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**Author:** Erwina, W.

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## Chapter III. METHODOLOGY AND ANALYTICAL MODEL

This chapter presents an overview of the research methods and techniques selected for the study area of Sukamiskin in order to document, study and analyse the utilisation of the Plural Health Information & Communication System (PHICS) by the local population of Sukamiskin in the Sunda Region of West Java through the identification, documentation, and analysis of significant factors influencing the related utilisation patterns, differentiated within, on the one hand, the Traditional Health Information & Communication Systems (THICS) and, on the other hand, the Modern Health Information & Communication Systems (MHICS) at the community level.

The research methodology is based on the ‘Leiden Ethnosystems Approach’ which has been developed by Slikkerveer (1990; 2006) of the Leiden Ethnosystems and Development Programme (LEAD) of Leiden University, which represents a specific ethnoscience method to analyse local knowledge systems within a particular culture area. The ‘Leiden Ethnosystems Approach’ is built up of three methodological principles: the *Historical Dimension (HD)*, the *Participant’s View (PV)* and the *Field of Ethnological Study (FES)* [1].

In addition to operationalising the specific research approach, this chapter provides an outline of the complementary qualitative and quantitative research components which have been studied in the 14 *rukun warga* (RW) (‘hamlets’) in Sukamiskin, Bandung [2; 3]. The description of the qualitative research, which involves observations and in-depth interviews with key informants, is followed by a description of the design of the structured questionnaire used to conduct the quantitative surveys in the 83 samples of the *rukun tetangga* (RT) (‘neighbourhoods’) in the study area (*cf.* Table 3.1).

Information on the local population has been obtained from the list of residents available in the villages from which household samples have been selected randomly in accordance with the location of the neighbourhoods in order to cover every *rukun warga* and *rukun tetangga*. Subsequently, the process is described of the distribution of the structured questionnaire among the selected samples, completed on the basis of the selected respondents of the sample under the guidance of the researcher and her team.

Furthermore, the present chapter offers a detailed description of the factors and blocks – and their operationalisation – of the conceptual model developed by Slikkerveer (1995; 2003) which has been selected for this research, providing the basis of the empirical multivariate model of utilisation behaviour based on the findings of the research. This chapter concludes with a description of the specific processes of the subsequent statistical analysis of the data collected during the quantitative household surveys. The present study applies a Non-Linear Canonical Correlation Analysis using the technique of OVERALS, whereby data are entered into the Statistical Package for the Social Sciences (SPSS), Versions 11.5, 17.0 and eventually 20 [4].

### 3.1 Selected Research Methodology

#### 3.1.1 The ‘Leiden Ethnosystems Approach’

The ‘Leiden Ethnosystems Approach’ represents a particular ethnoscience research strategy towards the study of Indigenous Knowledge Systems (IKS) which allows for a better understanding and explanation of indigenous perceptions, practices, beliefs, values and philosophies. As Slikkerveer (1989; 1999) indicates, the ‘Leiden Ethnosystems Approach’ introduces a combination of three methodological principles which he has developed at Leiden University on the basis of a specific combination of the theoretical Leiden Tradition of Structural Anthropology and the practical Theorem of Development Sociology.

This specific approach, introduced by Slikkerveer in 1989, is specifically useful to document, understand and explain the local peoples' indigenous knowledge, beliefs and practices, as well as their institutions, which have developed over many generations from their own perspective in a particular culture area, encompassing three principles.

*Firstly*, the Historical Perspective (HP) aims at the pre-contemporary analysis of complex present-day patterns in fields, such as religion, agriculture, resource conservation and medicine. Strictly contemporary-oriented approaches have largely failed to untangle the dynamics of development processes which have led to present-day complexes, particularly in transcultural research settings characterised by interacting inside and outside elements. The principle of the Historical Perspective, in which the historically-oriented methodology is complementary to the method of the ethnographic analogy, is largely based on the close collaboration between anthropologists and historians (*cf.* Wigboldus & Slikkerveer 1991).

*Secondly*, the 'Participant's View' (PV) refers to the evaluation of local world views, perceptions, attitudes and opinions as they are embedded in the fundamental structure of values, norms and belief systems which characterize a specific culture. The Participant's View corresponds to the anthropological concept of an *emic* view of cultures from within as opposed to the *etic* view from outside.

*Thirdly*, the Field of Ethnological Study (FES) is similarly rooted in the 'Leiden Tradition of Structural Anthropology' and evolved from early fieldwork carried out in Indonesia in the 1930s (*cf.* Van Wouden 1935; Schefold 1988). The principle of FES is closely related to the concept of 'culture area' which relates to the prevalence of certain cultural characteristics across a particular geographical region and allows for regional comparative research among diverse ethnic groups within the same region. In spite of its diversity of sub-cultures, Indonesia can thus be considered one culture area, namely the Indonesian Field of Ethnological Study. Furthermore, Slikkerveer (1999: 172) explains that the study of systems of indigenous knowledge and technology has long been confronted with different problems and opportunities which on the one hand: *'include the general arrearage in the study and documentation of indigenous knowledge systems in comparison with global knowledge systems [...]; the lasting 'stigmatisation' of indigenous knowledge and its etic 'invisibility' as part of the unwritten oral tradition of the local culture; and the less tangible symbolic and spiritual phenomena and world views'*. On the other hand, the increasing recognition of the potential of indigenous knowledge for enhanced sustainable management of agricultural and natural resources, its practical significance and cultural utility for participation, and local level decision-making and its contribution to biodiversity conservation combined with global knowledge call for extended research, further operationalisation of relevant concepts and implementation of results (*cf.* Slikkerveer 1999).

In the light of these considerations, the inadequacy of existing research methods and techniques to study the local peoples' own ideas calls for a more *emic*, interactive research methodology which is designed to study, analyse and understand the complex systems of indigenous knowledge and practice in developing countries and to relate these systems to global knowledge and technology (*cf.* Leakey & Slikkerveer 1991; Warren, Slikkerveer & Brokensha 1995; Adams & Slikkerveer 1996; Slikkerveer 1999). Consequently, research approaches have been developed in the field of 'new ethnoscience' which aims at studying local and regional systems of knowledge, beliefs and practices within a more dynamic context of processes of development and change.

The ethnosystems methodology, which was successfully applied to different study areas across East Africa, Indonesia and the Mediterranean, has amply shown to facilitate the understanding and clarification of the processes of interaction between indigenous and global knowledge systems (*cf.* Leakey & Slikkerveer 1991; Adimihardja 1995; Adams Slikkerveer

1996, Slikkerveer 1995; Agung 2005; Ibui 2007; Leurs 2010, Djen Amar 2010; Ambaretnani 2012; Chirangi 2013; Aiglsperger 2014). In general, the research methodology which adopts the 'Leiden Ethnosystems Approach' allows for a rather realistic representation of indigenous knowledge systems encompassing the local people's knowledge, beliefs and opinions as well as the individual perceptions, attitudes and cosmovisions.

The implementation of the 'Leiden Ethnosystem Approach' has rendered it possible to record, analyse and ultimately integrate different key elements of local knowledge systems in various different fields of ethnoscience research, such as in ethno-communication, ethno-economics, ethno-medicine, ethno-pharmacy, integrated microfinance management, and, lately, integrated community-managed development. Additionally, the specific ethnoscience research approach has facilitated the design, testing and successful implementation of analytical multivariate models of human behaviour in different settings (*cf.* Slikkerveer 1995; 1999). The construction of a multivariate model of human behaviour embarks on the concept of 'ethnosystems', not only broadening the perspective on culture, but also allowing for an adequate assessment of the cognitive and behavioural components of particular groups or communities as 'systems' in a rather holistic mode. In this way, the concept of 'ethnosystems' also accommodates the analysis of processes of utilisation of Health Information & Communication Systems (HICS) in pluralistic medical configurations.

In the light of these considerations, the present research uses a multidimensional approach towards the study of ethno-information and ethno-communication with regard to health which builds on the hypothesis that an individual's behaviour is affected by a number of factors, *i.e.* socio-cultural, psycho-social, economic, institutional and intervening factors playing a differential role in the Plural Health Information & Communication System (PHICS). The methodological attention is focussed on the comparison of significant factors influencing the utilisation of the two complementary Traditional and Modern Health Information and Communication Systems (T&MHICS).

A number of studies which have been conducted in related fields of ethnoscience and research settings on the basis of the 'Leiden Ethnosystem Approach' have accumulated considerable evidence of the significant influence of several groups of factors, in which the psycho-social factors tend to dominate the model. These studies include: '*Plural Medical Systems in the Horn of Africa: The Legacy of the "Sheikh" Hippocrates*' (Slikkerveer 1990); '*Bali Endangered Paradise? Tri Hita Karana and the Conservation of the Island's Biocultural Diversity*' (Agung 2005); '*The Challenge of Non-Experimental Validation of MAC Plants: Towards a Multivariate Model of Transcultural Utilisation of Medicinal, Aromatic and Cosmetic Plants*' (Slikkerveer 2006); '*Indigenous Knowledge, Belief and Practice of Wild Plants among the Meru in Kenia: Past and Present Human-Plant Relations in East Africa*' (Ibui 2007); '*Medicinal, Aromatic and Cosmetic MAC plants for Community Health and Bio-Cultural Diversity Conservation in Bali, Indonesia*' (Leurs 2009); '*Gunem Catur in the Sunda Region of West Java: Indigenous Communication on the MAC Plant Knowledge and Practice within the Arisan in Lembang, Indonesia*' (Djen Amar 2010); '*Paraji and Bidan in Rancaekek: Integrated Medicine for Advanced Partnerships among Traditional Birth Attendants and Community Midwives in the Sunda Region of West Java, Indonesia*' (Ambaretnani 2012); '*Afyu Jumuishi: Towards Interprofessional Collaboration between Traditional and Modern Medical Practitioners in the Mara Region of Tanzania*' (Chirangi 2013); and '*Yiatrosafia yia ton Anthropon: Indigenous Knowledge of Medicinal, Aromatic and Cosmetic (MAC) Plants in the Utilisation of the Plural Medical System in Pírgos and Práitoria for Community Health Development in Rural Crete, Greece*' (Aiglsperger 2014).

In addition to the ‘Leiden Ethnosystem Approach’, the present research on the Plural Health Information & Communication System in the Sunda Region of West Java follows an explanatory research method which is used to gain a deep insight and understanding of the role of factors in the utilisation behaviour reported by the respondents of the sample surveys.

These patterns have been recorded on a retrospective approach towards the reported utilisation patterns over the preceding 12 months. Furthermore, this study adopts a combination of qualitative and quantitative research techniques for data collection and analysis. As Ambaretnani (2012: 59) underscores: ‘*In social research, there are two distinct opinions regarding quantification which reflect underlying differences in perspective among scholarly disciplines as to methodology and interpretation of results*’. Although some social scientists point to the essence of research in the qualitative assessment of local concepts and values, ethnoscience researchers, however, argue that quantitative data and statistical analyses are forming the backbone of behaviour-oriented research, favouring a wider approach towards the description and explanation of information. More advanced research in ethnoscience attaches great value to a balanced combination of ‘qualitative–quantitative’ research by means of employing qualitative research for in-depth understanding of processes, further substantiated with quantitative research methods in order to measure the spread of preliminary findings over larger target groups in a complementary and mutually supporting fashion (*cf.* Slikkerveer 1995; Ambaretnani 2012). In general, it is the aim of this study to document, analyse and explain the knowledge, beliefs and related utilisation of Traditional and Modern Health Information & Communication Systems (T&MHICS) in Sukamiskin from a wider community perspective. In order to reach this aim, this research not only follows the ‘Leiden Ethnosystem Approach’, but also implements complementary qualitative and quantitative research methods and techniques of data collection through the household surveys.

### **3.1.2 The Selection of the Research Setting**

Comparing the different regions of Indonesia, the Province of West Java offers a rather substantial amount of distinct cultural characteristics whereby its capital Bandung functions as an important center with a rich cultural history. The present research concentrates on the community of Sukamiskin which forms part of the Arcamanik district belonging to East Bandung, and comprises an area of 196.162 ha. The community is laid out over flat land throughout its entire area, built at an elevation of about 500 metres above sea level. The average temperatures in Sukamiskin range between 19 °C and 32 °C while the level of rainfall reaches on average approximately 2.400mm annually.

The research area of Sukamiskin has been selected on the basis of five main considerations. Firstly, the distinct patterns of community life in the geographical area have raised growing academic interest. Secondly, the establishment of a *taman baca* (‘community library’) in the research area suggests that the community members are motivated to improve their own life and seek ways to meet their needs for information. Thirdly, the different forms of information and communication and medical systems in Sukamiskin encompass traditional and modern systems of communication and medicine. Fourthly, community members appear to have a growing awareness of the importance of information as they show their enthusiasm and interest in the available sources of information. Fifthly, the research area ensures the availability of community members with a strong feeling for their traditions, as well as for change and development for their own benefit, while there are also rather active institutions, media and facilities

### 3.1.3 The Choice of the Sample Surveys

The sample population in Sukamiskin has been selected from 14 different hamlets and 83 neighbourhoods which together comprise 617 respondents, aged between 0 and 90 years, of which 125 are household heads (*cf.* Table 3.1). In general, the household head is a person, who is regarded as the leader of the family and represents the family in social activities.

Although the head of the family is generally a man, *i.e.* a husband or father, there are cases in which the head of the family is a woman, *i.e.* a wife or mother. In general, a woman automatically becomes the head of the family if her husband dies, or in the case of divorce. Sometimes, women are also household heads when the husband is living and working elsewhere.

In order to cover a diverse research population which incorporates different aspects of community life, the household heads have been chosen randomly. In consultation with the Head and the Secretary of the community as well as with the Neighbourhood Councils, more than one household head was selected from each hamlet in the research area. Reviewing the list of residents available in each village, the sample survey respondents have been chosen from the designated number of residents recorded for each neighborhood, pertaining to a total of 125 sample units. On the basis of probability sampling, every member of the target population, namely the sampling frame, had an equal chance of being selected as a respondent (*cf.* Aiglsperger 2014). A subsequent inquiry by the Village Head was conducted in order to confirm the presence of the selected household heads. Four household heads, which were not available in the village, were substituted by other household heads randomly selected from the same neighbourhood.

Table 3.1 Hamlets (RW), Neighbourhoods (RT) and Number of Respondents (N) selected for the Household Surveys in Sukamiskin (N=125).

No.	Hamlet ( <i>RW</i> )	Neighbourhood ( <i>RT</i> )	Respondents		
			N	%	
1.	RW 01	5	7	5.6	
2.	RW 02	3	5	4.0	
3.	RW 03	4	7	5.6	
4.	RW 04	3	5	4.0	
5.	RW 05	6	12	9.6	
6.	RW 06	3	7	5.6	
7.	RW 07	5	4	3.2	
8.	RW 08	8	5	4.0	
9.	RW 09	6	8	5.4	
10.	RW 10	12	15	12.0	
11.	RW 11	10	17	13.6	
12.	RW 12	6	9	7.2	
13.	RW 13	6	14	11.2	
14.	RW 14	6	10	8.0	
Total			83	125	100.0

Source: Household Survey (2012-2014).

## **3.2 Complementary Qualitative and Quantitative Surveys**

### **3.2.1 Preparation for the Field Research**

Preparation for the research survey embarked on a thorough review of information on the conditions of the research area. Since Arcamanik forms a district of the city of Bandung, data on the conditions of Arcamanik which consists of several villages and sub-districts including Sukamiskin have been obtained from the public information available on the characteristics of the districts of Bandung. Following an initial revision of the conditions, the availability of channels of information and communication, as well as health care facilities, has been reviewed.

The increased community participation transpires through Sukamiskin as it has its own public reading place which has been established on the initiative of the community members themselves.

The research area moreover offers a rather comprehensive availability of different communication facilities, such as a television station ('Bandung TV'), radio and public communication tools as well as other forms of telecommunication accessible for the general public. Similarly, a number of formal health care institutions, including health centres, private clinics, midwives, healers, pharmacies, drug stores and herb stalls, are available in the sub-district. In general, the community of Sukamiskin is rather diverse in composition, further underscoring its significance as an appropriate research site for the study.

The research instruments applied in this study have been designed with a view to collect information on the utilisation of Plural Health Information & Communication Systems by the respondents and include both qualitative questions and quantitative questionnaires. The complementary approach of combined qualitative and quantitative surveys aims at confirming the findings of both surveys in terms of measuring the depth and the spread of related factors and assessing the interactive processes involved in the reported differential behaviour of the community members regarding the utilisation of the Health Information & Communication Systems (HICS) in Sukamiskin.

The preparation of both research components include the planning of the qualitative study, based on in-depth interviews with key informants, and the execution of the sampling techniques for the household surveys and the design of the structured questionnaires.

### **3.2.2 The Qualitative Study in Sukamiskin**

In the research area, a substantial amount of data have been collected by means of qualitative research methods in order to obtain data and in-depth information on a number of community aspects which have been identified as significant for this component of the study. In other words, the qualitative research tools have been designed in a way to collect in-depth data on patterns of behaviour, knowledge, wisdom and the cosmovision of the community members. Qualitative research was carried out in the form of field observations, the study of documents and formal and informal interviews with key informants and participants in the household surveys offering valuable information.

The interviews involved open-ended questions on a number of pre-determined topics as well as questions which have been inserted into the conversation in a more or less systematic or quasi-natural way (*cf.* ten Have 2004). The open-ended questions have been directed at key informants as well as at participants in the household surveys, who have been asked to complete the answers given in the questionnaires. For the present study, key informants included: the physician, the *lurah*, who is the Head of the Health Department of Bandung; the chief of the

mass media in Sukamiskin; the *ajengan* ('religious healer'), the traditional healers; and selected experts in the fields of Sundanese culture and information & communication science. The languages used in the interviews have been Indonesian and Sundanese which have been adjusted accordingly on the premises of the respondents in order to render it easy for them to understand the questions and provide appropriate answers.

In addition to these in-depth interviews, qualitative data have been collected from various documents which have been used as research material throughout this study. These documents include any record of text, digital source, image, sound or a combination. Besides information on the local culture and other relevant topics, the documents also include data on the annual health report of the inhabitants of Sukamiskin. Although to a certain extent it has been possible to empirically confirm so-called 'hard' socio-demographic factors, such as age, gender, education or marital status qualitatively by means of consulting the available statistics, the so-called 'soft' factors, such as people's knowledge, perceptions, beliefs and opinions could only be measured through detailed household surveys.

### 3.2.3 The Design of the Structured Questionnaire

The formal questionnaire used as the main research tool in the quantitative household surveys is based on five main sections which have been developed on the basis of the design of the conceptual model of the study described in the following Paragraph, which describes the sections of each questionnaire; they are structured in a way to record data on the respective blocks of factors determined in the related multivariate model, differentiated, on the one hand, by the Traditional Health Information & Communication Systems (THICS) and, on the other hand, by the Modern Health Information & Communication Systems (MHICS), at the community level. In this way, the respondents from the sample surveys were interviewed on their utilisation of the Traditional Health Information & Communication Systems (THICS) and on the Modern Health Information & Communication Systems (MHICS) in order to assess and compare their independent and intervening factors in relation to their reported utilisation of both systems.

The number of questions from section A to section D as mentioned above amounts to a total of 143, each of which is numbered and provided with pre-coded answer categories, organised and rank-ordered on the basis of the information gathered from the preceding qualitative research component and the subsequent pre-testing of the draft questionnaire. Each set of answer categories includes also an 'other' category which allows for the collection of additional information on topics related to the respective question. In the case of frequent recording, the 'other' category may become an additional pre-coded answer to the related question. The different sections are dealing with the following information from each respondent:

- Preface: guiding the interviewers with explanations and directions for the interviews
- Section A: independent variables
  - A.1. predisposing factors: socio-demographic variables  
psycho-social variables
  - A.2. enabling factors: socio-economic status
  - A.3. perceived factors: need of health information
  - A.4. institutional factors: *taman baca*, *PKK*, mosque
- Section B: intervening variables: the mass media



Section C: dependent variables: utilisation of the Traditional Health Information & Communication System (THICS)  
 utilisation of the Modern Health Information & Communication System (MHICS)

Section D: additional questions and recording of the respondents' 'expectations and opinions'

### 3.3 Construction of the Conceptual Model and its Components

#### 3.3.1 The Utilisation Model of Health Information & Communication Systems (HICS)

Tuma (1984: 7) has come to the conclusion that: *'theoretical developments in social movements have also begun to emphasize dynamics. [...] Collective violence is not an aberration but a natural by-product of social organisation whose forms change as the distribution of power changes. Forces which challenge and perhaps overturn the existing order can arise even when a system is apparently stable. Such shifts place theoretical emphasis squarely on dynamics. [...] Interest in explaining how and why social actors and social systems change over time seems to be gaining momentum.'*

In this respect, the multivariate model developed by Slikkerveer (1990) facilitates the description and explanation of how an individual or social system changes over time and provides the basis of the operationalisation of the conceptual model designed for this research.

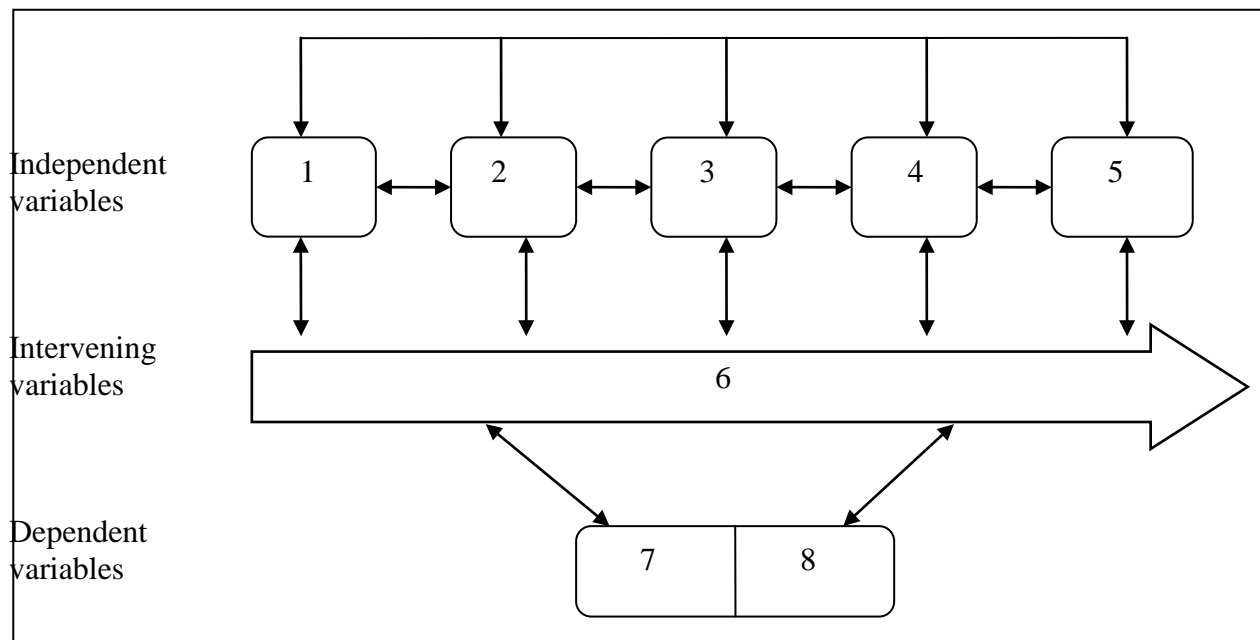


Figure 3.1 The Conceptual Model of Utilisation of the Plural Health Information & Communication System (PHICS) in Sukamiskin.

Source: Adapted from Slikkerveer (1990; 1995).

The multivariate model designed for the present research conducted in Sukamiskin highlights the interaction between the independent variables including five blocks of factors, the intervening variables including one block of factors, and the dependent variables including two blocks of factors of utilisation behaviour. The processes of interaction between the variables in the model also include interactions among the different blocks of factors, such as predisposing factors which include socio-demographic and psycho-social factors, enabling factors, perceived



Table 3.2 Block 1: Predisposing Factors: Concepts, Variables, Indicators and Categories.

Concept	Variable	Indicator	Category
Socio-demographic characteristics at the individual level	Household size	Total number of family members living	real numbers
	Age	Number of years	26–30; 31-35; 36-40; 41-45; 46-50; 51-55; 56-60; 61-65; 66-70; 71-75; 76+
	Formal Education	Type of education	No education; primary school; secondary school; senior high school, university; other
	Profession	Main profession	Farmer; teacher; personal servant; civil servant; religious leader; entrepreneur; labourer; private sector worker; unemployed; retired; other

The block of psycho-social factors records the knowledge, expectations and beliefs of the community members.

The variables in this block refer to: ‘knowledge level on traditional medicine’; ‘knowledge level on modern medicine’; ‘knowledge of availability of libraries’; ‘belief in power of traditional medicine’; ‘belief in power of modern medicine’; ‘belief in power of printed word’; ‘opinion on the quality of health information’; ‘opinion on the cost of health information’ and ‘opinion on the service of health information’. The operationalisation of the block of psycho-social factors into concepts, variables, indicators and categories is shown in Table 3.3.

Table 3.3 Block 2: Predisposing Factors: Concepts, Variables, Indicators and Categories.

Concept	Variable	Indicator	Category/score
Psycho-social characteristics at the individual level	Knowledge Level on traditional medicine	Level of knowledge	Very little; little; average much; very much
	Knowledge Level on modern medicine	Level of knowledge	Very little; little; average much; very much
	Knowledge of availability of libraries	Level of knowledge	Very low awareness; low awareness; average awareness; high awareness; very high awareness
	Belief in power of traditional medicine	Level of belief	Low belief; average belief; strong belief
	Belief in power of modern medicine	Level of belief	Low belief; average belief; strong belief
	Belief in power of printed word	Level of belief	Low belief; average belief; strong belief;
	Opinion on the quality of health information	Level of opinion	Very low appreciation; low appreciation; average appreciation; high appreciation; very high appreciation
	Opinion on the cost of health information	Level of opinion	Very low appreciation; low appreciation; average appreciation; high appreciation; very high appreciation

(Continued) Table 3.3

Concept	Variable	Indicator	Category/score
	Opinion on the service of health information	Level of opinion	Very low appreciation; low appreciation; average appreciation; high appreciation; very high appreciation

*Block 3: Enabling factors*

The block of enabling factors includes the ‘socio-economic status (SES)’ variable which refers to the household’s financial situation, such as family income and expenses. The quantitative questionnaire was designed to generate a number of indicators which relate to the occupations of the household head and his or her spouse, and eventually determine the SES variable, *i.e.*: family income; family expenses; ownership of housing, land, livestock, vehicles and electronics; and household budget.

The different indicators have been subjected to a factor analysis in order to obtain an average assessment of SES of the household with regard to a family’s capacity to utilise the Plural Health Information & Communication System (PHICS). Table 3.4 presents the operationalisation of the block of enabling factors into concepts, variables, indicators and categories.

Table 3.4 Block 3: Enabling Factors: Concepts, Variables, Indicators and Categories/Scores.

Concept	Variable	Indicator	Category
Socio-economic characteristics at the individual level	Socio-economic status (SES)	Level of SES	Poor; average; well-to-do

*Block 4: Perceived need of health information factors*

As Ambaretnani (2012: 73) underscores: ‘*These factors are difficult to quantify because they are less overtly tangible*’. Measured at the individual level, the variables which have been selected in the block of perceived need of health information factors refer to: ‘perception of traditional health information’ and ‘perception of modern health information’. In the questionnaire, perceptions of health information have been addressed by the question concerning to what extent the household head did perceive a need of traditional and modern health information and communication.

Recalling Mundy & Compton (1995), communities generally maintain a number of different types of indigenous communication channels. Every channel of indigenous communication serves the spread of traditional information, thereby also encompassing traditional health information and communication which also includes traditional medicine and forms of treatment. At the same time, modern health information and communication refers to information about modern medicine and treatment as well as modern health care services. Both traditional and modern health information and communication can be distinguished as related to health promotion, disease prevention and treatment.

Table 3.5 Block 4: Perceived Need of Health Information Factors: Concepts, Variables, Indicators and Categories/Scores.

Concept	Variable	Indicator	Category
Perceived need of health information characteristics at the individual level	Need traditional health information	Level of perception	Low perceived need; medium perceived need; high perceived need
Concept	Variable	Indicator	Category/score
	Need modern health information	Level of perception perceived need;	Low perceived need; medium high perceived need

Table 3.5 shows the operationalisation of the variables in Block 4, *i.e.* ‘need of traditional health information’ and ‘need of modern health information’, in terms of concepts, variables, indicators and categories.

*Block 5: Institutional factors*

The block of institutional factors contains the variables ‘Exposure to Institutional Health Information’ and ‘Member Health Information Institution’. The variables have been measured at the system level and address the experiences of each respondent. In the research area, institutional health information refers to: the public library; *Taman Bacaan Masyarakat* (TBM) (‘Community Reading Corner’), the *Pembinaan Kesejahteraan Keluarga* (PKK) (‘Empowerment of Family Welfare Movement’), *Pos Pelayanan Terpadu (Posyandu)* (‘Integrated Health Post’); health centres; mosques; and the *pesantren* [5]. Table 3.6 shows the operationalisation of block 5 institutional factors into concepts, variables, indicators and categories.

Table 3.6 Block 5: Institutional Factors: Concepts, Variables, Indicators and Categories.

Concept	Variable	Indicator	Category
Institutional characteristics at the system level	Exposure to institutional health information	Level of exposure	Very low exposure; low exposure; average exposure; high exposure; very high exposure
	Member of institutional health information	Level of exposure	Very low exposure; low exposure; average exposure; high exposure; very high exposure

*Block 6: Intervening factors*

As Aiglsperger (2014: 77) argues: ‘*In general, intervening factors operating on the system level alter the standard relationship between independent and dependent blocks of factors from outside of the communities concerned*’. For the purpose of this study, the variables which have been selected in the block of intervening factors, are: ‘exposure to electronic media’; ‘exposure to printed media’; and ‘awareness of epidemics’. Throughout the research area, community members are exposed to an abundance of information, *i.e.* electronic and printed information, on a daily basis. At the same time, channels of health information and communication are generally subject to rapid change as shown by the current use of gadgets, such as smartphones which have come to represent a medium affordable to almost everyone. Table 3.7 presents the operationalisation of the block of intervening factors into concepts, variables, indicators and categories.

Table 3.7 Block 6: Intervening Factors: Concepts, Variables, Indicators and Categories/Scores.

Concept	Variable	Indicator	Category
Intervening characteristics at the system level	Exposure to electronic media	Level of exposure	Very low exposure; low exposure; average exposure; high exposure; very high exposure
	Exposure to printed media	Level of exposure	Very low exposure; low exposure; average exposure; high exposure; very high exposure
	Epidemics	Existence	Don't know; no; yes

*Block 7 and Block 8: Dependent factors of utilisation of the Traditional and Modern Health Information & Communication Systems*

The dependent factors in the model include two interrelated blocks of factors which are the result of the dynamic interaction between the independent, *i.e.* predisposing, enabling, perceived need of health information and communication, and institutional and intervening factors. As such, the blocks of the dependent factors indicate the variance in the utilisation of the Plural Health Information & Communication System (PHICD), sub-divided in the Traditional and the Modern Health Information and Communication Systems (T&MHICS), and reported by the respondents over a recall period of twelve months preceding the household surveys.

In order to comply with the characteristics of the Plural Health Information & Communication System (PHICD) available in the research area, the dependent factors have been sub-divided into two blocks of factors, each of which contains one variable measured at the system level. The variables refer to: 'utilisation of Traditional Health Information & Communication System' and 'utilisation of the Modern Health Information & Communication System', specified over the weights or scores of the variables, reported by the respondents.

Table 3.8 Block 7: Dependent Factors of Utilisation of the Traditional Health Information & Communication System (THICS): Concepts, Variables, Indicators & Categories

Concept	Variable	Indicator	Category
Dependent characteristics of utilisation of the traditional health information & communication system at the system level	Utilisation of the traditional health information & communication system	Level of utilisation of the traditional health information & communication system	Very low utilisation; low utilisation; average utilisation; high utilisation; very high utilisation

Table 3.9 Block 8: Dependent Factors of Utilisation of the Modern Health Information & Communication Systems (MHICS): Concepts, Variables, Indicators and Categories.

Concept	Variable	Indicator	Category
Dependent characteristics of utilisation of the modern health information & communication system at the system level	Utilisation of the modern health information & communication system	Level of utilisation of the modern health information & communication system	Very low utilisation; low utilisation; average utilisation; high utilisation; very high utilisation

The operationalisation of the two blocks of dependent factors into concepts, variables, indicators and categories is presented in Table 3.8 and Table 3.9. In the final analysis, the dependent variables of utilisation of traditional and modern health information & communication systems substantiate the process of health information & communication utilisation behaviour in Sukamiskin.

### 3.3.3 Selection of the Stepwise Statistical Data Analysis

For the purpose of this research, data regarding the community members' utilisation of the Plural Health Information & Communication System (PHICS) in Sukamiskin have been collected by means of qualitative interviews and quantitative household surveys as well as by the study of the relevant literature and documentation of the research area. The quantitative data which have been collected from the structured questionnaires in accordance with the conceptual model developed for this research have been subjected to a stepwise statistical data analysis encompassing bivariate, mutual relations and multivariate analysis as well as multiple regression analysis (*cf.* Chapter 8).

Following the bivariate analysis, a Multiple Relations Analysis is conducted, encompassing an overview of all the significant variables resulting from the bivariate analysis, and represented in a model of Mutual Relation Analysis.

The multivariate and multiple regression analyses have been carried out by means of applying the OVERALS technique of statistical data analysis to the quantitative data collected during the household surveys. Through the method of 'bootstrapping', the selected programme OVERALS acts as an explanatory technique which generates stable results (*cf.* Van der Burg & De Leeuw 1988). The eigenvalues and canonical correlation coefficients are very stable if the sample size is not too small. Van der Burg, Noordermeer & De Haes (2000) argue that although the confidence intervals for the component loadings are larger than for the eigenvalues, they remain stable.

The different forms of statistical data analysis applied to the present data by means of OVERALS produce component loadings and canonical correlation coefficients which serve the description of the final results. In this way, statistical data analysis aims at elaborating the final model of utilisation of the Plural Health Information & Communication System (PHICS) in the research area. The results which are obtained from quantitative data analysis are substantiated by information gathered from the qualitative interviews and related explanations.

#### Notes

- [1] The 'Leiden Ethnosystems Approach' has been developed in order to facilitate the study of indigenous knowledge systems in their dynamic context of development and change. The approach adopts a combination of anthropological and sociological concepts which allow for a detailed analysis of the participants' 'point of view (Participant's View), the cultural characteristics of the research area (Field of Ethnological Study) and the historical processes involved in the development of specific behavioural patterns (Historical Dimension) (*cf.* Leakey & Slikkerveer 1991, Slikkerveer 2006).
- [2] Qualitative research investigates aspects of social life which are not amenable to quantitative measurement. Associated with a variety of theoretical perspectives, qualitative research uses a range of methods to focus on the meanings and interpretation of social phenomena and social processes in the particular contexts in which they occur (*cf.* Jup 2006).
- [3] Quantitative research involves the collection of data in numerical form for quantitative analysis. The numerical data can refer to durations, scores, counts of incidents, ratings or scales. Quantitative data can be collected in either controlled or naturalistic environments, in laboratories or field studies from special populations or from samples of the general population.

The defining factor of quantitative research is that the process generates numbers, be it that an initial data collection produced numerical values or, as in content analysis, that non-numerical values have been subsequently converted to numbers as part of the analysis process (*cf.* Jup 2006).

- [4] The Statistical Package for the Social Sciences (SPSS) is one of the most widely used programmes for statistical analysis in the field of social science. For the analysis of data from this study, Versions 11.5, 17.0 and 20 have been used.
- [5] In Sukamiskin, the Islamic boarding school, *pesantren* or *pondok pesantren*, was founded in 1882 by the religious healer *Ajengan* Alko and is currently led by *Ajengan* Abdul Azis. A respected institution, the *pesantren* continuously communicates with the members of the community. *Ajengan* Abdul Azis is open to receiving feedback and suggestions from the community members regarding the *aqidah* ('value of life') applied by the *pondok pesantren*. The school maintains an excellent network of communication with a number of mosques in the surrounding area which is largely the result of the transparency adopted by *Ajengan* Abdul Azis and the contribution of the *pesantren* to the construction of seven mosques in a number of neighbouring hamlets. Furthermore, students of the school, who are living in cottages around the *pesantren*, regularly take turns in participating in activities organised by the community which include *i.a.* religious lectures, recitings for the dead (*tahlilan*), wedding recitals, as well as events, such as thanksgiving and circumcision.



