Pattern matching in qualitative analysis

1 The importance of pattern matching for business and management studies

Hodgkinson and Starkey (2011: 364) note that researchers in business and management studies (BMS) need to "re-evaluate their conceptual and methodological armoury in order to ensure the field continues to be both scholarly and relevant to a diverse array of constituents". Although this statement is equally relevant for both quantitative and qualitative research, the latter is more prone to criticism due to its inherent messiness and complexity (cf. Sinkovics and Alfoldi 2012). Furthermore, there are epistemological disputes about the extent to which it is possible for constituents (fellow researchers, practitioners, policy makers, etc.) to interpret the presented data in the same way and arrive at the same conclusions as the investigator(s) of the presented qualitative research. This makes the creation of guidelines/criteria for the design and evaluation of qualitative studies challenging (cf. Johnson, Buehring, Cassell, and Symon 2007; Hammersley 2007).

To this end, pattern matching can be tremendously helpful at various levels. First and foremost, it aims at externalising implicit mental models and assumptions as much as possible. This helps the readers of the qualitative piece of work to retrace the thought processes of the investigators and to better understand how and why they arrived at the presented conclusions. Secondly, pattern matching requires meticulous contextualisation, clear-cut theoretical formulation, as well as detailed and precise operationalisation. While it is not possible to identify and externalise every aspect of our mental models, the concious application of pattern matching will improve the way researchers go about the design, implementation, and write-up of studies that satisfy the double hurdle of rigour and relevance (cf. Pettigrew 2001).

Fundamentally, pattern matching involves the comparison of a predicted theoretical pattern with an observed empirical pattern. The underlying assumption is that human beings make sense of the world by comparing what they observe externally to internal mental models (Hammond 1966a). As a consequence, even in cases where the pattern match is not made explicit, it is still present to a certain degree. At the same time, the purposeful application of the pattern-matching logic will result in a more rigorous and structured research process and write-up as it requires systematic planning, including as much advance conceptualisation work as possible and detailed documentation throughout the entire project. While the idea of pattern matching originates from a quantitative tradition, the application of its principles does not necessarily require the use of statistics (cf. Ghauri 2004). In this chapter, the focus is on the demonstration of how pattern matching principles can be used in the design and implementation of qualitative research.

The intended contribution is twofold. Firstly, the chapter aims at providing readers with an in-depth understanding of how this idea emerged and developed over time. In order to achieve this goal, a brief but detailed overview of the historical and philosophical roots of pattern matching will be given followed by an elaboration of the general logic of pattern matching. The latter is meant to offer the reader some guidance regarding what he/she should consider when consciously applying the principles of pattern matching in a study. Secondly, the chapter goes beyond the existing literature on the application of pattern

matching in qualitative BMS. This is done by the classification of pattern matching applications in three categories according to the degree of the pattern match. They are labelled 'full pattern matching', 'flexible pattern matching' and 'partial pattern matching'. For each category a detailed example from a published study will be provided.

2 The historical and philosophical roots of pattern matching

The concept of pattern matching originates from the field of psychology. From a meta-theoretical perspective (cf. Burrell and Morgan 1979) it can be traced back to Egon Brunswick's probabilistic functionalism (cf. Hammond 1966b). Brunswick was one of the influential yet controversial figures in what Koch (1959) calls the Age of Theory, or as postmodern researchers tend to refer to it, the age of modernity (cf. Kvale 1992). The central theme of this period was the attempt to build a science of (hu)man and behaviour (cf. Wolfe 1959). There are four key characteristics that need to be mentioned when explaining the background against which the idea of pattern matching emerged. In the Age of Theory, there was a pursuit of extrinsic legitimation and an attempt to emulate the natural sciences. This, at times, led to an emphasis of institutionalisation and method over the quality of the content and relevance of research problems (Koch 1959). A quest for universality manifested itself in an attempt to create law-like generalisations. The dominant research design of the period was the laboratory experiment that involved hypothetical-deductive reasoning and the correlation of linear variables. The emphasis was on prediction and control. Lastly, in the Age of Theory there was a general belief in the commensurability of theories (cf. Koch 1959; Kvale 1992).

The controversy surrounding Brunswick was a response to his deviation from the functionalism of his time as sketched out above. While he still believed in the existence of a universal truth, he posited that human beings' comprehension of that universal truth is merely probabilistic in nature (Hammond 1966a). This proposition is believed to have been influenced by his early experience of studying history in school. Egon Brunswick was born in the Austro-Hungarian Empire in 1903. As a bilingual child, he received his history education in both Hungarian and German. He very soon noticed inconsistencies in the way the same event was recounted in the respective languages. The deviation in the accounts triggered his initial insights into the probabilistic nature of a person's knowledge of their environment. His psychological and scientific interests in later life were centred around perception, reasoning, probabilism, functionalism, and the historical development of psychology (Tolman 1966). Brunswick's psychology focuses on the adaptive interrelationships between organisms and their environment.

In his writings, Brunswick emphasises the equivocal nature of cues that results in an ambiguity in the relationship between cause and effect. He postulates that, because of this ambiguity, the relationship between the observed cue and the real object should be described in terms that allow the quantitative measurement of the degree of the relationship. He calls this the ecological validity of the cue. In other words, he theorises that, because the environment is only partially accessible to human beings, environmental cues can be interpreted in different ways. Put differently, when observers attempt to explain/interpret an observed event/object, they can merely collect sensory cues that are scattered in the environment. These sensory cues are then recombined by the observer and form a probabilistic explanation. Furthermore, the way the observer picks up sensory cues,

and how he/she interprets them, is path-dependent; that is, it is influenced by past experience and the amount of available information. For example, the same managerial behaviour may be interpreted by different observing researchers in different ways, depending on their familiarity with particular bodies of literature, practical experience, methodological background, etc.

In his methodological system, Brunswick stresses the importance of studying the context/environment, and the use of statistics. He furthermore emphasises the representative design of experiments. The resulting probabilistic functionalism can be described as an attempt to describe behavioural phenomena in statistical terms in order to provide an adequate level of understanding with respect to variance and invariance (Hammond 1966a). The coining of the term 'pattern matching' itself is most commonly attributed to Donald T. Campbell (e.g. Chen 2015; Trochim 1985). By building on Brunswick's work, Campbell (1966) investigates the question of how knowledge of external objects and events is achieved if we accept that "instances of valid knowing and of mistake both occur and are in some instance discriminable" (p. 81). He proposes that this happens through the process of pattern matching. To underpin this proposition, Campbell (1966) draws on examples from engineering, astronomy, and computer science, and on the work of scholars emphasising the importance of analogy in scientific thought (cf. Oppenheimer 1956). He furthermore argues that, because scientific theories aim at explaining objects that are external (distal) to the theorist, and because all knowledge is indirect, pattern matching happens at many stages and iteratively.

Moreover, there are two patterns to be compared, one of which is a pattern of theory and the other a pattern of data. It needs to be noted that, while each pattern (i.e. theoretical and data patterns) is informed by the other, theory is not a summary of data. From this, it follows that, in order for a theory to be testable, it needs to be separable from data (Campbell 1966).

In the decades that followed the publication of Campbell's (1966) article, 'pattern matching', both as a logic and a technique, was picked up by other fields, such as computer science (e.g. Jackson 1991), operational research (e.g. Amintoosi et al. 2007), urban planning (e.g. Zeiss and Lefsrud 1995), and more. At the same time, it continued to retain its relevance in the field of psychology (e.g. Geisler and Super 2000; Waters, Underwood, and Findlay 1997). For BMS (cf. Yin, 2009; Ghauri, 2004), the most relevant strand of pattern-matching-related literature comes from the applied field of programme evaluation (e.g. Marquart 1989; 1990). The next section will briefly introduce the general principles of pattern matching, also known as the theory of pattern matching (Trochim 1989).

3 The general logic of pattern matching

Trochim (1989: 356) defines a pattern as any arrangement of objects or entities. He uses the term arrangement to indicate that patterns are non-random and, to a certain extent, describable. He furthermore proposes that pattern-matching principles permeate all types and levels of research activities, even if they are not consciously recognised. At the same time, even though all theories imply some patterns, theories do not equal patterns. As theories generally propose predictions, pattern matching involves an attempt to link a predicted pattern that is derived from theory, with an observed pattern. As a consequence,

the process of pattern matching can be divided into two realms, that is, a theoretical realm and an observational realm (Trochim 1985, 1989). The left side of Figure 1 represents the general logic of pattern matching.

However, as outlined in the previous section, the underlying assumption is that we cannot fully equate what we observe with an objective reality. For this reason, the pattern match is not simply performed between theories and facts, but between different levels of theories (cf. Lakatos 1970; Wible and Sedgley 1999). It needs to be noted, that in this context the term 'theory' is, mostly but not exclusively, employed in the broader sense of the word; namely, "an idea used to account for a situation or justify a course of action" (Oxford English Dictionary). The left side of Figure 1 also provides an illustration of these different levels of theories. The theoretical realm contains an initial theorising process and the definition and construction of an expected theoretical pattern. This initial theorising process may have many sources (Trochim 1989). It may come from a formal process of theorising (e.g. Weick 1989), it might be based on the ideas or hunches of the investigator (Trochim 1989) and/or on the perspectives of stakeholders of the investigated phenomenon (Marquart 1990), or it might be a combination of these. The general purpose of this stage is to make implicit mental models as explicit as possible.

The next step involves the translation of these initial theoretical ideas into specifiable theoretical patterns. There are many ways of conceptualising theoretical patterns. They can be presented in verbal, mathematical, pictorial, or any other form. Notwithstanding, in BMS the verbal form is the most common presentation form. In Figure 1, this stage is referred to as explanatory theory construction. Depending on the context of application, the purpose of this phase is to supply a tentative explanation for expected observations. This explanation can take the form of alternative theories, propositions, hypotheses, etc. In this conceptualisation process, the researcher also needs to decide on the level of generalisation that should be achieved (Trochim 1985, 1989; Trochim and Linton 1986). Examples of different levels of generalisation include a specific case in a narrow context (e.g. managerial decisions in a specific firm), a specific case in a broader context (e.g. managerial decisions of a specific organisation in response to an industry event or government policy), or a phenomenon, behaviour, etc. in general (e.g. managerial decision making in general) (cf. Trochim 1989).

The empirical counterpart of the theoretical realm is the observational realm. In this part of the process, we can distinguish between two levels of theory. A theory of data construction should describe in detail the type of raw data that is relevant, how it should be collected, and how it should subsequently be prepared/manipulated for analysis. The empirical data can come from many sources, such as observations, field notes, interviews, documents, surveys, etc. (Trochim 1985, 1989). In addition, an observational theory should lay out how one would construct appropriate and believable inferences on the basis of the data. This includes the construction of an analytical framework and the specification of how this framework will make sense of the data (cf. Wible and Sedgley 1999). These four levels of theory form the foundation on the basis of which the pattern match is performed. The observed pattern is compared to the predicted pattern in order for the relevance and potential validity of the mental model/theory to be gauged (cf. Trochim 1989). The next section is dedicated to the explication of the right side of Figure 1, with examples included.

Insert Figure 1 here

4 Pattern-matching applications and examples

One can distinguish between three broad categories of pattern-matching applications in BMS. The right side of Figure 1 provides a graphical overview. The rest of this section will introduce each of the categories in more depth, including detailed examples.

4.1 Full pattern matching

Category (c) in Figure 1 is dubbed 'full pattern matching' and contains methods that embody all stages of the general pattern-matching process (represented by the bold arrows), namely, initial theorising, conceptualising, defining and specifying theoretical patterns, and the matching of expected patterns with the observed data patterns (cf. Trochim 1989). This category is best suited to investigations whose goal is to examine causal relationships and build explanations. The emphasis is on a very rigorous research design, with as much conceptualisation and operationalisation prior to data collection as possible. In order to establish causality and the validity of that causality, researchers are required to construct alternative explanations before data collection is carried out. Category (c) in Figure 1 shows two application examples for this type of pattern matching. The first example is the original pattern-matching technique developed by Trochim (1989) for the purpose of programme evaluation.

This particular technique combines qualitative and quantitative methods to create concept maps based on multidimensional scaling. These maps are subsequently used to derive specific conceptualisations and operationalisations for the evaluation of programmes and/or interventions/policies (Kane and Trochim 2007; Trochim 1985; Trochim and Linton 1986). In its essence, this form of pattern matching does not differ from traditional hypothesis testing and model building (Trochim 1989). The main difference between Trochim's (1989) technique and more traditional hypothesis-testing methods, such as the t-test and ANOVA, is that the former can handle a larger degree of complexity and treats the observations from a multivariate perspective (Trochim and Donnelly 2008). However, as the purpose of this chapter is to introduce how the pattern-matching logic can be used more broadly in qualitative analysis, this specific technique will not be considered in any more detail here. For a full description and practical demonstration of how concept mapping for planning and evaluation works, the reader is referred to Kane and Trochim's (2007) book on the subject, in the Applied Social Research Methods series. For more information about how the pattern-matching logic is applied in quantitative research, for example, in the form of structural equation modelling, the reader is advised to refer to the book "Research Methods Knowledge Base", by Trochim and Donnelly (2008).

Insert Figure 2 here

The second example of an application for this pattern-matching category is the multiple explanatory case study (cf. Yin 2009). Figure 2 demonstrates the parallels between the general theory of pattern matching and the characteristics of Yin's (2009) explanatory case study design.

A very good published example of a piece of multiple explanatory case study research that applies the principles of pattern matching is that by Yin and Moore (1988). Their research focused on the explanation of what research-funding organisations and researchers can do in order to enhance the practical utilisation of research outputs. The context of the study was specified as the natural hazards field. The authors set out to answer the following two research questions: (1) "What explains why the results of research have been utilised in the past?" and (2) "Do the explanations suggest how research utilisation might be effectively promoted in the future?" (Yin and Moore 1988: 26). Given that there were three alternative theories in existence that could have explained why practitioners used scientific research, there was no need for additional theorising. The theories in question were the knowledge-driven theory, the problem-solving theory, and the social-interaction theory.

The authors specified critical conditions for determining the validity of those three theories. For example, the knowledge-driven theory stipulates that the diffusion of scientific knowledge is a linear process that starts with basic research, gradually develops into applied research, and eventually results in the design of commercial products and services. From this the following critical conditions can be derived: the project should be built on prior basic research, the research should be entirely defined by the researcher, the research results should represent a contribution to knowledge in the form of academic publications, and the research should result in a commercialisable product.

The unit of analysis was defined as the research project. The authors selected nine cases based on three criteria: (1) the utilisation outcome was known; (2) the research project was based in the physical or social sciences, or in architecture; (3) it was a high-quality project. There was a rigorous nomination process in which high-profile stakeholders nominated 66 projects in total. Based on a selection protocol, the authors narrowed the number of cases down to nine. The data collection was guided by a field protocol and comprised project site visits, interviews, and project documents. The analytical framework consisted of five categories based on different utilisation outcomes: (1) practice, decision-making, and enlightenment use; (2) decision-making and enlightenment use; (3) practice and decision-making use; (4) enlightenment use only; (5) minimal or no use. The authors then provided a detailed description of the cases within each of these five categories by drawing on the dimensions previously specified, to aid the judging of the validity of the three alternative theories.

The results of the analysis indicated that the best explanation for research use was provided by the social-interaction theory. Furthermore, a number of recommendations were derived from the case studies for improving practitioners' utilisation of research.

4.2 Flexible pattern matching

Category (b) in Figure 1 is labelled 'flexible pattern matching'. It includes techniques that provide greater flexibility for the matching of theoretical and observational patterns. Flexible pattern matching is most suited for exploratory research designs. While there is an initial definition of research questions, and preferably an a priori specification of a tentative

analytical framework or initial template (cf. King 2014; Yin 2009), this translates into more basic theoretical patterns than in the case of an explanatory case study design. The emphasis is on exploration and theory building based on the patterns that emerge from the collected data (cf. Eisenhardt 1989). The constructs/dimensions/patterns specified a priori mostly constitute an initial tentative analytical framework aimed at providing guidance and some focus for the explorations. It is important to keep in mind that both the research question(s) and the constructs/dimensions could shift by the end of the study. Propositions and hypotheses emerge from the analysis of the cases, and their validity is ascertained through replication logic. Subsequently, the emerging constructs, concepts, and theories are compared with the existing literature. A further test of the theory's internal validity consists of identifying conflicting and corroborating findings from the existing literature (cf. Eisenhardt 1989). A further example of a category (b) type of pattern-matching logic is template analysis (King 2014). Template analysis can be used on its own for the analysis of qualitative data, or nested into an exploratory case study design. In the latter instance, it is a very useful tool for providing an initial set of a priori constructs. The nodes for the initial template are most commonly derived from the existing literature.

A published example of flexible pattern matching that uses nested template analysis within an exploratory multiple case study design is provided by Sinkovics, Sinkovics, and Yamin (2014). The authors set out to investigate the relationship between bottom-of-the-pyramid (BOP) business models and social value creation. The focus is on how BOP firms themselves use their business models to simultaneously create commercial and social value. The explicit research questions are the following: (1) In the BOP context, what are the factors that influence whether social value creation is an objective of business formation? (2) In the BOP context, how is social value creation related to business model formulation and dynamics?

The authors frame these research questions through a literature review that synthesises the literature on the relationship between social value creation and business activities. An overarching theme that emerges from the literature is that enterprises that have social value creation as their main objective face a certain degree of conflict between the social and commercial dimensions of their business model (McDonald 2007). However, Sinkovics, Sinkovics, and Yamin (2014) argue that the truth value of this statement may vary across contexts. More specifically, they propose that the meaning of social value may differ greatly across economies, according to the extent of economic development. Furthermore, they argue that it is not possible to create a sustainable business at the BOP, without engaging with BOP consumers, producers, entrepreneurs, and employees.

This research framing sets the context at the BOP. The authors then delineate three main conceptual building blocks (patterns) that they go on to explore in the cases. The first building block is the business model. The case firms' business models are explored through the following twelve dimensions: customer segment, key resources, key partners/supporters, key activities, value proposition, clients/customers, competitors, channels, cost, revenue, change in offering over time, and change in strategy over time. The second building block is the constraint concept. The underlying assumption is that, for any business to survive, it needs to be able to identify and respond to the main constraints it faces. By identifying three studies that list known constraints in developing countries (Chowdhury 2007; Dahan, Doh, Oetzel, and Yaziji 2010; London, Anupindi, and Sheth 2010), the authors put together an initial template of constraints that a BOP business could face. This initial constraint template consists of 19 types of constraints, subsumed under two

main categories, namely, productivity/value creation constraints and transactional/value capture constraints. The third conceptual building block is the social value concept. Sinkovics, Sinkovics, and Yamin (2014) use the three core values of development (i.e. sustenance, self-esteem, and freedom from servitude) listed by Todaro and Smith (2011) to operationalise social value creation.

The selection criteria for the cases are the impact of the business on the local community and the sustainability of the enterprise. The data were collected in the form of face-to-face interviews and secondary material where available. The findings confirm the proposition that the meaning of social value is context-dependent. Due to space limitations, it is not possible to demonstrate the flexible pattern-matching process and outcomes for all three conceptual building blocks here. However, to provide an example, Table 1 illustrates the pattern-matching outcomes for the constraint dimension. The initial template columns give an overview of the dimensions that were derived from the literature prior to the data analysis. The final template columns in the table show both instances of the data matching the initially predicted dimensions and instances of new dimensions emerging from the data. Table 1**Error! Reference source not found.** also shows that, in addition to new dimensions in the initial two categories, an entirely new category of constraints emerged from the data. The authors term this new category 'trigger constraints', defined as "limitations the entrepreneur as an individual, a particular community, or society as a whole is facing" (Sinkovics et al. 2014: 698). Two of the five case firms started their businesses as a response to such trigger constraints. This finding has significant theoretical implications for theorising about the formation of BOP businesses in general and about entrepreneurial businesses in particular. In addition to a number of summary tables, the investigators also provide detailed descriptions of the cases based on the pre-defined dimensions.

Insert Table 1 here

4.3 Partial pattern matching

The first category in Figure 1, denominated with the letter (a), is named 'partial pattern matching'. It can be divided into a top-down and a bottom-up approach to initial theorising. Both approaches aim at engaging the investigator's mental models in the theorising process, but from different perspectives. The bottom-up approach is based on an inductive process and builds on empirical observations and data. Grounded theory is a good example (Glaser and Strauss 1967) because it starts out in the observational realm and the patterns that emerge from the empirical data are used to formulate propositions/hypotheses for further exploration or testing in a subsequent study. However, due to space limitations, it is not possible to include a published example of a grounded-theory-based partial-pattern-matching study, here. Instead, the rest of this section will be dedicated to providing a detailed outline of the top-down approach, including an illustration.

Insert Figure 3 here

Top-down pattern work is carried out in the theoretical realm and constitutes a potential starting point for the full-fledged pattern-matching process. A good example of this approach is bibliometric concept mapping for theorising. This builds on the interplay between existing literature and the researcher's internal, to a certain degree implicit, mental models. This is done through the visualisation of bodies of literature for the purpose of identifying interesting research avenues/ideas based on observed patterns in the concept maps. Figure 4 illustrates a bibliometric concept map of 410 article abstracts (Sinkovics 2016). This method is especially useful in cases of researchers searching for new research ideas or wanting to familiarise themselves with an unfamiliar body of literature (cf. Sinkovics 2013, 2016). The most important idea behind bibliometric mapping as a tool for idea generation can be derived from Weick's (1989) proposition that the feeling that something is interesting represents the beginning of an externalisation process. This process consists of the recognition and verbalisation of one's own implicit assumptions, which are most frequently also anchored in or influenced by the assumptions of a discipline. The use of bibliometric concept maps fulfils a similar conceptualisation purpose to that of Trochim's (1985) initial concept maps that are generated from stakeholder consultation and brainstorming.

Before the study by Sinkovics (2016) can be introduced as an example, there is a need to go into more detail about bibliometric concept maps. They can be created from titles, abstracts, and keywords of published articles. It is also possible to include conclusions and future research sections of academic papers, although this would require considerable additional effort. The main purpose of concept maps is to visualise keyword co-occurrences, showing which keywords are most likely to occur together in a specific body of literature. Put differently, the number of co-occurrences of two keywords is the number of publications in which both keywords occur together. The distance between two keywords on the map approximately indicates their relatedness (Van Eck and Waltman 2014). For example, a keyword map based on management articles is very likely to display the words 'firm performance' and 'management capability' in close proximity to each other, indicating a relationship between the two concepts.

Bibliometric concept maps can be generated using a variety of software tools. The author's preferred software is the freely available VOSviewer (www.vosviewer.com) due to its user friendliness, flexibility, and the fact that it produces very high-quality visualisation outputs. The VOSviewer software operates based on the VOS (visualisation of similarities) mapping technique and can be used to generate maps based on both text corpus and networks. Van Eck and Waltman (2010) provide an in-depth review of the software for the interested reader. To create bibliometric term/concept maps from selected articles, their titles, abstracts, and keywords need to be downloaded from the Web of Science™ database (or from an alternative database such as Scopus) into a text file.

After the visualisation has been carried out, VOSviewer provides users with two ways to display the concepts: network visualisation and density visualisation. The network visualisation option uses importance as the main criterion for highlighting concepts. The font size of the label and the size of the circle are representative of the importance of the concept. The colour of the circle helps users identify the cluster to which a concept belongs. However, displaying all the concepts would make the maps difficult to read. For this reason, only a subset of labels is represented on the map. The researcher can then use the zoom function to explore the map in more detail. The density visualisation view highlights the

importance of areas on the concept map based on the number of connected items. From within this view, the user can also opt for the cluster density view that assigns individual concepts to clusters and visualises their densities. Clusters help the investigator to identify major themes in a specific body of literature. When creating concept maps from texts, one can choose between binary counting and full counting. Binary counting only takes into account the presence or absence of a term in or from a document and is not concerned with how frequently a concept is mentioned within a document. In contrast, the full counting option considers all the occurrences (Sinkovics 2016).

Insert Figure 4 here

Insert Figure 6 here

In the article "Enhancing the foundations for theorising through bibliometric mapping", Sinkovics (2016) sets out to achieve two objectives. Firstly, the paper aims at introducing the technique of bibliometric concept mapping and demonstrating how it can be used to visualise a fairly large body of literature. Secondly, the author demonstrates how bibliometric concept maps can be used as a starting point for more in-depth explorations with the help of a Computer Assisted Qualitative Data Analysis Software (CAQDAS) package. Although the author chose NVivo, any other software capable of performing similar functions would be suitable. For more operational details about NVivo, the reader is advised to refer to the QSR International website (http://www.qsrinternational.com) and to dedicated manuals (e.g. Richards 1999).

The main research questions in the paper were the following: (1) How are ethics and related issues represented in the marketing literature? (2) Which potential future research avenues can be derived from this body of literature? The initial search strategy in the Web of Science™ database consisted of terms such as corporate social responsibility (CSR), human rights, ethics, and ethical. The first search resulted in 14,747 peer-reviewed journal papers. To reduce the number of journal articles and to increase the relevance of the hits, the search was subsequently limited to marketing and international marketing journals. This narrower search strategy yielded 410 articles. The titles and abstracts were exported to EndNote (reference manager software) and to a text file.

The next step involved the visualisation of the concepts extracted from the 410 abstracts. If the purpose is to gain a general understanding of what the main themes are in a body of literature, the minimum threshold for occurrences and the number of clusters should be set such that the number of generalisations is manageable. In Sinkovics' (2016) study, the threshold for occurrences was set at two and the number of clusters was left at the default setting. This yielded a concept map of 846 concepts and 17 clusters. In contrast, if the purpose of the exploration is to look at concepts as widely as possible, the number of occurrences can be set at one, which will yield a very large map. In this case, this setting resulted in a map consisting of 6,000 concepts. Figure 4 shows the large concept map displaying 6,000 concepts from Sinkovics' (2016) study. Smaller maps are very useful for

identifying general trends, whereas large maps are an excellent tool for brainstorming and spotting interesting concepts. Figure 6 shows the network visualisation of the 846 concepts.

In the next step, all the concepts that were perceived by the investigator as 'interesting' were compiled into a list that represented the initial template for the textual analysis. After the initial template was created, by zooming in and out in the concept map, the full abstracts of the 410 journal articles, including their bibliographic information, were imported into NVivo for further analysis. The initial template included concepts such as 'abusive supervision', 'mindful consumption', 'corporate social irresponsibility', 'corporate hypocrisy', etc. The concept of 'mindful consumption', for example, led to a more in-depth investigation of all the abstracts that mentioned consumption. This further investigation yielded the following collection of concepts (for a graphical representation refer to Figure 5): sustainable consumption, green consumption, environmentally friendly consumption, socially responsible consumption, ethical consumption, mindful consumption, fashion consumption, ritualistic consumption, negative effects of consumption, anti-consumption, consumer resistance, consumer cynicism, ethical segmentation of consumption, political activism, Fairtrade, and voluntary simplicity.

Insert Figure 5 here

The analysis furthermore uncovered a potential relationship between consumer cynicism, consumer resistance, and anti-consumption. There also seems to be a relationship between environmentally friendly consumption and voluntary simplicity. Moreover, political activism and Fairtrade emerged in connection with ethical consumption. Based on these concepts and relationships one could immediately formulate basic research questions and propositions for further investigation. For instance, one might ask the following questions: What are the drivers of ethical consumption? What types of ethical consumption are there? Are certain consumer groups more likely to become ethical consumers than others? For additional possible research questions around ethical consumption, and for a more detailed step-by-step guide to carrying out the analysis, the reader is referred to the original article (Sinkovics 2016). In terms of propositions, one might formulate the following basic ones: The more visible the negative effects of consumption become, the more consumers will adopt ethical consumption practices. The more mindful consumers are, the more likely they are to engage in voluntary simplicity.

Figure 3 provides a graphical illustration of the pattern-matching logic within this technique. As described above, pattern matching occurs at two levels. The first-level pattern match takes place between the researcher's mental model (a combination of his/her past experiences, academic training, beliefs, values, etc.) and the observed patterns that emerge from the bibliometric concept map. For example, following on from the previous example, the investigator may hold the assumption that consumers are more likely to engage in purchase behaviour that is convenient to them, even if they do not agree with the negative environmental and/or social implications of the production process. This is also well documented in the literature, and known as the attitude-behaviour gap (cf. Papaoikonomou, Ryan, and Ginieis 2011). The concept of 'voluntary simplicity' that emerged

from the concept map challenged this assumption, leading to the following question: Under which circumstances are attitudes translated into action?

The second level of pattern matching follows on from this point. In the first instance, the investigator's assumption about consumer behaviour was challenged (consumers prioritise convenience over ethics), leading to the formulation of a new research question (regarding what drives voluntary simplicity) and possible propositions (e.g. that the more mindful consumers are, the more likely they are to engage in voluntary simplicity). This potential research question and the propositions could now be explored in more detail in Nvivo. They would form the basis of the next pattern match. The investigator could use the query functions of the software to identify the relevant paragraphs containing the terms 'voluntary simplicity' and 'mindfulness' and investigate whether there was a documented relationship between these concepts in the selected body of literature (410 articles). If there was a documented relationship, one could then read the full paper, do additional literature searches and determine whether there was a need for further research. If there was no documented relationship between the concepts in the Nvivo database, one could do a wider literature search in the Web of Science™, ProQuest, Scopus, etc. If the proposed relationship had not yet been explored, the investigator could start designing a study to examine the relationship. If the relationship was already documented, one could determine the extent to which it had been investigated and design a subsequent study, if justifiable. To sum up, bibliometric concept maps serve as an aid to formulating initial research questions and/or propositions to be further explored in Nvivo.

5 Conclusions

Understanding the basic principles of the pattern-matching logic, as well as its historical and philosophical roots, can be a tremendous help in designing and conducting qualitative research studies, regardless of the form they take. As mentioned at the beginning of this contribution, from a meta-theoretical point of view, the general theory of pattern matching originates from probabilistic functionalism (cf. Hammond 1966b). This position between a strictly subjectivist and a strictly objectivist approach to social science (cf. Burrell and Morgan 1979) gives pattern matching its unique structured flexibility. Being aware of the different types and levels of possible pattern matches can help researchers in their initial theorising, irrespective of their approach, that is, irrespective of whether they apply deductive, inductive, or abductive reasoning. Moreover, a thorough understanding of the general logic of pattern matching will also enhance the quality of researchers' efforts in terms of conceptualisation, construct definition, and operationalisation.

6 References

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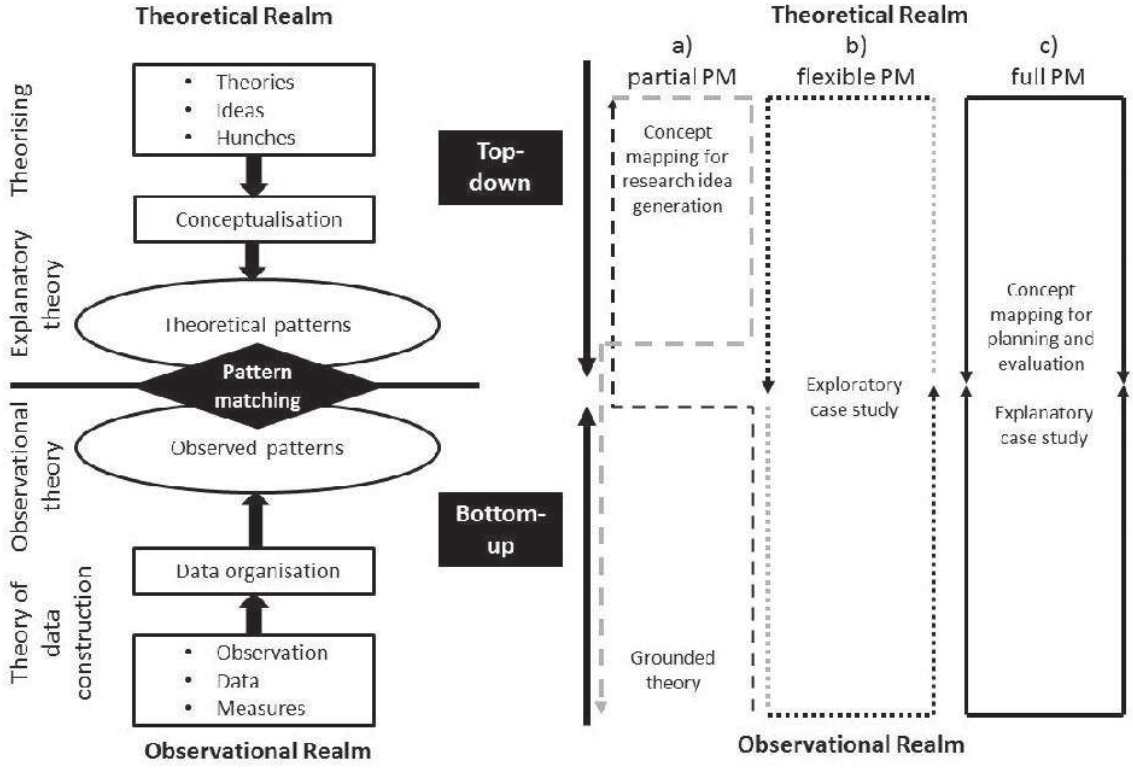
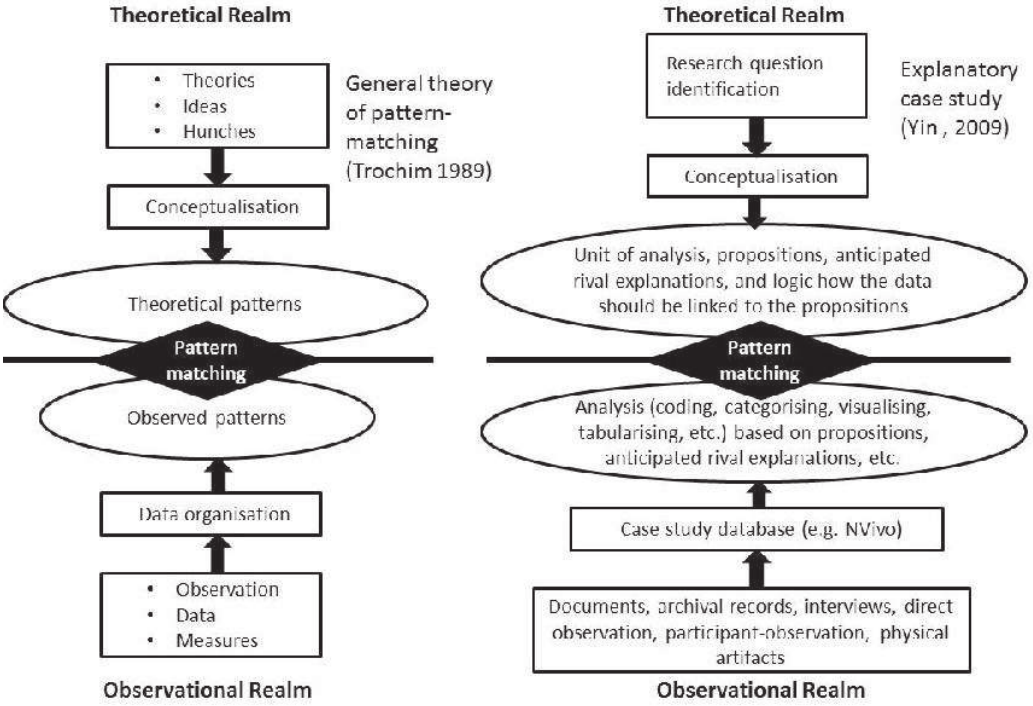
Figure 1 Different degrees of pattern matching in qualitative (and mixed) research



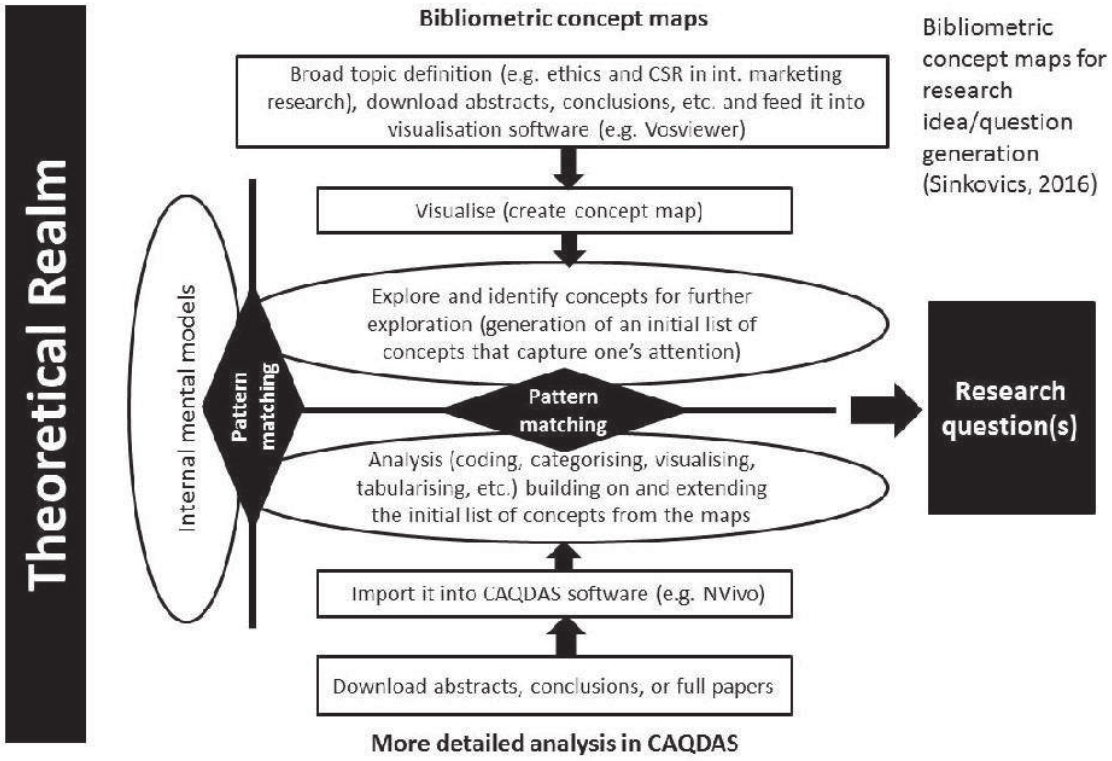
Source: adapted from Trochim (1989) and Wible and Sedgley (1999)

Figure 2 The general logic of pattern matching and its application in explanatory case study design



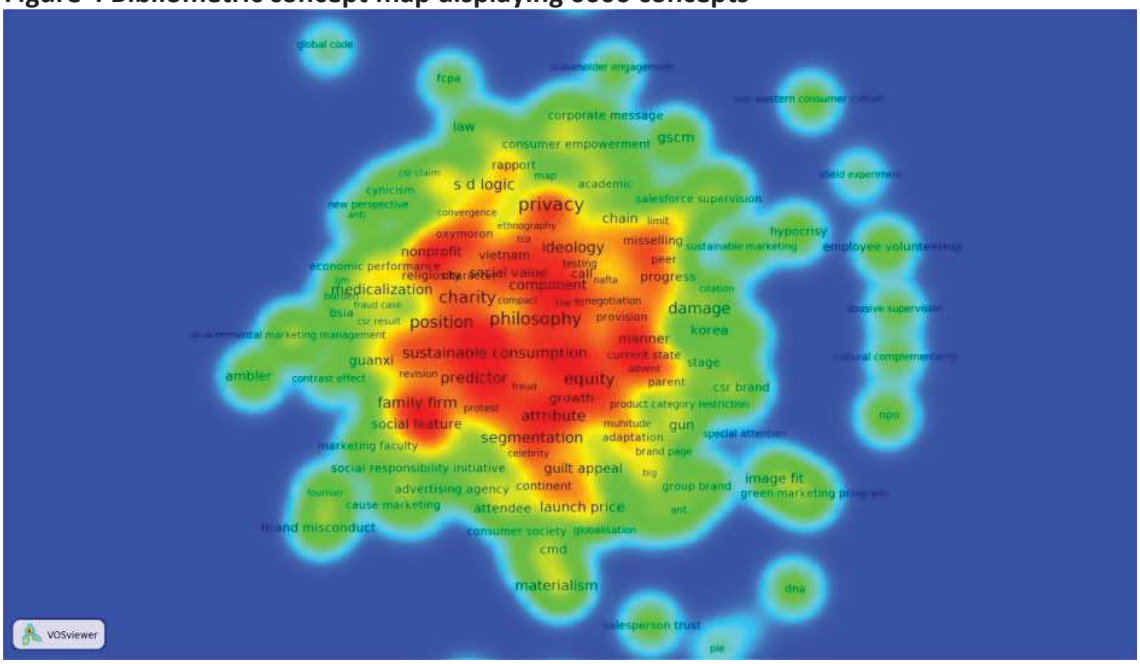
Source: adapted from Trochim (1989)

Figure 3 The logic of pattern matching in bibliometric concept mapping for initial theorizing



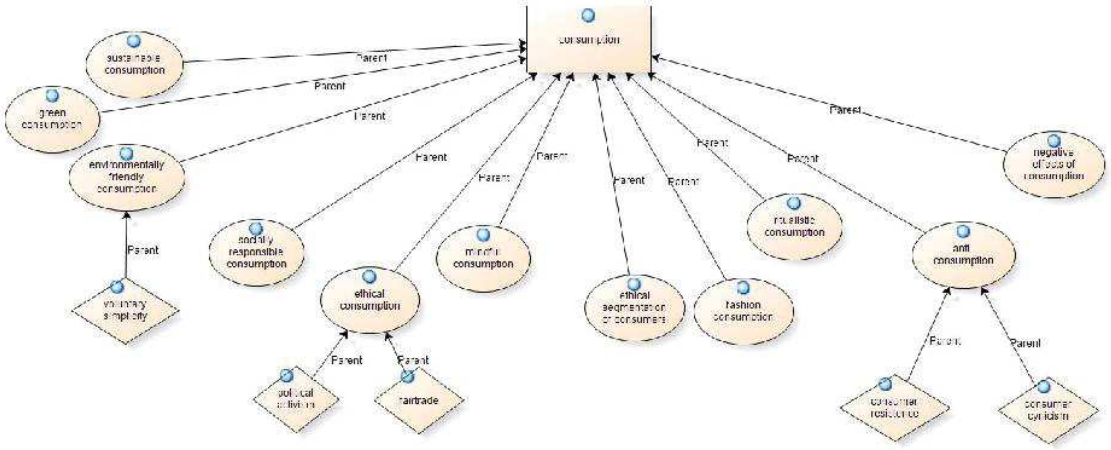
Source: adapted from Sinkovics (2016)

Figure 4 Bibliometric concept map displaying 6000 concepts



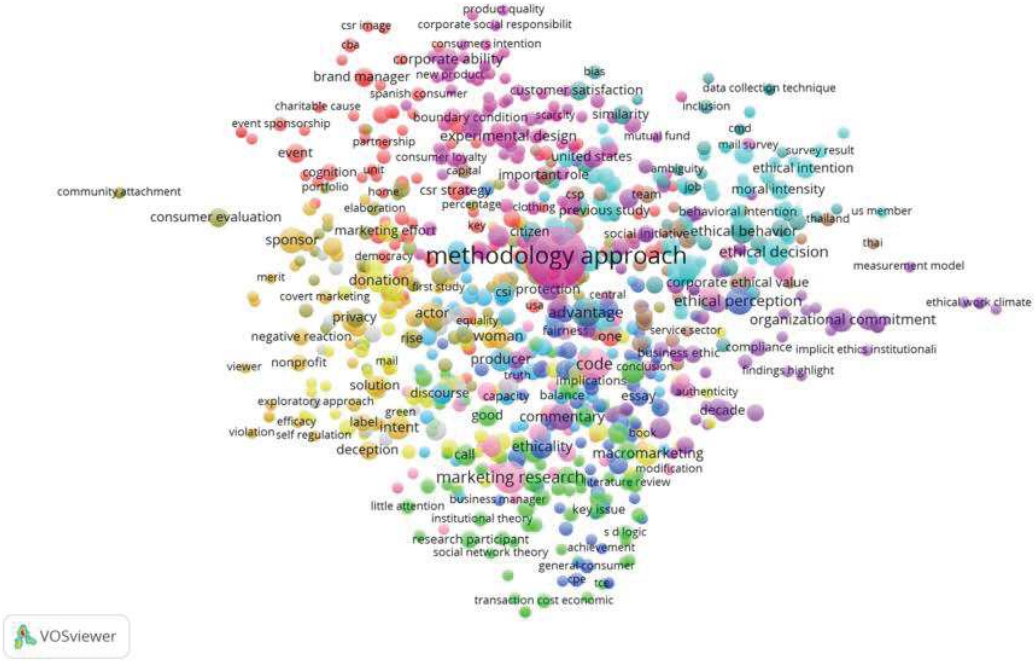
Source: Sinkovics (2016)

Figure 5 NVivo visualisation of consumption related nodes



Source: Sinkovics (2016)

Figure 6 Bibliometric concept map displaying 846 concepts



Source: based on Sinkovics (2016)

Table 1 A demonstration of flexible pattern matching through template analysis

Productivity/ value creation constraints		Transactional/ value capture constraints		Trigger constraints
Initial template	**Final template**	**Initial template**	**Final template**	**No initial template, fully emerged from the data**
Production input resources	**Production input resources**	**Market access**	**Market access**	**Changed industry conditions**
lack of access to high-quality input material (London et al. 2010)	lack of access to high-quality input material (London et al. 2010)	poor infrastructure (roads, communication networks, transportation system) (London et al. 2010; Chowdhury 2007)	poor infrastructure (roads, communication networks, transportation system) (London et al. 2010; Chowdhury 2007)	(e.g. diminishing competitive advantage)
low quality of local materials (London et al. 2010)	low quality of local materials (London et al. 2010)	lack of awareness of market expectations (London et al. 2010)	lack of awareness of market expectations (London et al. 2010)	**Act of God**
	supplier power (price, quantity)	inability to meet market expectations (London et al. 2010; Chowdhury 2007)	inability to meet market expectations (London et al. 2010; Chowdhury 2007)	(e.g. drought)
Financial resources	**Financial resources**		lack of awareness in the (domestic/international) market about company's products/services	**Socio-cultural factors**
lack of working and investment capital (London et al. 2010; Chowdhury 2007; Dahan et al. 2010)	investment capital (London et al. 2010; Chowdhury 2007; Dahan et al. 2010)		export barriers	(e.g. unemployment due to immobility)
exploitation by extra-legal lenders (e.g. loan sharks) (London et al. 2010)	exploitation by extra-legal lenders (e.g. loan sharks) (London et al. 2010)		market scepticism	**Social constraints**
no access to insurance (London et al. 2010)	no access to insurance (London et al. 2010)		community acceptance/legitimacy	(e.g. injustice, exploitation, lack of employment opportunities)

Production resources	**Production resources**	**Market power**	**Market power**	
inadequate or lacking technology/equipment/infrastructure (e.g. electricity, broadband, water) (London et al. 2010; Chowdhury 2007)	inadequate or lacking technology/equipment/infrastructure (e.g. electricity, broadband, water) (London et al. 2010; Chowdhury 2007)	lack of capacity to link directly with buyers (London et al. 2010; Dahan et al. 2010)	lack of capacity to link directly with buyers (London et al. 2010; Dahan et al. 2010)	
lack of expertise/know-how/education (technical, business, industry-related) (London et al. 2010; Chowdhury 2007)	lack of expertise/know-how/education (technical, business, industry-related) (London et al. 2010; Chowdhury 2007	lack of direct access to end markets (London et al. 2010)	lack of direct access to end markets (London et al. 2010)	
storage space (London et al. 2010)	storage space (London et al. 2010)	exploitation by middlemen (London et al. 2010)	exploitation by middlemen (London et al. 2010)	
underdeveloped human resources (Dahan et al. 2010)	underdeveloped human resources (Dahan et al. 2010	**Market security**	**Market security**	
		lack of consistent buyers (London et al. 2010)	lack of consistent buyers (London et al. 2010)	
		price fluctuation (London et al. 2010)	price fluctuation (London et al. 2010)	
		bureaucracy, corruption (Chowdhury 2007)	bureaucracy, corruption (Chowdhury 2007)	
		Law-and-order situation, strikes, lack of government assistance (Chowdhury 2007)	Law-and-order situation, strikes, lack of government assistance (Chowdhury 2007)	

Source: adapted from Sinkovics, Sinkovics, and Yamin (2014: 700)