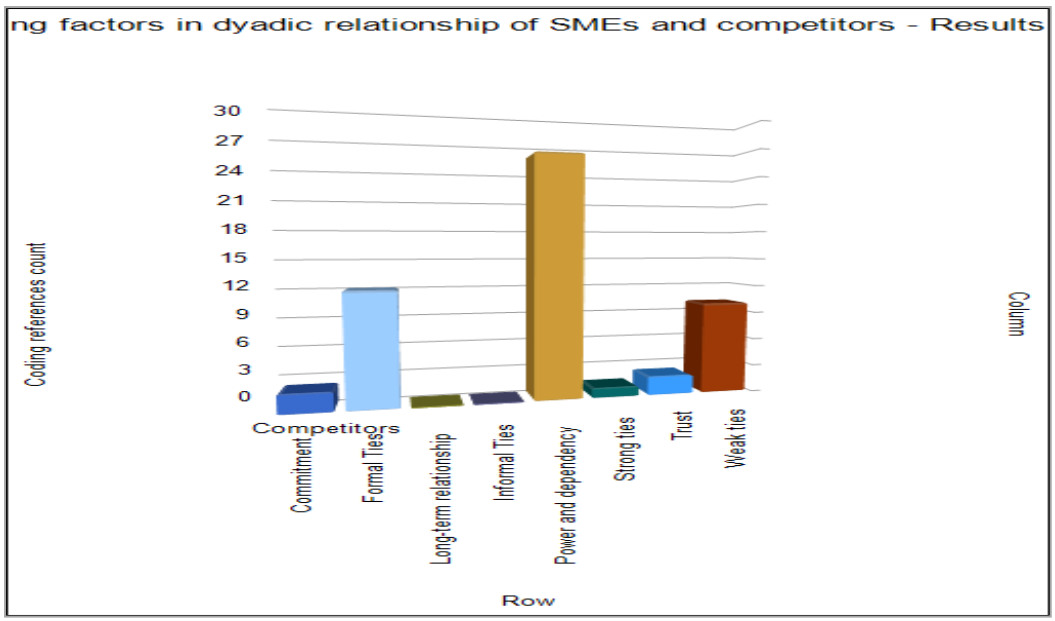


Figure 5.249: Moderating factors in dyadic relationships between SMEs and competitors-Result Preview

To run this matrix coding query, moderating factors were added in rows and competitors in columns. The query results show that dyadic relationships of competitors with sample case firms are less likely to be influenced by relationship factors, such as trust and commitment, strong ties or confidence and reliability. For example, the firms in primary data analysis cannot trust their competitors and do not usually have strong ties with them. Therefore, the moderating factors found to be more influential in dyadic relationships between case firms and competitors are power and dependency, weak ties and very formal or no interaction with competitors in local or international markets. The 'power' position of competitors influences the decisions of other firms in a business network. In this research study, the 'power' node exhibits both relational and structural aspects of the business network. As the size of the firm is directly linked to the power position of competitors in business networks, the two aspects were considered to be moderating factors in the two different categories of relational and non-relational moderating factors.

5.2.2.5 Queries for moderating factors affecting standardisation/adaptation of SMEs

As the purpose of this research study was to identify relationship factors and their impact on sample case firms in international markets in the context of dyadic business relationships, the moderating factors were added in rows, and standardisation/adaptation outcomes were added in columns. NVivo also provides an option to run the queries for any case nodes, and specifically for any outcomes for which the impact of moderating factors is of interest.

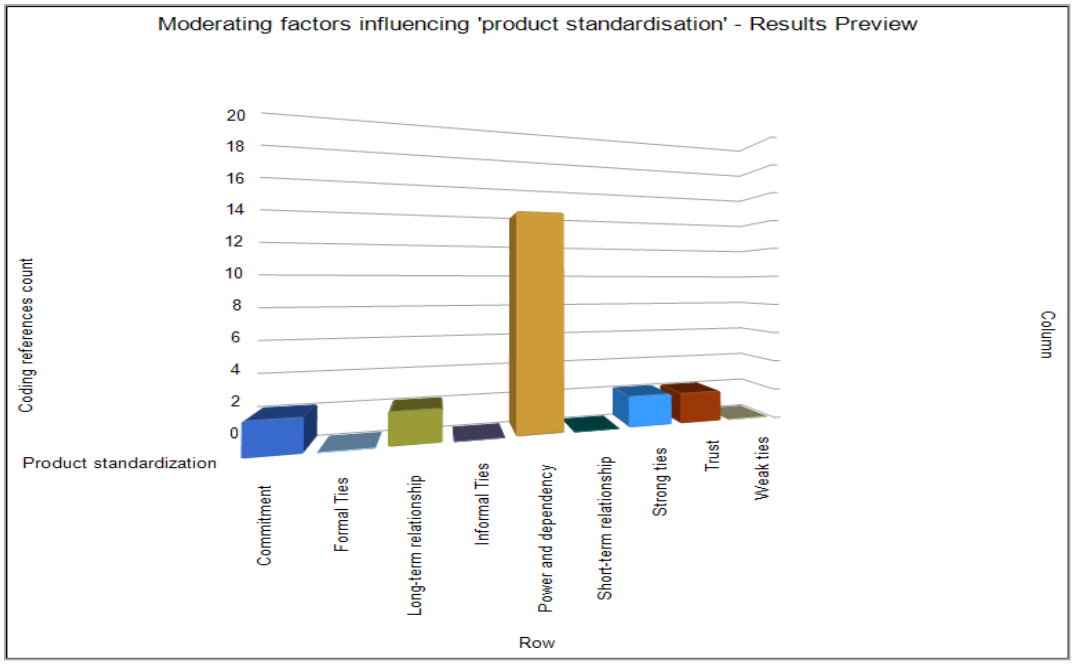


Figure 5.26: Relationship factors affecting product standardisation

The product standardisation decisions of SMEs are affected by relational moderating variables such as trust, commitment and strong ties, but most of these decisions are taken purely by customers. In dyadic relationships between sample case firms and customers, the customers are considered to occupy a more powerful position than SMEs. Therefore, as can be seen from Figure 5.25, power and dependency has the greatest influence on product standardisation or adaptation decisions. For certain firms, non-relational factors such as the nature of the product are much more influential than relationship factors. In the surgical industry, it was found that owing to the nature of the product; most products are standardised across the world. Similarly, matrix coding queries were run to identify differences across industries, and it was found that owing to the nature of products, most products are adapted to different countries based on various factors related to the customers in those countries. For example, for food products such as biscuits, one respondent mentioned that customers in the UK want high-quality biscuits with high sugar content, while customers from South Africa prefer fewer sweet biscuits of average quality.

Therefore, power and dependency is a moderating relationship factors which affects most product standardisation/adaptation decisions in dyadic relationships between sample SMEs and customers. Similar queries were used to identify similarities and differences in the data for different industries.

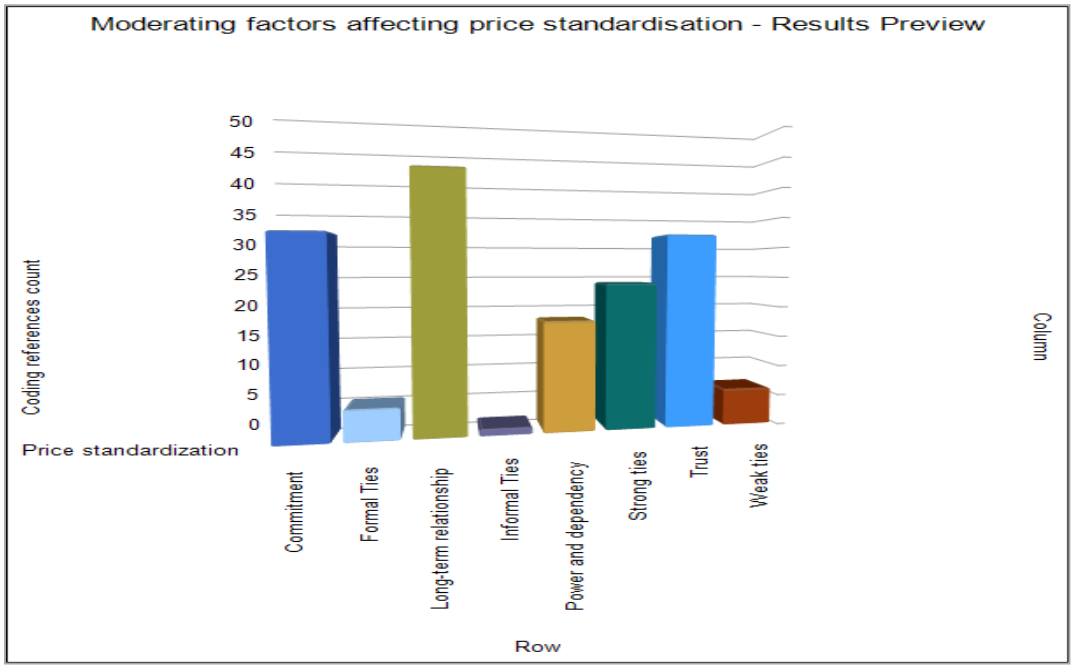


Figure 5.10: Relationship factors affecting price standardisation

Figure 5.27 shows that moderating variables such as trust and commitment, power and dependency, long-term relationships and strong ties were found to have a greater influence on price standardisation across all cases. Price standardisation was further analysed using queries to establish which actors have a greater influence on price standardisation and which actors make little difference in sample firms' pricing decisions.

5.2.2.6 Queries for actors influencing standardisation/adaptation of SMEs

During the data analysis, it was discovered that not all actors influence standardisation/adaptation of all elements of the marketing mix. SMEs' interactions with certain actors in business networks influence specific marking mix elements. For example, it was observed that distributors in dyadic relationships with SMEs influence distribution channel decisions (see Figure 5.28).

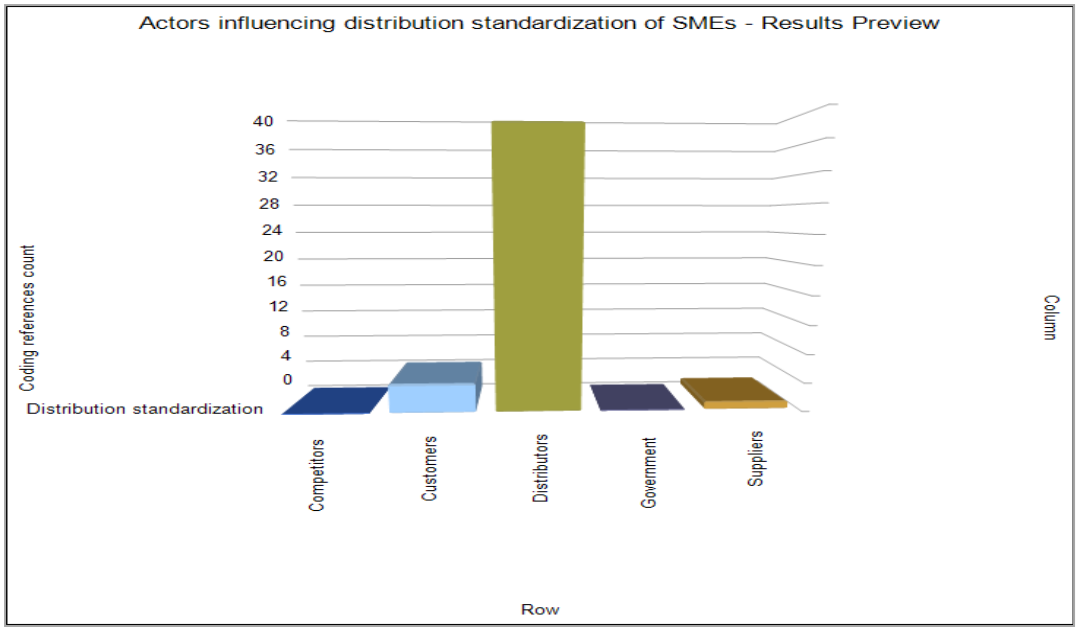


Figure 5.2811: Actors influencing distribution standardisation of SMEs- Result preview

SMEs use similar distribution channels because they have strong ties with or trust and confidence in cargo agents. This clearly shows that long-term relationships and trust or commitment shown by cargo agents to SMEs leads to distribution channel standardisation decisions. It was also discovered during the data analysis that price is the only marketing mix element which is influenced by more than one actor in dyadic relationships with SMEs in a business network (see Figure 5.29).

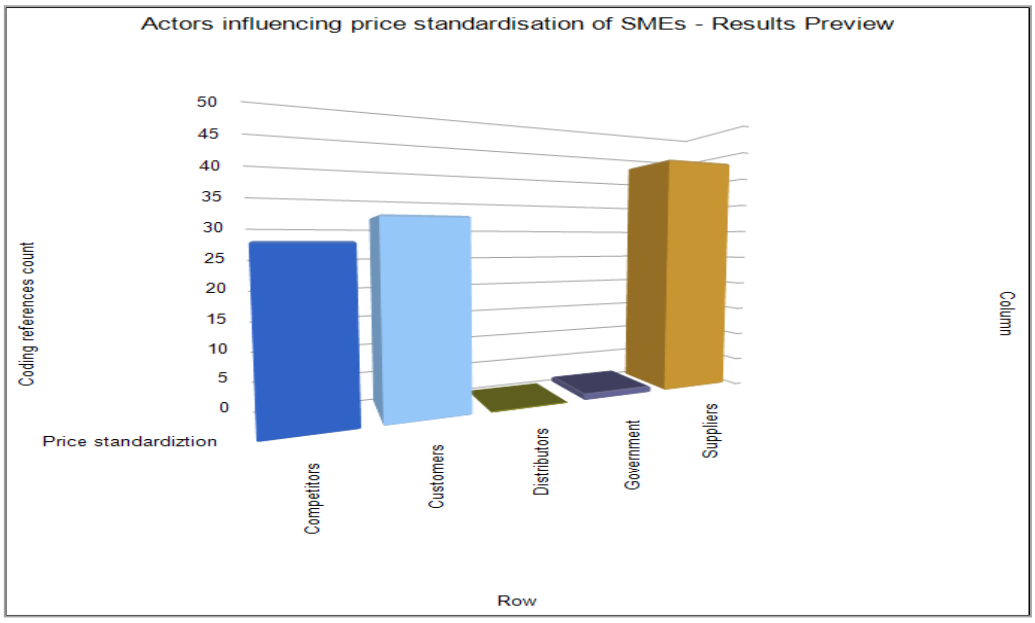


Figure 5.2912: Actors influencing price standardisation of SMEs

From the data analysis of all these cases and their interactions with actors, it was found that customers, suppliers and competitors influence the price standardisation/adaptation decisions of firms. Although the moderating factors are different for the interactions of suppliers and competitors with SMEs, it was observed that both actors influence the price standardisation decisions of firms in a business network. Interaction between these actors and SMEs results mainly in price standardisation rather than price adaptation decisions.

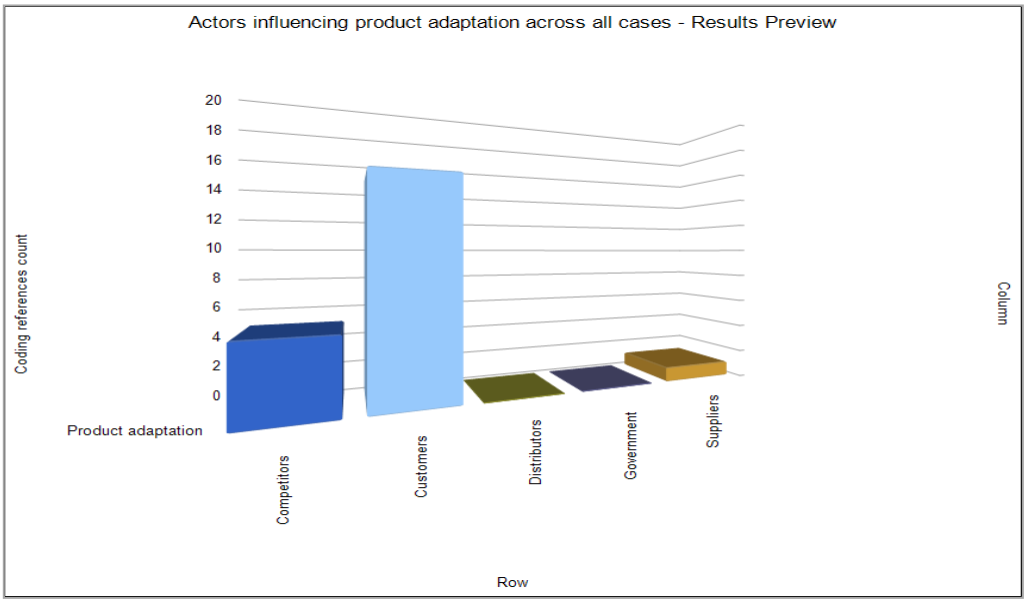


Figure 5.3013: Actors influencing product adaptation across all cases

The matrix coding queries show that interactions with distributors and government do not influence SMEs' product adaptation decisions (see Figure 5.29). Dyadic business relationships with suppliers may influence SMEs' product adaptation decisions. Strong relationships with suppliers increase the chances of having a variety of raw materials for production and hence may result in product adaptation decisions. According to merchandisers from LM6:

> We are continuously in contact with these suppliers. There is a specific frame of mind as they understand us and we understand them. As we give benefit to our customers, our suppliers give us the benefit owing to our long-term relationship.

This also suggests that, in the long run, a company starts to trust its suppliers and finds these established suppliers more committed than new suppliers. LM6 maintains long-term relationships with suppliers, interacting with these suppliers even after orders have been completed. Sometimes, if the same accessories are required by another customer and the company likes the supplier's accessories, the company will contact the same supplier again. Case six's customers may also have relationships with the same suppliers in the business network. Further queries are described in detail in Chapter 6.

5.3 Stage 4: Drawing conclusions

This section describes the analytical tools and the methods to increase the reliability and validity of collected data and results from the data analysis.

5.3.1 Verification

NVivo enables researchers to verify higher-order themes (Bazeley and Jackson, 2013). Evaluation criteria are used to enhance the rigorousness of the research work and to improve the quality of the research design and data analysis (Silverman, 2006). A positivist approach uses validity and reliability as quality measures for research. Validity is interpreted as 'the extent to which an account accurately represents the social phenomenon to which it refers' (Hammersley, 1990:57), whereas reliability refers to 'the degree of consistency with which instances are assigned to the same category by different observers or by the same observer on different occasions' (Hammersley, 1992). By definition, reliability is the extent to which measurements are repeatable. In this study, with the help of NVivo, charts and queries could easily be created to observe which results were repeated across the cases.

The evaluation criteria used for this research were triangulation and observation. This research was a cross-sectional study focusing on dyadic relationships: it did not explore changes in dyadic relationships over time but focused on identifying relationships and their impact on

strategic decisions. The research study focused on the causal interference of factors in network relationships. A degree of unit homogeneity was found between the cases and between the sample and population. The expected findings from primary case studies will prove reliability and validity across all the sample cases.

5.3.1.1 Inter-coder reliability

The trustworthiness of the data and the reliability of the generated codes need to be assessed by second coder for coding process. Therefore, for this research work, the second coder was used for coding of 30% of all the transcripts for total sample of 14 SMEs. Inter-coder reliability is used to enhance the validity and reliability of the coded material and outcomes.

According to (Auld et al., 2007), the inter-coder reliability is determined by percentage agreement of passages coded to the appropriate nodes. Percentage agreement is defined as:

$$\text{Percentage agreement} = \frac{\text{Agreements}}{\text{Agreements + disagreements}}$$

To ensure inter-coder reliability, the researcher checked coding for transcripts with the second coder through meetings. The inter-coder reliability can be determined by using NVivo. Several tools are available to foster the reliability testing in NVivo (Bazeley and Jackson, 2013).

Following are the ways used to determine the inter-coder reliability between two coders:

- Using coding stripes
- The coding comparison query

According to (Bazeley and Jackson, 2013), the for determining the inter-coder reliability initially it requires to merger the projects (transcripts coded by different users) in same project in Nivo. The coded material then can be examined by turning on the coded material by different

coders. Following figure shows the work of two coders on a source documents for different codes along with the procedure to be followed in NVivo.

View coding by different users:
- Open a source in detail view
- Select view > Coding stripes> Select items>

This shows the coding density bars for each user and allows seeing the coder's difference in coded material.

Figure 5.3114: Coding stripes shows the work of first and second coder.

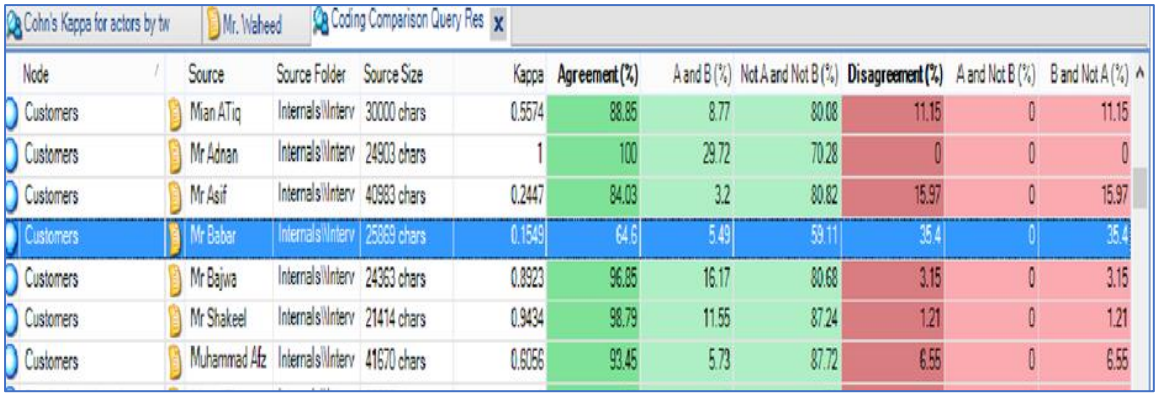
5.3.1.2 Inter-coder reliability using Cohen's Kappa

To determine the inter-coder reliability using Cohen's Kappa in NVivo we use coding comparison query. The first and second coder can compare the coding of themes, categories and inter-coder agreement by calculating Cohen's Kappa with an option given in the coding comparison query (Bazeley, 2007, Bazeley and Jackson, 2013). The statistical output from coding comparison query can be shown as follows:

- Source size: Total number of units in the source being coded (characters for documents, duration to one-tenth of a second for media files, pixels for images).
- Kappa- a value of I indicates perfect agreement n (identical coding), 0 (or less) indicate no better than chance or (worse than chance)
- Agreement (%)- shows overall level of agreement between coders such as A and B% or Not A and Not B (%).
- Disagreement (%)- Overall disagreement between the coders such as A and Not B (%) or B and Not A (%).

5.3.1.3 Visualization of inter-coder reliability

Following is the portion of the output for a coding comparison query in the research project data is shown in Figure 5.30. The coding of K (User A) and NA (User B) for single node customers using 30% of the total interviews, i.e. 6 interviews out of total 14 interviews.



Cohn's Kappa for actors by tw | Mr. Waheed | Coding Comparison Query Res

Node	Source	Source Folder	Source Size	Kappa	Agreement (%)	A and B (%)	Not A and Not B (%)	Disagreement (%)	A and Not B (%)	B and Not A (%)
Customers	Mian ATiq	Internals\Interv	30000 chars	0.5574	88.85	8.77	80.08	11.15	0	11.15
Customers	Mr Adnan	Internals\Interv	24903 chars	1	100	29.72	70.28	0	0	0
Customers	Mr Asif	Internals\Interv	40983 chars	0.2447	84.03	3.2	80.82	15.97	0	15.97
Customers	Mr Babar	Internals\Interv	25869 chars	0.1549	64.6	5.49	59.11	35.4	0	35.4
Customers	Mr Bajwa	Internals\Interv	24363 chars	0.8923	96.85	16.17	80.68	3.15	0	3.15
Customers	Mr Shakeel	Internals\Interv	21414 chars	0.9434	98.79	11.55	87.24	1.21	0	1.21
Customers	Muhammad Afz	Internals\Interv	41670 chars	0.8056	93.45	5.73	87.72	6.55	0	6.55

Figure 5.15: Statistical output from a coding comparison query showing Cohen's Kappa for a single node 'Customers.'

Similarly, the Cohen's kappa is calculated for all the nodes created in the research projects. Such as all the nodes related to actors, i.e., customers, suppliers, competitors, distributors and government.

Following figure shows the coding comparison query for price standardization as an outcome factor. Similarly, Cohen's Kappa was calculated for all the codes related to the standardization/adaptation of price, product, promotion and distribution of marketing programs.

Cohn's Kappa for actors by tw | Mr. Waheed | Coding Comparison Query Res

Node	Source	Source Folder	Source Size	Kappa	Agreement (%)	A and B (%)	Not A and Not B (%)
Price standardiztion	Mr Adnan	Internals\Interv	24903 chars	1	100	17.44	82.56
Price standardiztion	Mr Asif	Internals\Interv	40983 chars	0.8008	96.43	8.13	88.3
Price standardiztion	Mr Babar	Internals\Interv	25869 chars	0.6472	92.53	8.11	84.42
Price standardiztion	Mr Bajwa	Internals\Interv	24363 chars	0.9512	98.62	16.41	82.21
Price standardiztion	Mr Shakeel	Internals\Interv	21414 chars	1	100	19.35	80.65
Price standardiztion	Muhammad Afz	Internals\Interv	41670 chars	1	100	3.63	96.37
Product adaptation	Mian ATiq	Internals\Interv	30000 chars	0.8408	97.42	7.58	89.84

Figure 5.3316: Statistical output from a coding comparison query showing Cohen's Kappa for single node 'Price standardization'.

Following Figure shows the Coding comparison query for 'weak ties' as the relational factor used in data analysis. The coding for other relationship variables such as trust, commitment, social ties and power and dependency were also compared using coding comparison query and

Cohen's Kappa measure to know the agreement between two coders, i.e., coder A (K) and coder B (NA).

Node	Source	Source Folder	Source Size	Kappa	Agreement (%)	A and B (%)	Not A and Not B (%)
Weak ties	Mr Asif	Internals\\Interv	40983 chars	0.8449	99.46	1.51	97.94
Weak ties	Mr Babar	Internals\\Interv	25869 chars	0	96	0	96
Weak ties	Mr Bajwa	Internals\\Interv	24363 chars	1	100	12.37	87.63
Weak ties	Mr Shakeel	Internals\\Interv	21414 chars	0.8908	99.32	2.86	96.46
Weak ties	Muhammad Afz	Internals\\Interv	41670 chars	0.7923	99.46	1.04	98.42

Figure 5. 17: Statistical output from a coding comparison query showing Cohen's Kappa for a single node 'Weak ties.

5.3.1.4 Developing theories

Modellers are used as tools to visualise theoretical connections in the data (Bazeley and Jackson, 2013). Modelling theoretical associations advances the data analysis. This begins with the grouping of related concepts by mapping specific connections between specified nodes to reflect processes or associations noticed during the data analysis.

According to Yin (2009), theory development is an essential part of research design. The purpose of this case study is to develop theory about SMEs: how SMEs from developing countries develop their marketing programmes internationally in light of network influences. This research examines standardisation/adaptation strategies from a network perspective, making a novel contribution to existing theory.

NVivo facilitates the exploration of higher-order themes through charts, graphs and queries. With the help of the toolkit provided by QSR International, it is easy to follow a data analysis procedure. NVivo 10's strengths lie in data analysis, such as coding, developing themes and concepts, developing higher-order themes that contribute to theory development, and handling large amounts of data with ease of retrieval. However, it also has certain drawbacks, in that it is less useful from an analytical perspective. The percentage coverage or number of counts

used for charts and queries may vary according to the length of the interview: rather than focusing on the strength of the data, the analysis may focus on how many times something is said. This weakness can easily be overcome by analysing the actual meaning or outcomes of data coded in NVivo. In this research study, conceptual links between nodes were considered during the data coding. For example, if a given text were about how strong ties influence the pricing of a product in a certain case study, this would be coded on nodes such as the case node, the actor node (actors with which SMEs have shown strong ties), the price standardisation node (if the relationship leads to price standardisation), and the moderating factor node (such as strong ties). This made it easier to develop queries based on the conceptual framework. Queries were used to establish which moderating variables in dyadic relationships between firms and suppliers influence price standardisation. To confirm the reliability and validity of the results extracted from NVivo, detailed findings are given in the next chapter Write-up and evaluation

In this research study, a qualitative research methodology with a constructivist/interpretivist stance was selected, raising the question of what evaluation criteria should be used for qualitative research. Positivist and interpretivist researchers have different views on how research outcomes may be evaluated. The measures of validity, reliability and generalizability used in evaluating positivist studies are regarded by many qualitative researchers as having relatively little significance for judging the merits of interpretive investigations (Carcary, 2009:11). Some scholars have tried to apply validity and reliability to qualitative work (Hammersley, 2008). However, validity and reliability, as quantitative research criteria, will inevitably result in confusion and inconsistency when applied to qualitative research because these criteria are incompatible with the basic philosophical assumptions of this type of inquiry (Smith, 1989). Silverman (2006:211) describes anecdotalism and triangulation as evaluation criteria for qualitative research, arguing that qualitative researchers, with in-depth access to single cases, must overcome a particular temptation. He asks how researchers can convince

themselves and their audience that the findings are genuinely based on critical investigation of all their data and do not depend on only a few well-chosen examples, known as anecdotalism. According to Denzin (1978), triangulation is defined as 'the combination of methodologies in the study of the same phenomenon'. Some interpretivist address alternative issues such as credibility, dependability and transferability when determining the trustworthiness of their qualitative investigations (Carcary, 2009:11).

Apart from the above-mentioned traditional choices for evaluation, Silverman (2006:212) suggests some interrelated ways to achieve validity and rigour in the findings. These are:

- **Refutability:** Refuting initial assumptions about the data in order to achieve objectivity.
- **Constant comparative method:** Finding other relevant cases for comparison.
- **Comprehensive data treatment:** Actively seeking out and addressing anomalies or deviant cases.
- **Deviant case analysis**: Testing provisional hypotheses by 'negative' or 'discrepant' cases until all the data can be incorporated into an explanation.

Once methodological choices have been made, the researcher must apply evaluation criteria related to the overall goal of the research question. The research question of this study demands qualitative research evaluation criteria, i.e., triangulation, observation and comparison. Lincoln and Guba (1985) present two criteria: dependability (corresponding with reliability) and conformability (equivalent to objectivity). Dependability refers to the degree to which a study is replicable in the same context. The trustworthiness of the study (Miles and Huberman, 1994a) should be assessed on the basis of triangulation of the data source (respondent, time and place), data type (qualitative and quantitative) and research methods (interviews and surveys are used extensively in this study).

5.4 Conclusion

This chapter is comprised of various stages used in primary data analysis using NVivo in detail and is concluded by discussing how to draw conclusions and verifying the results by using inter-coder reliability criteria using Cohen's kappa within coding comparison query. The inter-coder reliability not only increases the validity of the data analysis but it also ensures more robust results across all the cases.