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Multi-Methodological Approaches in Qualitative Entrepreneurship Research

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Abstract: This study examines, how entrepreneurship research can be conducted using different methodological approaches. Utilizing the qualitative method, multiple sources of evidence were experimented, drawing upon industrial reports, structured interviews, in-depth interviews and observations from a range of case studies. The results suggest that the investigation of complex issues such as recognition, discovery and creation of entrepreneurial opportunity contribute to the range of methodologies available which guide researchers to systematically frame their studies to achieve the intended research objectives. A systematic literature analysis comparing different types of qualitative methodological approaches is however, required to shape a wider discussion in this area.

Key words: Multi-methodological approaches, qualitative, entrepreneurship research, methodological, guide

INTRODUCTION

The broad definition of entrepreneurship as an area of research has led to a wide range of methodological approaches utilized by researchers, including ethnography, case studies, large scale surveys, longitudinal and cross-sectional analyses and secondary analysis (Blackburn and Smallbone, 2008). All these methodologies enrich studies in entrepreneurship as they lead to the use of various approaches which permit us to better apprehend the issues surrounding entrepreneurial opportunity.

Working on the extended definition of entrepreneurship provided by Shane and Venkataraman (2000) on how by whom and with what effects opportunities to create future goods and services are discovered, evaluated and exploited, this study aims to examine how qualitative entrepreneurship research can be conducted by employing different methodological approaches. Specifically, it attempts to answer the "how" and "why" questions as reflected in an applied research (Kenworthy and McMullan, 2013).

In Indonesia, optimization skill is popular in entrepreneurs who use internet technology in their business called it is simply a way of looking problems and knowing solutions (Rahmawati and Dhewanto, 2014).

According to Whetten (1989), how and why are two essential building blocks for effective theory development. As Sutton and Staw (1995) put it good theory should be "rich enough that processes have to be described with sentences and paragraphs, so as to convey the logical nuances behind the causal arrow".

MATERIALS AND METHODS

Research design involves a framework for data collection and analysis and reflects decisions about the priority given to a range of dimensions of the research process (Bryman, 2008). Specifically, methodological considerations have the ultimate purpose of providing researchers with scaffolding or a path they can follow which coincides with their particular research purposes (Crotty, 1998). This includes beliefs about the nature of reality (ontology) and beliefs about how knowledge is acquired (epistemology), combined with the nature of how methods are used or studied (methodology) (Guba and Lincoln, 1994). Once researchers have developed research questions they are seeking to answer, they must consider what methodologies and methods they will employ in their research, what theoretical perspective lies behind the methodology and what epistemology informs this theoretical perspective (Crotty, 1998). Therefore, identifying the methodological considerations that explain the research assumptions is paramount to this study.

This study explains the methodology that depicts the theory of knowledge, reality and inquiry as well as all the assumptions that connect with each idea. The ultimate aim is to understand the subjective nature of "lived

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Table 1: The difference between quantitative and qualitative approaches

Parameters	Quantitative	Qualitative
Assumption about the world	Assumes that there are social facts with an objective reality apart from the beliefs of individuals	Posits that reality is socially constructed through individual or collective definitions of the situation
Purpose	Aims to explain the causes of changes in social fact, primarily through objective measurement and quantitative analysis	Concerned with understanding the social phenomenon from the actors' perspective
Approach	Commonly employs experimental of correlational designs to reduce error and bias that prevent a clear perception of social facts	Assist the reader in understanding the definition of the situation of those studied

Taylor and Bogdan (1998)

experience" from the perspective of those (the entrepreneurs) who experience it by exploring the subjective meanings and explanations that individuals attribute to their experiences (Berglund, 2007). Patton (1990) defines such a phenomenological focus quite simply as describing what people experience and how it is that they experience what they experience. The methodological implication of this study which concentrates on lived experience is that an individual's interpretation of the experience is argued to be an essential part of the experience itself. Bogdan and Taylor (1975) summarize this phenomenological stance as follows:

> "The phenomenologist views human behaviors as what people say and do as a product of how people interpret their world. The task of the phenomenologist and for us, the qualitative methodologists is to capture this process of interpretation. To grasp the meanings of a person's behavior, the phenomenologist attempts to see things from that person's point of view"

As to the use of qualitative, quantitative or even the mixed method approach, all of these methods have their own strengths and shortcomings. The significant difference between the two paradigms is explained by Taylor and Bogdan (1998) as illustrated in Table 1.

Generally, both the quantitative and qualitative methods have weaknesses in which are compensated for to some extent by the strengths of the other (Creswell, 2003). However, Thompson *et al*. (1989) argue that the world of "lived experience" does not always correspond with the world of objective description because objectivity often implies trying to explain an event or experience as separate from its contextual setting. Hence in recognizing and appreciating the research aim which is to understand the social phenomena of entrepreneurial opportunity, a qualitative methodology appears to cohere with this.

Through, the qualitative research method, this study answers the questions ofhow and why entrepreneurs are affected by constructing events that go on around them. Based on the interactions between cognitive, affective and physiological elements as events and streams of experience play out, entrepreneurs give meaning and make sense of their context (Morris *et al*., 2012). The entrepreneur derives meaning by translating experiences into how he or she feels and thinks while meaning also acts as a guide and explanation for his or her experience. Hence, utilizing qualititave method is essential. The importance of utilizing this method within the entrepreneurship domain is reinforced by Gartner and Birley (2002):

> "It is our opinion that many substantive issues in entrepreneurship are rarely addressed and that many of the important questions in entrepreneurship can only be asked through qualitative methods"

The next qualitative issue is trustworthiness. Lincoln and Guba (1985) posit that trustworthiness encompasses establishing credibility that makes up the confidence in the "truth" of the findings and they suggest that trustworthiness is important in evaluating the worth of a research study. Trustworthiness includes three important components: transferability, dependability and confirmability. Transferability refers to the applicability of research findings in other contexts while dependability denotes consistencies of findings which could be repeated. Confirmability on the other hand shows the degree of neutrality or the extent of which the findings are shaped by the respondents and not by the researcher's bias, motivation or interest.

As an important component of trustworthiness, the naturalistic paradigm of transferability depends on the degree of similarity between the original situation and the situation to which it is transferred (Douglas, 2004). However in terms of findings, transferability can not be specified, instead the researcher can only provide sufficient information that can then be used by readers to determine whether the findings are applicable to the new situation (Lincoln and Guba, 1985). This is referred to as naturalistic generalization or extrapolation (Stake, 1978; Patton, 1990).

Naturally, the wider the theoretical sampling is developed, the more embedded is the theory that is established. In addition, generalizability in the naturalistic world enterprise requires general theories that can emerge from within the quantitative paradigm (Douglas, 2004). However, generalizability does not depend on sampling criteria; rather it depends on substantive data (Patton, 1990). Due to this, the product of qualitative inquiry does not need to be a theory or model to be applied to a large number of diverse situations.

In addition in order to understand qualitative research, the issue of credibility needs to be addressed. Likewise, credibility does not depend much on the sample size; rather it depends more on the richness of information gathered and on the analytical abilities of the researcher (Douglas, 2004). Several techniques can be used to establish credibility such as prolonged engagement, persistent observation and triangulation (Lincoln and Guba, 1985). Patton (1990) suggests four types of triangulation methods. They are methods triangulation, data triangulation, triangulation based on multiple analyses and theory triangulation. Building on the work of Patton, this study utilizes methods triangulation through the use of four approaches namely the interpretive, interview, the in-depth interview and personal observation in the data collection process.

Besides the issues of transferability and credibility, there has been an increasing concern on validity in qualitative research as well as in other fields such as action research (Reason and Bradbury, 2001), discourse or conversational analysis (Seale, 1999), psychology (Kvale, 1995) and social science and applied fields including education (Eisenhart and Howe, 1992).

As a matter of fact, the issue of validity has been addressed for more than half a century (Atkinson *et al*., 2003). Validity in qualitative research involves determining the degree to which the researcher's claims about knowledge correspond to reality (or research participant's construction of reality) being studied (Eisner and Peshkin, 1990). Lincoln and Guba (1985) posit that validity is the degree to which a researcher can demonstrate the neutrality of the researcher's interpretations through a confirmability audit, one of the techniques for establishing confirmability in research. Johnson *et al*. (2006) suggest the use of an ecological audit of the researcher's knowledge claims, going back to the raw data (interview notes, tape recordings, observation notes and the like) and analysis notes, reconstruction and synthesis methods, process notes, personal notes and memoranda. This process is also known as an audit trail. As explained by Cohen and Crabtree (2006):

> "An audit trail is a transparent description of the research steps taken from the start of a research project to the development and reporting of the findings. These are records that are kept regarding what was done in an investigation"

This study embeds the audit trail process in the process of research design.

Understanding interpretive approach: Unlike the naturalist's methodology, an interpretivist does not explain or anticipate, rather the key is to understand (verstehen). As a method, understanding must begin from the pre-conception that there are at least some common grounds between the researcher and the researched. In addition, an interpretivist has different suppositions in terms of perception of the world where in social phenomena the world is seen to have different meanings. To an interpretivist, one factor affects the change in the social context. Due to this, different studies may lead to different conclusions from one particular observation. Additionally, the epistemology in the interpretive approach stems from investigations of various phenomena and this distinguishes the social context from natural science. Hence, an ontological assumption concerns the nature of the world and human beings in social contexts (Bryman, 2001).

A well-established interpretive tradition exists within the social sciences; however, it is only in the last three decades that interpretive research in entrepreneurship emerges (Bouchikhi, 1993; Cheil and Pittaway, 1998; Costello, 1996; Hines and Thorpe, 1995; Johannisson, 1995; Rae, 2000; Rae and Carswell, 2000; Steyaert, 1997). As illustrated by Grant and Perren (2002), small business and entrepreneurship research remains dominated by objectivist and functionalist approaches while the interpretive methodological assumption focuses on analysis of the methods used for gaining data and uses observation and fieldwork notes to investigate objects. This implies that the interpretive paradigm is inclined towards using qualitative methods for observation and therefore, the findings can be subject to different forms of interpretation (Andrade, 2009).

In the interpretive approach, entrepreneurship is viewed as a process of sensemaking in which new ideas and possibilities become enacted, selected and legitimated until they are finally accepted by potential users. Inspired by Weick (1979) and Gadamer (1994), the interpretive approach in entrepreneurship study has been followed by many researchers including Bjorn (2007), Gartner (1993) and Lavoie (1991) and the key assumptions are that entrepreneurship should be understood by studying culturally embedded participants while stressing on theoretical holism. In view of this notion, a strong emphasis is placed on the role of cultural norms among the entrepreneurs who are the research participants such as the beliefs embedded within their selves that affect the way they act and behave. This phenomenon has actually sparked discussions on the idea of "enactment" which is literally translated as "the process of acting something out" in entrepreneurship.

Enactment theories of entrepreneurship perceive the process of creation as the formation of new organizations, entities, groups or companies (Gartner, 1993; Gartner *et al*., 2003). Gartner (1993) suggests that enactment is vital if we want to cancel out the standard understanding of entrepreneurship in which opportunities are seen as something that is always "right under our nose" easily noticed and found. On the other hand, the opportunity enactment perspective focuses on sensemaking, stressing that reality is socially constructed through actions which bracket "a cacophony of experiences and opportunities that entrepreneurs are engaged in" (Gartner *et al*., 2003). The languages of change, action and novelty are hallmarks of a process orientation (Moroz and Hindle, 2012). Events are framed by terms like flow, creation and "becoming" (Aldrich and Martinez, 2001; Steyaert, 2007; Van de Ven and Poole, 1989). This perspective is argued to comport well with the study of entrepreneurship which is fundamentally an action-based phenomenon that involves a highly interrelated set of creative, strategic and organizing processes (Moroz and Hindle, 2012).

Nevertheless, empirical studies applying the process of understanding of opportunity recognition is still quite rare (Fletcher, 2006), making it beneficial to conduct empirical investigation on this particular issue.

Applying interpretive approach to entrepreneurship study: Before understanding how an interpretive approach is used, it is useful to recognize the role and aim of interpretive inquiry in the research context. Generally, interpretive inquiry aims to characterize how people experience the world, the ways they interact together and the settings in which these interactions take place. This involves the interpretation of meaningful human expressions be they written, verbal and/or physical. Two key ideas are involved here, namely human action and social action. Smith (1992) argues that human actions are those assertions people make based on reasons, intentions and motivations while the idea of social must be added because the meanings ascribed to human actions, both by the actors and the interpreters are determined by and can only be understood within a social meaning. An interpretive approach views the role of researcher as inquirer and it carries an active role. Inquirers are also interpreters of the interpretations. People give meaning to their own actions and to the actions of others and thus, what inquirers are concerned with are no different from what most people are concerned with understanding (Smith, 1992).

This study uses the interpretive inquiry approach and the three key areas in analyzingand interpreting data following the method proposed by Limb and Dwyer (2001) and Rogers and Viles (2002). This includes transcribing, coding and drawing out key themes from data. An interpretive approach involves interpreting symbolic forms, narrative, arguments, conversation and the setting of the research context in this case, the biotechnology entrepreneurs.

The analysis process begins with reading (for data immersion) and re-reading all nine cases from both the first stage interviews and in-depth interviews that were carried out. In choosing the nine cases for the study, purposeful sampling is used. The reading process also involves familiarity with the story, terminologies, languages and ideas discussed during the interviews. The reading of content is also used to identify emergent themes within the biotechnology industry in Malaysia and to develop general explanations. The data immersion process also involves identifying patterns or themes and examining how these occur. We use pre-set themes that were first identified and coded based on the literature review and key emerging themes or patterns from the data. Specifically, we identify whether the themes occur in all or only some of the data, observing the relationships between various themes and observing the contradictory responses based on the pre-set interview questions on the themes. The three key areas that represent the pre-set themes are the sources of entrepreneurial opportunity, views on entrepreneurial opportunity discovery and creation and opportunity exploitation.

Data analysis involves the process of interpreting raw data from the interviews with the entrepreneurs in the biotechnology industry in Malaysia. This stage requires making sense of the interview conversations with the entrepreneurs and links the meanings to key themes. This is the interpretation stage where we act as interpreters, search for core meanings of thoughts, feelings and behaviors described in the transcribed data. At this stage, we identify as to how the pre-set themes and the emerging themes relate to each other and how the two key research questions are answered. This is in line with Fletcher (2007)'s assertion: "Although, we are unrelated to the making of the story as we read and connect to some aspect of it, we can theorise beyond the telling of it. This is because as a community of researchers, we have a set of rules, conventions, ideas and strategies for interpreting the story. Likewise, even people who are not directly familiar with the scholarly work of entrepreneurship are able to connect to the story. This is because people label, categorize and construct things as 'entrepreneurial' about understandings they have derived from different exposures (media, education, family) interpretations and understandings that they 'bring into being' and 'take forward' through dialogue and interaction."

Applying abductive approach in entrepreneurship research: The abductive approach is a term used to describe a form of inquiry that is separated from both induction and deduction (Forstater, 1999). Peirce (1966) considers that the function and purpose of retroduction or abduction lies in explaining some surprising phenomenon, some experience which either disappoints an expectation or breaks in upon some habits of expectation of the inquisiturus. Peirce's vision of abduction as a form of disciplined, targeted conjecture following a surprising observation is equally capable of application to both positivist and interpretive research (Chamberlain, 2006). However, Blaikie (2000) describes a uniquely interpretive version of abduction which discourages the imposition of a specific frame of reference onto the research subjects. Chamberlain (2006) summarizes Blaikie's conception of an abductive strategy that consists of two parts as below: "First, the methodology adopts an interpretivist ontology that is social science is approached from the viewpoint of the participants, perceive it as being. Second, the research project is addressed by the researcher becoming sufficiently engaged, even immersed in the interpretivist reality of the situation to perceive, whatever is remarkable or noteworthy and then insightfully speculate on likely associations or causations of it".

This research adheres to the conception of abductive reasoning while making selective use of both Blumer (1969)'s vision of sensitizing ideas and Blaikie's version of interpretive abduction. This process involves identifying the specific area (s) where a lack of clear conceptual basis is likely to render the data generation task nearly meaningless, then applying externally derived theory minimally and in those areas only as a "sensitizing idea" (Chamberlain, 2006). Specifically, the study employs the imported idea of sensemaking together with the idea of discovery and creationist views of entrepreneurial opportunity. The aptness of the imported idea as described by Chamberlain (2006) is then tested in the research situation by examining the consistency, coherence and plausibility of its effect on the raw observations of the behavioral process of opportunity creation by the biotechnology entrepreneurs. The next study describes the research design in detail.

The research design: The research design is the logical sequence that connects the empirical data to a study's initial research questions and ultimately to its conclusions (Yin, 2009). Yin (2009) explains this further: "A research design is a logical plan for getting from here to there where here may be defined as the initial set of questions to be answered and there is some set of conclusions (answers) about these questions. Between "here" and "there" may be found a number of major steps, including the collection and analysis of relevant data".

Guided by the extant literature, the research process begins with an exploratory study where two interviews were conducted with two biotechnology companies to identify the current trends and issues in entrepreneurship. The subsequent step involves identifying and formulating issues based on the literature and the exploratory study. Any new key emerging issues are then included. Both the exploratory interviews and literature review centered around four key issues of sources or opportunity, entrepreneurship discovery and creation, business networking and general issues.

This is followed by the first-stage data collection activities (fieldwork) and this includes interviewing nine carefully selected biotechnology entrepreneurs from three different categories, namely government-funded entrepreneurs, personally-funded entrepreneurs and family-funded entrepreneurs. The rationale for this choice is to identify different patterns emerging from different types or categories of entrepreneurs.

The next step of the research design is the preliminary data analysis and it includes data analysis from the first-stage data collection and captures various key emerging issues from the research participants. All these themes are investigated in the first-stage data gathering process. The subsequent step involves the second-stage of data gathering activities (fieldwork), an in-depth interview with three of the nine biotechnology entrepreneurs from the three different categories. The second-stage of data collection involves a personal observation of a business meeting between some entrepreneurs and their potential clients. At this stage, we use the participation observation method with both note taking and digital audio recording approaches.

Unit of analysis in entrepreneurship research: Qualitative research reports are typically rich with details and insights into participants' experiences of the world. In studying human relations within an enterprise, the unit of analysis can be highly complex; it is not necessarily the enterprise itself as an entity, nor is it necessarily the individual actors as separate units of analysis including the entrepreneurs (Douglas, 2004). The unit of analysis, thus refers to the basic unit of text to be categorized during the process of content analysis. The unit of analysis of any entrepreneurial process model may be focused on the individual, a group or team, an organization or firm, the meso-environment, community, region, etc., where the environment and entrepreneur may interact and influence one another or the macro-environment, exogenous to the entrepreneurial process where there is little influence by the entrepreneur on the environment at large (Moroz and Hindle, 2012). Nevertheless, messages have to be unitized before they can be coded and differences in the unit definition can affect coding decisions as well as the comparability of outcomes with other similar studies (De Wever *et al.*, 2006). As such defining the coding unit is one of the most fundamental and important decisions (Weber, 1990).

Qualitative content analysis commonly employs individual themes as the unit for analysis, rather than the physical linguistic units most often seen in quantitative content analysis. For instance, a theme or idea might be demonstrated in a single word, a phrase, a sentence, a paragraph or an entire document. When using themes as the coding unit, one primarily looks for the expressions of an idea (Minichiello *et al.*, 1990). Hence, the unit of analysis for this study is defined as the process in which the biotechnology entrepreneurs recognize and create opportunities. This is explained by analysing the behavioural actions of the entrepreneurs in their business functions.

The methodological process: According to Bryman (2001), piloting helps to ensure that the interview questions operate well and that the research instrument as a whole functions well. In this respect, the interview questions were piloted in two phases. The first phase was with two doctoral students who had experience working in business and entrepreneurial ventures. The review outcomes on the interview questions were very helpful with regards to syntax, spelling, integration, comprehensibility and grammar. This is to avoid confusion, slang, abbreviations, ambiguity and vagueness. The review also ensures that the intended respondents would readily find the questions understandable.

The second phase was considered as exploratory study carried out with two biotechnology entrepreneurs following Bryman (2001)'s suggestion that pilot testing is best conducted on a small set of respondents similar to those in the final survey in order to ensure that all questions are comprehensive and redundancy is avoided to guarantee reliability and appropriateness. The scope includes the company's background and the nature of business.

Data from the exploratory study relevant to the conceptual frameworks are then analyzed. Based on the literature review and secondary data, it appears that only a few issues that emerged from the interviews provide deeper meaning in addressing the study's objective. Building on the multi-methodological approach underpinning the study, 11 emerging issues are identified that affect the process of the interrelationship of entrepreneurial opportunity creation.

Initially, we started by conducting informal discussions and these discussions allow us to gather valuable information on the background and aspirations of the biotechnology entrepreneurs. Some of the "storytelling" seems interesting as it indicates how the entrepreneurs engage and relate themselves indirectly within the context of opportunity recognition and creation (O'Connor, 2004). By asking relevant questions, we manage to capture the meaning of the discussions on issues of technology changes that might influence the biotechnology entrepreneurs.

Other issues discussed during the interview include in-house designed and developed technologies and contracted out technologies and how these affect the entrepreneurs' businesses. There are also questions on media's impact on the entrepreneurs and how media facilitates and affects the biotechnology industry. In addition, there are other issues that sparked interests for instance, the importance and relationship of government actors in the process of entrepreneurial opportunity creation and specifically the role of entrepreneur-government collaborations, government's policy towards biotechnology entrepreneurs, creation of relevant educational infrastructures in the area of biotechnology and financial assistance and funding. Further, we investigate the elements of business networks, particularly the effects of personal and formal networks on the biotechnology entrepreneurs. Building on these ideas and issues, we extend the research to the next step which is the first-stage of the data collection process. In so doing, we need to determine the sampling method to be used. This is explained in the following study.

Sampling methods and ethical considerations in entrepreneurship research: In qualitative research, it is essential to adopt appropriate sampling method technique. In choosing the participants for this study, purposeful sampling is used as described by Patton (1990): "The logic and power of purposeful sampling lie in the selection of information-rich cases for study in depth. Information-rich cases are those from which we can learn a great deal about issues of central importance to the purpose of the research, thus the term purposeful sampling".

Specifically, we adopt the snowball or chain sampling which identifies cases from people who know what cases are information-rich that is good examples for study or good interview subjects (Patton, 1990). According to Hartley (1994) by using contacts from the industry can be very helpful in establishing what the population is of organizations one might draw the case study from and then for how to choose the case (s). For this, six participants are recommended by the governing body of the biotechnology industry in Malaysia (the Malaysian MBC) while the other three participants are chosen from business and social networks from within the same industry.

In qualitative research's interview session involving human requires ethical approval. This is in view of the fact that research that involves human beings serve both scientific and human interests (Haahr *et al*., 2014). In such a case, informed consent should be an ongoing process. Seymour and Ingleton state that entry into research involves two separate phases, the first being negotiation with research participants about the nature of work to be done followed by the manner in which the informed consent is gained from participants. All the nine entrepreneurs accepted the request for interviews and agreed that the materials gathered during the research process be used for research purpose. Besides, the unique intimate atmosphere created in the interview requires us to pay sensitive attention to the integrity and well-being of the interviewees and to the boundaries for what questions to ask (Kvale and Brinkmann, 2009).

The interview process: Interview is considered the most critical part of the data gathering process. Research methodologists, Bryman (2001), Kumar (2005), Leedy and Ormrod (2005) and Yin (2003) describe interviews as superior data gathering device because people are more willing to talk than to write. Kumar (2005) explains that if a question is misunderstood, the interviewer can either repeat it or put it in a form that is understood by the respondent. Further, conducting an interview allows the interviewer to access to the respondent's gestures and tone of voice and to the emotional influence of the response. Hence, the words and tone of voice can be protected, recorded and later recalled using the latest technology currently available in the market. Moreover, the interview method provides an opportunity to penetrate in-depth the responses of the interviewees, something unlikely to be achieved through other investigative means (Leedy and Ormrod, 2005).

However because of the objects of inquiry in the interview are humans, extreme care must be taken to avoid any harm to them (Fontana and Frey, 2005). Brinkmann and Kvale (2005) argue that the researcher and participant interact and affect each other during the interview, thus, it can be regarded as an ongoing relationship where the personal and social identities of both the researcher and participant are at stake.

In order to manage this issue and to increase the reliability of the interview process, a case study protocol is developed. As Yin (2009) suggests, a case study protocol is a major way of increasing the reliability of case study research and is intended to guide the investigator in carrying out data collection from a single case study (even if the single case study is one of several in a multi-case study). To conduct sound and solid interviews, the research process must be guided by reflection on relational issues (Brinkmann and Kvale, 2005), thus case study protocol is seen as one of the best options in the research process.

The interviews: We conducted all of the pre-arranged interviews at pre-determined locations at the entrepreneurs' offices throughout Malaysia. Each session takes ~1-2 h per participant and this excludes the time for factory visits. The interviews are digitally recorded using an Olympus VN-5500 PC digital recorder while the visits are captured using a Canon DSLR camera. Field notes are also taken where possible. All the interview data collected during this first-stage process, including the secondary data provided by the research participants are analyzed.

The in-depth interview (second-stage data collection process) involved three carefully selected from among the nine entrepreneurs chosen from all the three categories mentioned earlier. The entrepreneurs allow us to gather relevant details on issues pertaining to entrepreneurial opportunity recognition and creation from three different perspectives.

In addition, we are also invited by one of the entrepreneurs for an observation of a business meeting. The meeting was conducted in a friendly environment at his office and the potential client from Vietnam is known to him. The purpose of the meeting is to introduce the potential client to his market offer and to show how the entrepreneur could add value to the business relationship. The process of personal observation helped us to better understand better why and how people communicate their ideas and how these ideas are being translated into opportunities for profit. The conversation during the meeting also allows us to gather valuable words and business-related ideas used by both the entrepreneur and the potential client to make sense of their business discussions. Qualitative entrepreneurship research engages in several aspects of data interpretations and this demands neutrality of the interpretations itself. In this regard, audit trail is one useful means to address this issue.

Managing research process through audit trail: The first process of an audit trail includes keeping in a safe place the raw data that includes written field notes and unobtrusive measures (documents). The second stage involves the process of data reduction and analysis, including summaries such as condensed notes, unitized information and quantitative summaries and theoretical notes. These materials include recording of the process of adding and eliminating research processes and theoretical notes. The third stage is data reconstruction and synthesis, encompassing the structure of categories (themes, definitions and relationships), findings and conclusions and a final report including connections to existing literature and integration of ideas, relationships and interpretations.

The final stage is managing materials relating to intentions and dispositions, including the last inquiry proposal, personal notes (reflexive notes and motivations) and expectations (predictions and intentions), instrument development information including pilot forms, preliminary schedules and observation formats. These steps may not be sufficient to be claimed as comprehensive but eventually help to facilitate and build trustworthiness in the methodological process of the study. Concerning this, all relevant raw data including audio interviews, data reduction and analysis are kept and documented systematically and this encompasses the interview questions from the exploratory study, the interview schedules with the selected biotechnology entrepreneurs and the observation notes. This step enables research traceability and is known as a process of ecological audit as proposed by Johnson *et al*. (2006).

RESULTS AND DISCUSSION

Eisenhardt (1989) and Yin (2003) recommend studying and utilizing each case before investigating cross-case analysis to detect patterns. Following this recommended data analysis process in case study research, the first step in our data analysis is an initial case analysis while the second lead to an in-depth cross-case and observational videographic analysis. Data gathered from interviews and observations are used to understand, analyze and describe the case. This analysis is driven by the literature and exploratory study.

In this study, the raw data are first transcribed and translated using transcription software, transcriptions. This software helps us to incorporate audio files with the document files in one platform. This feature facilitates the process of transcribing and translating the raw data from interviews. The transcribed data are then analyzed manually. The interviews are transcribed and translated soon after they are completed and are then edited for clarity and completeness. At this time, permission is sought from the respondents to reproduce the full interview transcripts in the report. All the nine biotechnology entrepreneurs granted their permission.

The information extracted from the interviews are examined closely and the findings are reported directly without further data reduction or analysis. Analysis of videography is found to be a useful tool to both creating intimate auto-ethnographies and in bringing the camcorder into group situations without introducing someone who is not ordinarily part of the group (Belk, 2013). The analysis of our research utilizes both means of oral interview analysis as well as videography. The comparison between the cases of three different categories of personally funded, government funded and family funded ventures constituted the next step of analysis. This is considered the case study development process which involves pulling together and mapping all of the key themes with the completed data analyzed into one solid case study.

Case studies provide unique contributions to the field of entrepreneurship and thereby contribute substantially to knowledge in entrepreneurship research (Perren and Ram, 2004). Case studies often provide unique information about specific time frames and contexts, thus often look at reasons behind specific behavior that may not be fully revealed in a quantitative study (Rauch *et al*., 2014). Using case studies, it is possible to study samples that are extremely small and exclusive because the members of the population are very distinct and critical for example, entrepreneurs engaging in biotechnology ventures in Malaysia. Such outliers need to be studied by relying also on qualitative techniques (Zuckerman, 1972).

The case study approach has many advantages and is appropriate for examining:

- Contemporary or ongoing phenomenon not divorced from their real-life context
- Phenomena that are systemic in nature with a number of forces acting upon the system simultaneously

- Phenomena that are contextualized such that it is difficult to separate the phenomenafrom their context as can be done in an experiment

In view of this notion, the three categories of entrepreneurs are selected. The case studies are facilitated through interview data collection, coupled with content analysis of similar and dissenting answers (Tsoukas, 1989; Yin, 2003).

Presenting research findings visually, whether in a video, an illustrated article or book or a live presentation is much more engaging and informative than relying on words alone (Belk, 2013). This improved likelihood of accurate and reliable theory that is theory with a close fit to the data (Eisenhardt, 1989). Belk (2013) posits the qualitative research in Asian countries as follows: "There is also a reason why so many scholars have turned to photographic, videographic, netnographic and projective visual methods in conducting research in Asia: to stimulate and capture consumer data in visually rich and image-saturated Asian cultures such media lend themselves well to researching these markets. Naturalistic research in Asia is certain to see increasing use of the visual as technologies, Asian economies and audience visual literacy all continue to expand".

CONCLUSION

Research methodology is an essential element which allows any researcher to systematically frame the study to address research questions and achieve research aims. In other words, it guides them onto the proper research path which we have attempted to illustrate in this study. As Seale (1999) elucidates, the examination of the methodological considerations and research design may benefit the quality of research by encouraging a degree of awareness about the methodological implications of any particular decisions made. Through, case studies, it is possible to study samples that are extremely small and exclusive because the members of the population are very distinct and critical for example, biotechnology entrepreneurs in Malaysia. Such outliersneed to be studied by relying on qualitative techniques (Zuckerman, 1972).

This study employs the interpretive inquiry approach, analyzing and interpreting data following the methods recommended by Limb and Dwyer (2001) and Rogers and Viles (2002). Specifically, we interpret the symbolic forms, narrative, arguments, conversation and setting which characterize the research context in this case the biotechnology entrepreneurs. In addition, we have also used multiple sources of evidence, drawing upon multiple sources of evidence such as industrial reports, structured interviews, in-depth interviews and observation from a range of case studies. According to Yin (2009), the use of multiple sources allows researchers to address a broader range of historical and behavioral issues, most importantly enabling the development of converging lines of inquiry and the process of triangulation and corroboration.

This strategy allows the investigation of complex issues such as recognition, discovery and creation of entrepreneurial opportunity, using multiple methodological approaches, thereby contributing to the range of methodologies available to study the field of entrepreneurship. The multi-methodological approach employed has allowed us to understand the subjective nature of "lived experience" from the perspective of the biotechnology entrepreneurs who experience it. Accordingly, through the use of qualitative research method, we manage to provide answers to the questions of why and how the biotechnology entrepreneurs are affected by constructing events that go on around them. It is hoped that this study will shed lights on future studies in entrepreneurship.

Having said so, there is much more potential for visual and projective qualitative research in Asia that this brief survey will hopefully soon be eclipsed by the visual research of the future (Belk, 2013). We hope to see that the multi-methodological approaches employed can be extended to entrepreneurs of different sectors and across the geographical locations. The study's results are beyond the scope of this study which remains an agenda for our next course of scholarly research.

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