

## CHAPTER 4: METHODOLOGY

### **4.1 A QUALITATIVE COMPARATIVE CASE STUDY WITH A STRONG EXPLORATIVE ELEMENT**

The goal of this research project is to explore whether possible variations in hybridization profiles (*how-question*) of MNE subsidiary production systems can be related to both an institutional and a strategic distance as well as to the systematic variation in strategic choices (*why-question*). The latter comprise both variations at the corporate and the subsidiary level. While strategic choices at the corporate level involve different generic strategies, strategic choices at the subsidiary level refer to different entry modes. These are defined as constituted by establishment and equity modes. Based on this research goal two methodological decisions suggest themselves: to conduct a comparative investigation of cases controlled by well-defined selection criteria and to build on explanatory case studies with a strong explorative element. It is important to note that ‘explorative’ does not imply that the derivation of tentative theoretical inferences is impossible (Eisenhardt, 1989).

#### ***WHY A QUALITATIVE EXPLANATORY COMPARATIVE CASE STUDY WITH A STRONG EXPLORATIVE ELEMENT?***

*Why qualitative research?* Researching how hybridization outcomes of production systems differ and why such outcomes come about is essentially about understanding the relation between qualitative differences of organizational phenomena and a complex, multidimensional contextuality. Based on this research interest, it requires qualitative methods that are defined by Marschan-Piekkari and Welch (2004) – based on Van Maanen (1983) – as “procedures for ‘coming to terms with the meaning not the frequency’ of a phenomenon by studying it in its social context” (Marschan-Piekkari and Welch, 2004: 6). Qualitative research is particularly appropriate when the relevant contextuality is not sufficiently known ex-ante and requires a good deal of exploration and flexibility as is suggested by this project. Marshall and Rossman (1995) assert that the qualitative approach is “uniquely suited to uncovering the unexpected and exploring new avenues” (Marshall and Rossman 1995: 26). For it provides “the flexibility needed to allow the precise focus of the research to evolve during the research process itself” (Marshall and Rossman 1995: 37). As this research posits only tentative associations – without formulating specific propositions or hypothesis – and leaves specific causalities open to exploration, a qualitative approach suggest itself. In sum, qualitative research has been generally recommended where social phenomena are related to complex social contextuality as is the case in this research.

*Why case studies?* Yin (2003: 1) suggests that “case studies are the preferred strategy when ‘how’ and ‘why’ questions are being posed, when the investigator has little control over events, and when the focus is on a contemporary phenomenon within some real-life context”. Case studies are also suggested to be an ideal option when cross-border or cross-cultural issues are involved. Ghauri (2004) claims that in IB research case study approaches are particularly suited “where data is collected from cross-border and cross-cultural settings” (Ghauri, 2004: 111). For:

*In spite of rather sophisticated methods of questionnaire translations and cross-translations, the understanding and interpretation of questions by respondents and of answers and findings by researchers are very difficult to compare and often lead to misleading conclusion. The case study method provides excellent opportunities for respondents and researchers to check their understanding and keep on asking questions until they obtain sufficient answers and interpretations. (Ghauri, 2004: 111)*

Clearly, all of the above conditions apply when we are investigating *how* and *why* hybridization profiles of production systems in automobile subsidiaries in India differ. The decision for a case study approach still leaves open the question: *what kind of case study to conduct?* According to Yin (2003), case studies can be used for explorative research when causalities are not well understood or known as well as for simply describing a social contemporary phenomenon. However, case studies are also suitable to conduct explanatory inquiries where propositions are tested or basic associations explored. Depending on the research goals of a case study we can distinguish three ideal types of case studies: explorative, descriptive and explanatory (c.f. Eisenhardt, 1989). According to Yin (2003) ‘what-questions’ are likely to indicate an exploratory research interest. ‘How-’ and ‘why-questions’, in turn, usually indicate a more explanatory kind of investigation. At the same time, Yin (2003) sees no rigid boundaries between the different types as explanatory case studies may be complemented by exploratory or descriptive case study components. Given the research interest of this study, focusing on the *how- and why-question* of production system hybridization, this case study is at its core an explanatory case study. Yet, as a number of causal relations between strategic choices, different kinds of contexts and hybridization outcomes are far from clear, specific propositions are deliberately avoided and left open to exploratory investigation. Therefore this case study can best be described as a mix between an explanatory and an exploratory case study.

There is a second important decision to be taken with regard to the kind of case study. This involves the question whether the case study should be based on *single or multiple/comparative case study designs?* Pauwels and Matthyssens (2004: 129) argue that the “only argument to switch from single to multiple case study research (at the risk of losing

depth) is to create more theory-driven variance and divergence in the data, not to create more of the same”. Based on this reasoning, a *multiple-case design* suggests itself when we are *exploring* associations between variations in strategic choice on the one hand and variations in hybridization profiles on the other. This leads us to the question *on what grounds to select the cases?* In multiple case studies, the case selection follows what Yin (2003) calls a ‘replication-logic’ or others the logic of ‘theoretical sampling’ (Glaser and Strauss, 1967; Eisenhardt, 1989; Pauwels and Matthyssens, 2004). The basic rationale is that “each case must be carefully selected so that it either (a) predicts similar results (*a literal replication*) or (b) predicts contrasting results but for predictable reasons (*a theoretical replication*)” (Yin, 2003: 47). Similarly, Eisenhardt (1989: 537) reasons that in case study research the “cases may be chosen to replicate previous cases or extend emergent theory, or they may be chosen to fill theoretical categories and provide examples of polar types”. In line with these suggestions and given the analytical framework presented, this research will be based on ‘theoretical sampling’ involving the selection of four ‘categorical types’ that *differ systematically with regard to major variation causing factors theorized*. More specifically, while the *first research goal*, the question whether both strategic and institutional distance impact hybridization outcomes could be investigated in a single case study (i.e. mainly through variation across different production system dimensions within a single case), the *second research goal* of this project, involving the question how different strategic choices impact hybridization outcomes, relies on ‘theoretical replication’ through a multiple case study. Although the selection of cases is driven by broad associations posited, the study’s analytical framework is formulated in an open and tentative way. Again, the formulation of propositions on specific relationships between core analytical dimensions is avoided in line with a theory-building research design (Eisenhardt, 1989).

## **4.2 DATA COLLECTION**

### ***CASE SELECTION: FOUR AUTOMOBILE SUBSIDIARIES IN INDIA***

The comparative study involves four cases for two reasons. On the one hand, four cases allow a relatively complete variation of the major variance causing factors posited in this study (i.e. variation in generic strategy and entry mode). On the other hand, given the comprehensiveness of a production system as defined in this work and given the time-intensity of qualitative case studies as well as the limited financial resources of the project, four cases were considered the maximum that could be handled. The study is restricted to one sector – the automobile industry – and one host country context – India. These restrictions are based on the following reasons. Previous hybridization research has shown that transfer propensities and hybridization profiles differ markedly by industrial sector (e.g. Florida and Kenney,

1995; Kenney, 1999; Abo et al., 1994; Smith and Elger, 2000). To control for this sector-effect the study is confined to one sector. The automobile industry or production systems of the automobile sector are chosen because they are well understood and because there is an emerging body of hybridization research in this sector. The latter allows selective comparison of the findings of this study with those of others. Moreover, to reduce the research complexity the host-country context is also held constant. Previous research (e.g. Kostova and Roth, 2002) has shown that different host-country contexts have a great impact in the transferability of management practices within MNEs. As the impact of host country variance is not at the heart of this study and would unnecessarily increase the contextual complexity impacting the hybridization outcome, the project is limited to one host country only. India is chosen as the focal research context on two grounds. First of all, the country choice is based on the theoretical sampling requirements of this study. The Indian context offers a range of cases of automobile subsidiaries that differ systematically with regard to both parent generic strategies and entry modes. Additionally, the variation in entry times of these subsidiaries is moderate, which helps to reduce local contextual change effects as far as possible. Secondly, India as a research context poses a valuable addition to extant hybridization research. Not only has hybridization research been largely restricted to Japan as the main country-of-origin of transfers but it has also mainly focused on the US and the UK as the main countries-of-destination (Becker-Ritterspach, 2005). Although more recently research on transfer and adaptation has grown beyond Japan as the sole source-of-transfer and/or beyond the UK and the US as sole destinations-of-transfer, an overall research bias towards Japanese-FDI remains. Furthermore, while researchers pay increasing attention to Asia, most notably China (e.g. Taylor, 1999; Noronha, 2002), India, one of the most important emerging economies in Asia, has been largely neglected with regard to organizational hybridization research. Apart from a few studies (e.g. Okada, 1998; D'Costa, 2003) that focus on Japanese-FDI and only touch sporadically on FDI-related transfer and adaptation issues, there are virtually no studies that systematically research organizational hybridization in the Indian context.

#### ***INTRODUCING THE FOUR CASES***

The four cases selected for this research project include the subsidiaries Maruti Udyog Limited (MUL), Fiat India Private Limited (FIPL), DaimlerChrysler India Private Limited (DCIPL), Skoda Auto India Private Limited (SAIPL). Although a thorough introduction of the four cases will be performed in the individual case discussions in chapter 6, a brief introduction of the cases is made here to render the sampling-logic of this project more comprehensible.

MUL was founded in 1976 as M/s Maruti & Co Ltd. by Sanjay Gandhi, the son of Indira Gandhi. However, Sanjay Gandhi's Maruti project turned out to be a failure. It was not until

1983, when Suzuki entered the company, that MUL started producing its first cars. As no meaningful production infrastructure and labor force existed, the establishment of the site was basically a Greenfield project. As regards the equity mode, Suzuki was initially involved as a minority JV partner. In 1992 MUL ceased being a public sector company when the Suzuki Motor Company (SMC) acquired a 50% share in the JV. In 2002, SMC finally acquired a majority in the JV. With regard to the generic strategy, SMC showed the clearest signs of combining a cost leadership and focus strategy.

Fiat entered the Indian market in 1996 in the format of a majority JV with Premier Automobiles Limited (PAL). Although the company initially planned to set up a wholly-owned Greenfield operation, market conditions forced the company to freeze its plans. Instead, Fiat engaged in a JV with the former technical-collaboration partner PAL and took over its 'Brownfield' site. Practically from the beginning, Fiat had a majority (51%) in the JV with PAL and raised its stake continuously. With the shift in equity the Indo-Italian JV, India Auto Limited (IAL), was renamed to Fiat India Private Limited (FIPL). Fiat's generic strategy can be described as combining a differentiation and cost leadership strategy. However, as far as Fiat's generic strategy for emerging markets is concerned, it is more appropriate to label it a combination of a focus and a cost leadership strategy.

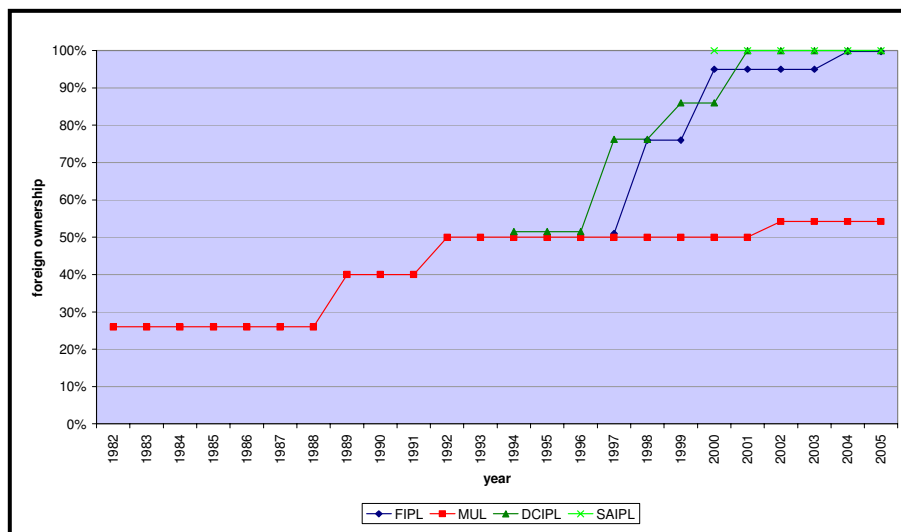
DaimlerChrysler India Private limited (DCIPL; initially Mercedes-Benz India Limited) was founded in 1994 as an Indo-German JV between Daimler-Benz and the Indian truck producer Tata Engineering and Locomotive Company Limited (TELCO). From the start the German partner held a majority in the JV and continuously increased its equity in the operation. The establishment mode of DCIPL was basically a Greenfield format. Although some employees were delegated from TELCO, the labor force was for the most part young and newly recruited. The production facilities were also newly installed in a new factory hall. DaimlerChrysler's generic strategy can be best categorized as a combination of differentiation and focus.

SAIPL was founded in 2000 as a wholly-owned Greenfield site. The generic strategy of SAIPL's parent Volkswagen (VW) can be best described as combining a differentiation and cost leadership strategy. Although VW, like Fiat, differentiates its product portfolio by world regions, Skoda's generic strategy for emerging markets can still be considered a combination of differentiation and cost leadership. Table 14 outlines the major difference between the cases with regard to their strategic choices. Figure 7 shows graphically the equity development of the four cases between 1982 and 2005.

**Table 14: Selection criteria and variance of cases based on theoretical sampling**

	MUL	FIPL	DCIPL	SAIPL
MNE related strategic choices				
Generic strategy	Combining a focus and cost leadership strategy  Internationalization focus on emerging or developing markets	Overall combining a differentiation and cost leadership strategy (World Car is combining a focus and cost leadership strategy) Internationalization focus on emerging or developing markets	Overall combining a differentiation and focus strategy  Internationalization focus on mature markets	Overall combining a differentiation and cost leadership strategy  Internationalization focus on emerging or developing markets
Entry mode subsidiary related choices				
Entry time	1982	1997	1994	2000
Establishment mode	Greenfield	Brownfield	Greenfield	Greenfield
Equity mode	Joint Venture  (From minority to majority JV)	Joint Venture > wholly-owned (From majority JV to wholly-owned)	Joint Venture > wholly-owned (From majority JV to wholly-owned)	Wholly-owned  (Wholly-owned from the outset)

**Figure 7: Foreign ownership of MUL, FIPL, DCIPL and SAIPL**



### **DATA COLLECTION METHOD**

The study's data collection rests on the triangulation method (Miles and Huberman, 1994). The study makes use of multiple sources of data and collection methods including: observation, documentation and guided open-ended interviews (Eisenhardt, 1989; Patton, 1990; Yin, 2003). The main benefit of triangulation and integration of multiple data sources is an increased internal validity of the study. Pauwels and Matthyssens (2004) summarize the two goals and benefits of triangulation as follows:

*First, it is proposed as 'a near-talismanic method of confirming findings' (Miles and Huberman 1994: 266). In this perspective, data-source triangulation mainly reduces random measurement error (Kumar et al. 1993). Second, triangulation is useful in so far as different facets of the phenomenon are investigated through the most appropriate combination of methods and sources (Yeung 1995). (Pauwels and Matthyssens, 2004: 129)*

In this study triangulation is of paramount importance because there is an imbalance with regard to different types of data available for the respective cases. For example, while there is a high saturation with regard to interview data in the DCIPL case, there is only a moderate amount of external (press/media) documentation available for this company. This is just the other way round in the case of MUL where the interview saturation-level is moderate and the availability of external documentation is very high. Thus, the combination of these different sources of data not only helps to cross-check the validity of findings but is also a prerequisite to establish a sound comparison across different dimensions under conditions of financial resource and information/data access constraints.

### **DATA COLLECTED**

The data collection method of this work rests on three pillars. The first pillar comprises the collection of documents available within and outside the companies. Data collection for this kind of data lasted practically throughout the whole period of the research project starting in February 2002 and ending in December 2005. This implies that data collection overlapped with data analysis, which is a key element and advantage of case study research (Eisenhardt, 1989). The second pillar involves observations made during factory and site visits and the third pillar consists of guided/semi-structured interviews. The factory-visits and company-interviews were mainly conducted during the research stay in India between September 15<sup>th</sup>, 2002 and February 29<sup>th</sup>, 2003. Only in the case of DCIPL there was an earlier research stay in India between July 6<sup>th</sup> and July 27<sup>th</sup>, 1998 during which a total of 24 interviews were conducted. During the second and main research stay for this comparative study a total of

38 interviews were completed in the four subsidiaries as well as with different organizational and institutional representatives/experts outside these firms. Over all, the interviews served two broad goals. Interviews in the automobile subsidiaries were conducted to establish a solid understanding about their production system hybridization profiles and the contextual conditions that brought these about. Interviews with outside agencies were conducted to acquire a more solid understanding of the strategic and institutional context in India as well as to establish an external perspective on the companies. Table 15 gives an overview of the data collected, ordered by research case, by data-collection activity, and by date. Table 16 gives an overview about the interviews conducted with representatives of company external agencies and experts.

**Table 15: Summary of activities at different research sites**

Activity Case	Research period	Document collection	Factory visits	Interviews
MUL	Mainly between February 2002 and February 2003	Company website, company documents and reports, IPO red herring prospectus, academic books and articles, newspaper and website articles, press interviews	Tour of production site in Gurgaon, the State of Haryana on 18.01.2003	6 interviews conducted between 13.12.02 - 22.01.03
FIPL	Mainly between February 2002 and February 2003	Company website, company documents and reports, academic books and articles, newspaper and website articles, press interviews	Tour of production site in Kurla/Mumbai, the State of Maharashtra on 07.01.2003	4 interviews conducted on 07.01.2003
DCIPL	Mainly between February 2002 and February 2003	Company website, company documents and reports, academic books and articles, newspaper and website articles, press interviews	Tour of production site in Pimpri/Pune, the State of Maharashtra on 12.11.2002	10 interviews conducted between 10.11.02 - 18.11.02 (24 interviews conducted during first research stay between 15.07.1998 - 29.07.1998)
SAIPL	Mainly between February 2002 and February 2003	Company website, company documents and reports, academic books and articles, newspaper and website articles, press interviews	Tour of production site in Walju Industrial Estate/Aurangabad, the State of Maharashtra on 25.01.2003	3 interviews conducted on 25.01.2003
Total				23



**Table 16: Summary of data collection regarding India's institutional and strategic context**

<b>Expert Interviews</b>	<b>Interview date</b>	<b>Number of inter-views</b>	<b>Factory visit where applicable</b>
General Motors India Vice President Corporate Af-fairs	Gurgaon, 27.01.2003	1	-
Technical Vocational Educa-tional and Training Consultant	New Delhi, 25.10.2002	1	-
Free Journalist - Motoring columnist	New Delhi, 25.10.2002	1	-
Eicher Motors Limited Chief Strategic Planning, Gen-eral Manager Manufacturing and Director Supply Chain	Indore, 03.01.2003	3	Tour of production site in Pitham-pur/Indore, in the State of Madhya Pradesh on 03.01.2003
Gesellschaft für technische Zusammenarbeit (GTZ) - Indo-German Tool Room Program	New Delhi, 28.10.2002	3	-
Automotive Component Manu-facturers Association (ACMA) of India - Excecutive Director	New Delhi, 06.11.2002	1	-
Society of Indian Automobile Manufacturers (SIAM) - Assis-tant Director	New Delhi, 29.11.2002	1	-
Indo-German Chamber of Commerce (IGCC) - Director General	Mumbai, 09.01.2003	1	-
Friedrich Ebert Stiftung - Ex-pert on Industrial Relations in India	New Delhi, 12.12.2002	1	-
Business Standard Motoring - Assistant Editor - Features	Mumbai, 09.01.2003	1	-
Engineering und Design AG (EDAG) - Managing Director	New Delhi, 10.09.2002	1	-
<b>Total</b>		<b>15</b>	

It should be added that the geographical spread of the four sites, initial access difficulties and financial constraints regarding trips to and stays at the different site locations did not allow prolonged research stays in some of the locations. Therefore, the number of inter-views remained below the level originally targeted. Finally, although case study protocols were carefully developed (c.f. Yin, 2003) including a detailed scheduling for the different kinds of research activities at different research sites, realities on the ground made a frequent rescheduling necessary. Nevertheless, the case study protocol served to systematically guide the research process and to track the achieved research goals.

## ***INTERVIEW GUIDE AND INTERVIEWEES***

The main goal of the company interviews and the document collection was gathering information on the *how* and *why* the local subsidiaries' production systems differed with regard to their hybridization profiles. This involved as a first step to develop an understanding *how* the hybridization profile actually looked like and to identify the contextual origin of particular production system dimensions. To establish such an understanding and to identify the contextual origin, interviewees were generally asked first specific questions about the configurational properties of the local production system across different dimensions. In a second step the interviewees were asked more specifically about the conceptual and physical origin of these configurational properties. In this context interviewees were also requested to compare the local production systems with those of other sites in the corporation and to identify similarities and differences as well as possible reasons for such differences. In a third step interviewees were asked specific questions aiming at identifying the transfer scenario, (mis)fits/recontextualization pressure experiences as well as adaptation measures taken. This involved questions such as: Whether the foreign parent defined and transferred a template? Which production system dimensions were covered by the template and whether or not there were transfer restraints or adaptation needs due to local/host contextual conditions? The last and final bloc of the interview guide was geared more specifically at identifying local/host contextual conditions as well as local subsidiary and MNE strategy related issues that may have impacted transfer scenarios, misfits/recontextualization pressures and recontextualization modes (see table 17).

**Table 17: Structure and main topics covered by the interview guide**

---

Personal Information of interviewee
◆ Function, company membership, career etc.
General company information:
◆ Foundation, products manufactured, vertical integration and history of site, locational choices, employee numbers etc.
Production system configuration across dimensions
◆ Organizational Structure: Functional differentiation & hierarchical differentiation
◆ Process Organization: Technical configuration & Human Resource Profile
◆ Organizational Relations: Work and Labor Relations & Inter-organizational Relations
Contextual origins across production system dimensions
◆ Identify transfer scenario
◆ Identify (mis)fits/ recontextualization pressures
◆ Identify dominant recontextualization modes
Contextual conditions impacting transfer scenarios, recontextualization pressures and modes
◆ Strategic conditions in the local/host context
◆ Institutional conditions in the local/host context
◆ Strategic conditions at the subsidiary and MNE level

---

Expert interviews that were conducted with representatives of institutions or organizations followed a different format. In this respect, interview guides were specifically tailored to the host institutional or strategic context to be inquired, i.e. host country conditions focusing on the educational system, the industrial relations system and the automotive industry in India. As far as the selection of interviewees was concerned, there was only a limited influence on the part of the researcher. However, the interview-request to companies involved asking for interviewees who were ideally: in a top to middle management position, preferably in a production or human resource management function; interviewees who knew well other sites of the foreign parent company or even stayed there for some time; and interviewees who worked at the local subsidiary for an extended period of time. The reasoning behind this ideal interviewee profile was: that the interviewees needed to have a functional competence to answer production system and human resource related questions; that they needed to have a sufficient overview to answer questions concerning the whole production system; that the interviewees featured a comparative competence to answer questions about differences between the local site and other corporate sites; and that they should have some historical knowledge about the local site to be able to answer questions about developments and changes over time. Table 18 presents a broad overview of the functional and hierarchical positions covered by the interviewees in the respective subsidiaries.

**Table 18: Interviewees function and position across firms as well as their coding**

Function / Position / Interview date	Code
<b>MUL</b>	
Assistant General Manager Production on 13.12.02	MUL 1
Assistant Manager Marketing on 18.01.03	MUL 2
Assistant Manager Production on 18.01.2003	MUL 3
Former Manager R&D on 20.01.03	MUL 4
General Manager HRM on 20.01.2003	MUL 5
Assistant General Manager Maruti Supplier on 21.01.2003	MUL 6
<b>FIPL</b>	
Senior Advisor to the Managing Director on 07.01.2003	FIPL 1
Italian Head of Production on 07.01.2003	FIPL 2
Manager Production on 07.01.2003	FIPL 3
Manager Organization and Development on 07.01.2003	FIPL 4
<b>DCIPL</b>	
German Vice President and Head of Production on 18.11.2002	DCIPL 1
Head of Human Resources on 12.11.2002	DCIPL 2
German General Manager Production on 18.11.2002	DCIPL 3
General Manager Human Resources on 13.11.2002	DCIPL 4
General Manager Materials on 13.11.2002	DCIPL 5
General Manager Quality on 14.11.02	DCIPL 6
Divisional Manager Human Resources on 12.11.2002	DCIPL 7
Divisional Manager Planning on 14.11.02	DCIPL 8
Divisional Manager Production on 14.11.02	DCIPL 9
German Meister on 10.11.2002	DCIPL 10
<b>SAIPL</b>	
Czech General Manager Technical/Quality on 25.01.2003	SAIPL 1
Head of Production on 25.01.2003	SAIPL 2
Production Worker on 25.01.2003	SAIPL 3

### 4.3 DATA ANALYSIS

#### *THE ANALYTICAL STEPS TAKEN*

Eisenhardt (1989) notes that data-analysis is on the one hand the most difficult step of research and the least codified one on the other. The data analysis of this project mainly follows Eisenhardt's (1989) suggestion of starting with a within-case analysis and then moving on to a cross-case analysis. Moreover, the study follows Miles and Huberman's (1994) suggestions concerning the main components of qualitative data analysis, based on the overlapping and intertwined activities of: data reduction, data display, conclusion drawing and

verification. According to Eisenhardt (1989: 540) “[w]ithin-case analysis typically involves detailed case study write-ups for each site”. Such detailed and descriptive ‘write-ups’ for each of the four cases were also the first step of this study. The write-ups were mainly structured along the *how- and why-question* of different production system dimensions. However, before these write-ups were made, field notes, transcribed interviews and documents were thoroughly read and manually coded according to analytical categories derived from the theoretical framework. In this process interviews were decomposed and chunks of coded interview-sections grouped according to analytical dimensions theoretically defined. The categorizing/coding and subsequent regrouping was based on the different dimensions of the production system and simultaneously the *how-* and *why-question*. The second crucial analytical step involved a cross-case comparison. The main goal of this analytical step was to identify pattern similarities and differences across cases (see chapter 7). To make this process possible, the initial detailed write-ups were further reduced (c.f. Miles and Huberman, 1994) and condensed into shorter case profiles.

Following the ‘pattern matching logic’ (Yin, 2003; Pauwels and Matthyssens, 2004), the final analytical step of this study involved investigating and exploring whether or not the similarities and differences found across the cases could be attributed to predicted associations posited in the theoretical framework. This process was supported by extensive efforts of data display as suggested by Miles and Huberman (1994) (see also within-case and cross-case comparing tables widely used throughout the study). In addition to detecting matches/contradictions based on comparisons between theory and data, an effort was made to specify associations that were deliberately not explicated in the theoretical framework. Contradictions, matches and newly emerging causalities were then fed into refined theoretical statements discussed in the conclusion (see chapter 8) of this work (c.f. Eisenhardt, 1989).

#### 4.4 QUALITY OF RESEARCH

Pauwels and Matthyssens’ (2004) contribution suggests that the quality of qualitative research and its validation cannot be assured by output control but has to be built into the research design and process. Pauwels and Matthyssens (2004) state:

*[V]alidation is the ongoing deliberate creation and examination of possible sources of (in)validity. Sources of (in)validity may emerge from (1) juxtaposition of data, extant literature and the emergent theory, and (2) iteration between case selection, data collection, data analysis and comparison with extant theories (Dubois and Gadde 2002; Orton 1997). (Pauwels and Matthyssens, 2004: 130)*

A careful crafting of the research design – as is described in this chapter for this study – i.e. matching the research method, the data collection method, the sampling strategy and the data analysis with the research goal, is probably the most important building bloc to assure the validity of any research. But let us take a close look at validity criteria generally employed to evaluate the quality of case study research. Yin (2003) suggests four core quality criteria including construct validity, internal validity, external validity and reliability. We shall briefly discuss these criteria with regard to this study.

### ***CONSTRUCT VALIDITY***

Construct validity deals with the question whether appropriate operational measures are established for the concepts under research (Yin, 2003) and whether saturation is achieved (Glaser and Strauss, 1967). A number of measures were undertaken to enhance construct validity. First, the theoretical framework involves a clearly defined unit of analysis as well as clearly defined explanatory dimensions. This explanatory framework was systematically translated into a research design, topics in the case study protocol and ultimately into questions in the interview guide. This process of translation was embedded in the review and feedback of academic peers at conferences and workshops. Thus, the theoretical framework and the research design were presented at an early stage at conferences and workshops to allow for modifications and increased coherence (c.f. Saka, 2003). Initial case findings were partly presented in articles subjecting findings and conclusions to the scrutiny of academic peers.

Following Yin (2003), multiple sources of evidence were used by drawing on interview, observation and documentation. Moreover, to enhance ‘theoretical saturation’ the multiple respondents were made use of. The interview guide also assured that different interviewees in different firms were responding to a same set of questions. While the level of ‘theoretical saturation’ was not optimal in the firms, where only a small number of interviews were conducted, the researcher went to great length to achieve such saturation through secondary data collection. Fortunately, such data was available for the firms under investigation as the Indian automobile industry has received strong media coverage. Furthermore, key informants were asked to review a draft of the respective firm’s case write-ups and give their comments. Finally, by presenting comprehensive empirical evidence mainly in chapter 6, this study has tried to keep the ‘the chain of evidence’ (Yin, 2003) and the link between evidence and conclusions as transparent as possible.

### ***INTERNAL VALIDITY***

Internal validity is concerned with the challenge of “establishing a causal relationship, whereby certain conditions are shown to lead to other conditions as distinguished from

spurious relationships” (Yin, 2003: 34). In line with Yin (2003), this work employed the following techniques to enhance internal validity. First, the theoretical framework and associations posited were from the outset formulated in an open and tentative way. Therefore, the work was utterly open to rival or refined explanations, which were actually found and fed into revised theoretical statements in the conclusion. Secondly, such openness was supported by the guided interview approach, which not only assured an in-depth understanding of causalities but also assured an openness for emerging issues and unpredicted associations. Thirdly, internal validity was enhanced by employing the ‘pattern-matching logic’ as suggested by Yin (2003) and Pauwels and Matthyssens (2004). In this process, theory derived association between hybridization profiles, contextual distance and strategic choices were rigorously compared with the empirical data. Finally, the findings were compared with the extant literature, relating findings to external reference points.

#### ***EXTERNAL VALIDITY***

Pauwels and Matthyssens (2004) suggest that while case study research cannot provide ‘statistical generalization’, it can provide ‘analytical generalization’. Analytical generalization involves “to generalize a particular set of results to some broader theory” (Yin, 2003: 37). In the research context of this work, theories about production system hybridization in MNEs subsidiaries are the domain to which the results of this study can be generalized. The theoretical domain this study addresses was clearly delineated. Moreover, to enhance external validity, the study employed, in line with Yin’s (2003) suggestions, a multiple-case design based on a replication-logic.

#### ***RELIABILITY***

Reliability involves the question whether the research process, if repeated by another researcher, would produce the same results (Yin, 2003). Based on Yin (2003), the following measures were taken to enhance the study’s reliability. The research work involved developing and using a case study protocol. Interview evidence was for the most part tape-recorded and transcribed. Key respondents were asked for feedback. Where ‘theoretical saturation’ through interviewing was suboptimal, a great effort was made to collect secondary information and compare primary with secondary data. Moreover, the study systematically organized the evidence in a case-based data base (Yin, 2003). Finally, an effort was made, as evidenced in this chapter, to explicate the research rationale and to account for the basic research steps taken.