

How and why do IT entrepreneurs leave their salaried employment to start a SME?"

A mixed methods research design

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Abstract:

This method paper addresses an untapped but important type of IT turnover: IT entrepreneurship. We seek to develop a mixed methods research (MMR) design to understand the factors and processes that influence turnover behavior of prospective (nascent) IT entrepreneurs. To do this, we review two prior streams of research: the entrepreneurship literature and IT employee turnover. We incorporate the results of this literature review into a conceptual framework describing how the relevant factors leading to entrepreneurial and turnover behavior change over time, either gradually or suddenly, in response to specific events. In addition, we also contribute to the research by arguing that mixed methods research (MMR) is appropriate to bridge the gap between entrepreneurial literature and the IT turnover literature. A third important contribution is the design of the MMR, combining a longitudinal approach with a retrospective approach; a qualitative with a quantitative approach and, the exploratory design with the triangulation design [1]. Finally, we discuss practical implications for IT managers and IT entrepreneurs.

1 Introduction

Is your CIO quitting your company to create a SME in direct competition with you?

A major issue faced by companies is IT turnover; however, this issue becomes even more important when the IT professional launches his/her SME in competition with his/her former employer; thereby posing a threat to the IT capabilities of the employer's firm, [2]. Even though IT turnover represents a large body of research, to our knowledge, no studies specifically address the turnover of future IT entrepreneurs starting their own SMEs. Moreover, the entrepreneurship literature, while discussing the career reasons of entrepreneurs as well as the difference between entrepreneurs and non-entrepreneurs, does not consider the population of IT entrepreneurs. Therefore, there is a need to (1) bridge the gap between the two bodies of literature and (2) extend IT turnover research to the population of IT entrepreneurs starting their own SMEs.

Regarding the literature on IT personnel turnover, Joseph et al. identified a total of 43 constructs related to IT turnover intentions [3]. They classified these constructs into the following groups: desire to move, ease of movement, job search, individual attributes, job related factors and perceived organizational factors. Moreover, Joseph et al. insist on the necessity of studying those constructs within the context of environmental and organizational factors [3]. Finally, they also recommend considering new models such as the unfolding model of voluntary turnover, [4] and job embeddedness theory, [5] to address the weak relationship between intention and actual behavior. In his review of the entrepreneurship literature, Davidsson [6, p.6-9] identified more than 25 constructs related to entrepreneurial behavior. He classified them in the following categories: human capital (e.g. level of education), social capital (e.g. having parents or friends who are self-employed), financial capital (e.g. income), motivations and perceptions (e.g. self-efficacy). In addition to Davidsson's review, other theories which are worth noting are: *entrepreneurial self-efficacy*, [7], the work on *successful intelligence*, [8]; and the jack-of-all-trades theory, [9, 10], [11].

Our review of these two areas of literature shows a lack of specific studies on the actual turnover of IT entrepreneurs. This gap motivates our research as new constructs are very likely to emerge from any qualitative studies on this topic. In addition, it is well documented that both employee turnover and the creation of new ventures can be analysed using process models – the turnover process, [3] and the entrepreneurial process, [12], [13], respectively. Consequently, we seek to acquire in-depth knowledge of the IT entrepreneur's perspective using grounded theory methods (e.g. using the method of narrative analysis of life histories) to explain this process and identify new constructs (qualitative exploration). We also seek to conduct a quantitative study to identify trends and to generalize the findings from patterns of IT entrepreneurs to the IT personnel turnover and entrepreneurship literature [1 - p.33].

In sum, we consider the gap in both the IT turnover literature and in the entrepreneurship literature regarding IT entrepreneurs' turnover to be an important topic to address – which generates both practical and research implications. Because this topic requires both qualitative and quantitative approaches, we suggest using a mixed methods design (MMR), [1 – p. 34]. Therefore, we explore the following research question; "How and why do IT entrepreneurs leave their salaried employment to start a SME?" In addition, to answering this research question, we seek to explain the underlying process, by drawing from both elements of turnover process models and entrepreneurial process models. Also note that the dependent variable is two-fold. First, there is the decision to leave salaried employment and second, the decision to start a SME. Therefore, for purposes of theory building, we assume that the IT professionals quitting their jobs will start their SMEs as they leave paid employment (very shortly before or thereafter).

The rest of the paper is structured as follows: First, we briefly review the two streams of literature and present the conceptual framework of this research. We then discuss the MMR design. Finally, we discuss the contribution of this paper, its practical and research implications and its limitations.

2 IT Turnover literature review

Here, we briefly review the first literature stream: specific features of the IT industry that influence IT employees' turnover, including the individual, organization, and environmental levels, as suggested by [3].

A large body of research has identified individual level factors that influence IT personnel turnover. Among them, [14], [15], [16], [17], [18]. In their narrative review of the literature, Joseph et al. summarized 43 antecedents to IT turnover intention [3]. Among them, some were positively linked to turnover intention, such as *role ambiguity*, *role conflict* (with the exception of one study), *threat of professional obsolescence*, and *work exhaustion*; other constructs were negatively linked to IT employees' turnover intention (e.g., *boundary spanning activities*, *job autonomy*, *satisfaction with pay*, *promotability*, and *fairness of rewards*). Other factors yielded inconsistent results in explaining turnover intention, such as *age*, *education*, *IT job tenure* and *organization tenure*.

Joseph et al. noted the omission of IT industry's contextual factors in studies of IT personnel turnover [3]. In studying nascent IT entrepreneurs (NE)¹, it is even more critical to include IT industry factors, as entrepreneurs seek business opportunities specifically within the IT industry. Based on Ang and Slaughter's work, attributes of the IT context can be divided into two subsets: the internal organizational context and the external environment context [19]. The former includes factors specific to a given firm, including its IT strategy, its organizational structure, size, organization lifecycle, and finally, the IT work process. The external context includes general technology trends, IT labour markets, legal concerns, effects of national culture, and the growing influence of globalisation in the IT industry. For example, the current robustness of the labour market is a key contextual factor, as highlighted by Panko (2008), who states that the perceived or real health of the IT industry should be regarded as an important factor at the

¹ The definition of nascent entrepreneurs according to Reynolds et al. is the following : "An individual may be considered a "nascent entrepreneur" given three conditions: first, if *she/he* has done something — taken some action — to create a new business within the past year; second, if *she/he* expects to share ownership of the new firm; and, third, if the firm has not paid wages or salaries for more than three months"

environmental level. Indeed, he states that “post bubble job losses and unemployment growth was very short lived and was not as bad as many people believed” [20, p.194].

3 Entrepreneurship literature

There exists a large and growing body of theory and data on entrepreneurs – one that is rarely cited or acknowledged in the IS literature. Here, we briefly review specific portions of this literature that we consider directly relevant for purposes of theory building specific to IT professionals. Three different types of entrepreneurs are generally identified in the entrepreneurship literature (e.g. nascent, new or established). Since the first of these, nascent entrepreneurs (NE) is most relevant to our work, we focus on them, [21, p.44]. Within the entrepreneurship literature, one stream of research compares the individual attributes of NE with non-entrepreneurs. In order to summarize the differences identified in such studies, we use Davidsson’s classification scheme, [6], first considering *human* and *social* attributes of entrepreneurs, followed by *perceptual factors*. We also review a second stream of research that focuses on factors that trigger the decision to start a SME.

A first large and growing body of literature has focused on the question of how NE differ from non-entrepreneurs. By comparing NE to non-entrepreneurs, researchers have identified similarities and differences, thereby revealing indicators of subsequent venture creation.

Human capital – The individual’s *level of education* is related to entrepreneurship; however, the type of relationship is complex. Specifically, Wagner suggests an inversed U-shaped curve between education level and entrepreneurial behavior, with low propensity to become a NE at the extreme levels of education (both those who did not complete secondary school and those who completed a graduate degree) and much higher propensity to become an entrepreneur for those with moderate levels of education (i.e., secondary school and university graduates) [22].

More complex theoretical developments help to clarify the role of *education* and *prior experience* as they relate to propensity to start a business. E.g., Lazear and others ([9, 10], [11] support a

"jack-of-all-trades" view of entrepreneurship where *breadth of education*, the *balance of skills*, and the *number of roles* served in prior job positions are better predictors of entrepreneurial behaviour than specialization or years of experience. The importance of varied or balanced prior experience is further clarified in recent psychological studies [8] focusing on *successful intelligence*. Indeed, according to Sternberg, an entrepreneur will be successful if three types of intelligence (analytical, practical and creative) are combined in a balanced set. Sternberg also insists that practical intelligence is developed through a process that he calls *learning from experience*, i.e. "some people can be in a job for years and know less than someone who has been in the job for months" (p.195).

In addition, *need for achievement*, is consistently shown to be a key predictor of entrepreneurial behavior [23]. Although conflicting conclusions have been reached by other authors (due, in part, to the fact that managers share the same trait of high need for achievement as entrepreneurs), nonetheless, high need to achieve is important to recognize [24]. Lastly, *self-efficacy*, *innovativeness*, and *risk-taking* are other important attributes. Arenius and Minniti found a strong role for confidence in one's skills as a factor distinguishing entrepreneurs from non-entrepreneurs [25] – a result confirmed by others [26], [27], [28]. Chen et al further specified entrepreneurial self-efficacy (ESE) into five sub-factors: marketing, innovation, management, risk-taking and financial control or self-efficacy [7]. Their study found that entrepreneurs are more likely to be innovative and risk-taking, compared to managers – but there were no significant difference for the other self-efficacy factors (marketing, management, and financial control self-efficacy).

Social capital. The second dimension of Davidsson's framework is *social capital* [6]. Wagner reports that the probability of becoming a NE is "more than twice as high for those who know an entrepreneur" compared to those who do not [22, p.8], a finding that is confirmed by [28].

Perceptual factors. In addition to self-efficacy, other perceptual factors increase the propensity of becoming a NE. Wagner reports that the proportion of NE is "twice as high among those who consider *fear of failure* not a problem, compared to those who do" [22, p.8]. Another perceptual factor, *overconfidence* in one's ability to succeed, also plays a role in several studies, [28],

[29]. Indeed, Koellinger et al., suggest that overconfidence generates a perceptual bias – one that is “common among individuals in general [...] and [...] entrepreneurs in particular”, [28, p. 520] – which affects the “*perceived chances of outcomes and risks*” of starting a business [28]. Another important construct is *perception of business opportunities*, often labelled *alertness to opportunities* [25], which is, in turn, shaped by overconfidence. Of course overconfidence influences an individual’s propensity to start a business [28] [25]. For instance, Wagner reported that 14.5% of NE’s perceive good opportunities for venture creation compared to 4.3% of non-entrepreneurs [22].

Some limitations regarding the research on NEs have been addressed by Davidsson [6]. Davidsson acknowledges that the basic logic underlying cross-sectional comparisons of NE to non-entrepreneurs seeks to answer the wrong question, “How does involvement in a start-up process affect the person?” rather than the true question: “What attributes of [individuals] cause them to enter a start-up process?” This means that issues of causality must be seriously scrutinized in cross-sectional research on entrepreneurs [6, p.10]. Davidsson reminds us that it is the *venture* which is nascent (i.e., about to begin), rather than the person² [6].

In sum, although we acknowledge some weaknesses that have been identified in the entrepreneurship literature comparing NE and non-entrepreneurs, we do not share the sceptics “limited enthusiasm” for this stream of research [6, p.10]. The theoretical importance of constructs such as balanced skill sets, diverse work experience (i.e., the “jack-of-all-trades”), entrepreneurial self-efficacy, and overconfidence are useful constructs that have emerged from this line of work. These constructs help contribute to a deeper understanding of entrepreneurs. Next, we address the career reasons that underlie entrepreneurs’ start-up behaviour.

A second, key stream of entrepreneurship literature focuses on the factors that trigger employees to leave their existing jobs to start a new venture. One primary reason why people become entrepreneurs is because they “could find no other suitable work”

² A NE is not necessarily a novice entrepreneur who is starting his/her first business. A NE is simply a person in the early stages of starting a business

(e.g. they are unemployed) [30, p.6]. Of course, this is not the only reason. Indeed, one landmark study of career factors underlying entrepreneurial behaviour was conducted by Carter et al. (2003). The authors deepen our understanding of career-related factors leading to entrepreneurship by offering a prospective comparison of factors among NE's and non-entrepreneurs. They identified six career attributes among NEs that explain 68% of the variance in outcomes (i.e., becoming an entrepreneur or not). Among their six factors, four did *not* differ significantly between the two groups, while just two factors were different – and surprisingly, entrepreneurs scored *lower* on these two constructs: these were *recognition* and *roles* [31].

As Davidsson suggested, these results may support a 'rebel' theory of entrepreneurship [6]. Moreover, we would have expected that *roles* (e.g. *continue a family tradition, follow the example of a person that they admire*) and *recognition* would rate higher in importance for entrepreneurs. The four attributes that did not differ between NE and non-entrepreneurs were *self-realization, financial success, innovation and independence*.

Recent results from the *Panel Study of Entrepreneurial Dynamics* (PSED) by Schjoedt and Shaver also show that pre-entrepreneurial job satisfaction tends to be higher for NE's compared to non-entrepreneurs. Apparently, those who become entrepreneurs are not forced to leave their firms due to low job satisfaction [32]. Schjoedt and Shaver partly attribute this finding to the possibility that "entrepreneurs may simply be more optimistic and positive people" [32, p.747]. Hence, their level of job satisfaction is merely a reflection of their general personality type, rather than serving as the motive for leaving their existing job.

4 Conceptual framework

Next, we present the conceptual framework (**Fig. 1**) underlying the research. We introduce a process model of IT entrepreneurial turnover embedded within a set of contextual factors [19], [3]. This framework also considers the evolution of the relevant attributes during this process. Drawing from Lee and Mitchell's definition, a shock is "a particular jarring event that initiates the

psychological analyses involved in quitting a job”³ [33]. In the IT turnover literature, Niederman et al. [34] report that 66% of the leavers (IT professionals) experienced a shock, revealing the importance of this construct. Consequently, the evolution of the relevant attributes can be the direct result of one or several shocks that cause an IT employee to reconsider his job (e.g. a success in the implementation of an ERP can generate a sudden increase of the IT self-efficacy of the IT professional, and then produce thoughts of quitting and starting his/her SME), [4], [35] or simply the normal evolution over time of several attributes (e.g. the same boring maintenance of software application can generate an overall boredom). Then, at some point, the individual may consider that everything is in place for her/his departure, and then she/he may leave and start her/his SME.

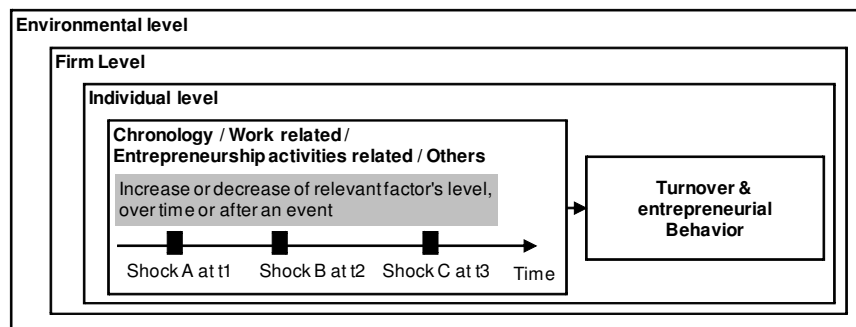


Fig. 1: Conceptual Framework

5 Methods

This section explains the MMR approach that we follow. Because we seek to answer a “how and why” question, regarding a phenomenon (i.e., where its boundaries with the context, organization and environment are not clear), a multiple case-study appears to be the most appropriate approach, [36]. Moreover, we also collect additional quantitative data on other IT entrepreneurs via surveys, so that additional statistical methods can lead to further insights when merging the results of the

³ In addition, this “shock to the system” can be internal or external to the individual, positive or negative, job-related or non-job-related, and expected (a pregnancy) or unexpected.

qualitative and quantitative data, [1]. Our MMR design is summarized in **Fig. 2** and could be defined as follows.

As a method, MMR “focuses on collecting, analyzing, and mixing both quantitative and qualitative data in a single study or series of studies. Its central premise is that the use of quantitative and qualitative approaches in combination provides a better understanding of research problems than either approach can alone” [1 – p.5]. We address our research questions using two broad phases.

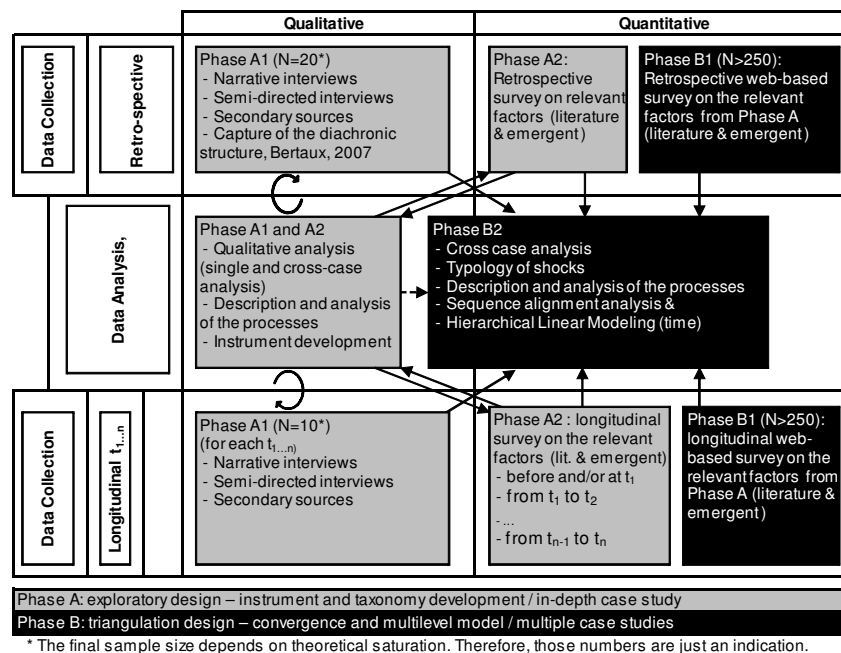


Fig. 2: Mixed Methods Design

Phase A follows an *exploratory design – instrument and taxonomy development*. Although we generally follow the premise of [1 – p. 58-88], this is not the only available framework for MMR [37]. This design consists of two distinct phases: qualitative (A1) followed by quantitative (A2), [1 – p.5]. In this design, the constructs to be included in the survey are based on literature, and also on the qualitative data collection and analysis. For these reasons, we propose completing phase

A1 prior to phase A2.⁴ Then, we intertwine these two types of data, following grounded theory recommendations, [38]. The rationale for this approach is that the qualitative data and analysis provide an in-depth understanding, leading to (1) the emergence of new constructs, as recommended by grounded theory⁵, [39] and (2) the development of the instrument, including elements from the literature or emerging from phase A1. Such an exploratory design has been used in prior research on IT personnel turnover, [40]. Although there may be some overlap between phases A and B, the large majority of phase B occurs after phase A.

In phase B, the *triangulation design – convergence and multilevel model* is a design where the “two sets of results [qualitative and quantitative] are converged during the interpretation, and the intent is to draw valid conclusions about a research problem” [1 – p.84]. The multilevel aspect refers to “the intent of forming an overall interpretation of the system”, [1 – p.84]. The rationale for this approach is to combine and mutually enrich the results from the quantitative approach with the results and in-depth knowledge acquired from the qualitative data. In addition, because we collect the data in relation to different levels – mainly individual but also organizational and environmental factors – we need to consider a *multilevel approach*. This type of approach, merging multilevel qualitative and quantitative results, has been efficiently used by Reich and Kaarst-Brown [40].

Longitudinal versus retrospective approach.

As we regard shocks as events that rarely occur among IT employees (i.e., shocks that cause them to quit a job to start a company), a longitudinal study is the best approach, given an ideal setting and timing. Unfortunately, this method is clearly not sufficient as it may result in a very small number of suitable cases. This is, in part, because most IT employees do not quit their jobs. Moreover, due to difficulties in terms of timing (e.g.

⁴ It is unlikely that phase A1 and A2 will overlap or that phase A2 will happen before phase A1, however, there could be exceptions (e.g. confirming or classifying a result; in dash in Fig. 2).

⁵ As we reviewed the literature before collecting the data, we describe our approach as following the Straussian version of grounded theory. In this approach, it is required to do a search of the literature before and during data collection. In our case, this is justified as an important body of research related to IT turnover and entrepreneurship already exists. Therefore, we are expecting the emergence of new concepts at (1) the intersection of the two streams of research as well as (2) related to the conceptual framework of analysis we suggest.

doing the interview close to the occurrence of a shock that triggers employee departures), confidentiality issue (e.g. the IT entrepreneur may not want to share information regarding his/her future plans) and feasibility (e.g. there may be no interesting behaviour for long periods of time). Therefore, in addition to the longitudinal approach, we consider a retrospective method, which presents the advantage that the IT entrepreneur can see “the whole leaving process in a relatively holistic and measured way”, [35]. Moreover, leaving and starting a company is an important and emotion-arousing event, which improves the likelihood of respondents remembering these events clearly, [35], which thus reduces the problem of bias in retrospective recall. For all those reasons, we heed the recommendation from Leonard-Barton, who argues that researchers should use both longitudinal and retrospective case studies at the same time, allowing them to achieve benefits of each method, while minimising their respective weaknesses [41]. Next, we describe the data collection process in detail.

Sample selection and sample size.

During phase A, the subjects are selected following the principle of theoretical sampling and the sample size is linked to saturation. Those terms are from grounded theory and have been defined as follows: [38, p.143]

“Theoretical sampling: A method of data collection based on concepts/themes derived from data. The purpose of theoretical sampling is to collect data from places, people and events that will maximize opportunities to develop concepts in terms of their properties and dimensions, uncovers variations and identify relationship between concepts”. For example, we may seek to collect data from young entrepreneurs and senior entrepreneurs, so that concepts may emerge from the experience of the latter (e.g. recognition of overconfidence or naïve perceptions at the time of the decision). In addition, as the concepts emerge during the literature review, as well as the data collection/analysis, it is impossible to precisely and exhaustively predict the criteria for theoretical sampling in advance. That said, at this stage of the research, we have already established several criteria such as experience (as explained before), gender, type of company (service vs products) or growth expectations.

“Saturation: Saturation is usually explained in terms of “when no new data [is]_emerging”. But saturation is more than a matter

of lack of new data. It also denotes the development of categories in terms of their properties and dimensions, including variation, and if theory building, the delineating of relationships between concepts.” For example, if after 4 or 5 new cases, no new concept/relationship emerged, we could conclude that saturation has been reached. Because of that, the final sample size is unknown. However, we anticipate collecting 10 longitudinal case studies and 20 retrospective case studies. These numbers are partly linked to time constraints.

Data collection and analysis, phase A.

For the most part – this data collection broadly follows the two sub-phases (A1 and A2) discussed above. Phase A1 consists of a life story approach, [42], [43], [44], and collection of secondary sources. Indeed, the “life story” approach is a form of collecting data according to “oral, autobiographical narratives”, [42]) and one of its main tools is the narrative interview. In this specific type of interview, the researcher asks the interviewee to “tell all or part of his experience”⁶, [43 – p.11]. In addition to this approach, we also use semi-structured interviews and secondary sources to complement and triangulate the narrative interviews. Phase A1 is divided between a retrospective and longitudinal data collection exercise. The former emphasizes the use of life story, whereas the latter captures the current situation, favouring semi-structured interviews and secondary sources. Then, we conduct qualitative analysis of the data which leads to the emergence of additional factors, [39]. Following a Straussian grounded theory approach; we intertwine the data, its analysis and the literature (the loop in **Fig. 2**).

Due to space constraints, we omit additional details of our proposed analysis. We rely on the primary references for analyzing qualitative data [45], [36], [46]. However, we detail the life story approach, which complements this analysis with

⁶ Bertaux (2007, p.63-66) suggests to keep in mind those three phases of the interview. First, start the interview, by posing a “social context”, reaffirm the goal of the interview and ask a question (use the word “tell”). Secondly, follow the narrator, by acknowledging and letting him tell the story, with a minimum of interruptions. He also suggests exploring the other trajectories the narrator could have followed and why he eventually didn’t. Third, Bertaux recommends that the interviewer manages the unexpected by acknowledging without hesitation his/her emotions or the narrator’s emotions. Finally, he recommends ending the interview with a positive question (e.g. the narrator’s greatest success) and, once the tape recorder is off to stay attentive, as some key elements can be revealed at this moment precisely because this will be off the record.

specific tools, such as the research of the diachronic structure (i.e. the succession of remarkable events, linked with 'before/after' type of relationships) and the sequential causality, [43 - p.74]. Based on the results of this analysis and the literature, we adapt the instrument and collect (phase A2) retrospective and longitudinal quantitative data. We collect the relevant information before and after the shocks in order to report their influences, but also at regular intervals during the period of the narrative review, to capture a gradual evolution of the relevant dimensions.

Data collection and analysis, phase B.

During Phase B1, we administer a modified (web-based) version of the retrospective and longitudinal questionnaire (taking into consideration the literature and the emergent constructs) to a much larger sample of IT entrepreneurs⁷, so that we achieve a sufficient sample size ($N > 250$). In this modified version, we address the existence of shocks, filter the relevant factors and finally, capture data regarding several constructs at different points in time (before and after the shock, but also at regular interval as illustrated in **Fig. 1**). This questionnaire is interactive, so that we can reduce the overall number of questions to only focus on the relevant factors. We administer the specific questionnaire through a web-based survey. The choice of items is customized to the individual respondent, depending on the number of shocks that occurred and the relevant time intervals. This level of interactivity in the survey is needed to minimize the large number of survey items that might otherwise be required⁸.

The quantitative analysis requires further investigation. Our goal is to explore the process patterns which help an IT professional become an IT entrepreneur. The final quantitative dataset is composed of three types of categories: the shocks, the dates and the relevant factors influencing the decision to quit and start a business. In addition to the analysis of the processes and shocks, we also consider two statistical methods. The first

⁷ We use a newsletter addressed to 10 000 individuals, among them a large number of (future) IT entrepreneurs.

⁸ Based on the chronology above (Figure 3), we would need to consider an estimated potential of 2 520 (70 factors (IT turnover + entrepreneurial + emerging) x 9 time period x 4 items/factor) items which is of course impossible. Thus, by selecting only the relevant dimensions and weighing the options in term of measurement, we greatly reduce the overall number of questions.

method, multiple sequence alignment uses the Clustal program. Although originally designed to compare and align the protein sequences; thanks to the molecular biologists who combined their effort with computer scientists, several improvements have been made to this method. In IS, this method has been used [47] to assess IS development. Although this method is about events, it is possible to assess different dimensions of one event, for instance, the activity, its location and who else was present [48]. The second statistical model refers to Hierarchical Linear Models (HLM), [49] which allows "multilevel model for change", exploring longitudinal change over time [50, chapter 3 and 6].

6 Discussion

Next, we discuss the contributions of this paper. First, we suggest a conceptual framework to address the gap between IT turnover and entrepreneurship research, i.e. the IT entrepreneur's turnover. Although this framework is in the process of being validated and enriched, it constitutes a sound basis for future research, and we believe that seeking to understand IT entrepreneurs' actual turnover behaviour increases our knowledge of IT turnover. Secondly, we argue that MMR is appropriate to bridge the entrepreneurial literature with the IT turnover literature. Third, another important contribution is the design of the MMR (**Fig. 2**), combining a longitudinal and retrospective approach, [41]; a qualitative with quantitative approach (data collection and analysis) and, finally, the *exploratory design – instrument and taxonomy development* with the *triangulation design – convergence and multilevel model*. Although Creswell and Plano Clark strongly recommend the use of "a single design that best matches the research problem", [1 – p. 79] we believe that our research question does not allow us to follow only one design. Moreover, Petter and Gallivan [37] found that this combination is frequently used in IS studies involving MMR. Finally, the use of MMR responds to several calls to go beyond the dominance of positivist, quantitative research, [37], [51].

7 Practical implications, limitations and future research

The implications can be discussed at two levels; for IT managers and IT entrepreneurs. The benefits to IT managers lie in generating a better understanding of IT entrepreneurs' turnover, in order to potentially change the levels of IT employee rewards, challenge, or other job attributes, so as to prevent turnover among prospective entrepreneurs – or to allow the employee to leave in a “kinder and gentler” way. For example, Schjoedt and Shaver show that pre-entrepreneurial job satisfaction tends to be higher for (NE) compared to non-entrepreneurs. Apparently, those who become entrepreneurs do not leave their firms due to low job satisfaction [32]. Such a result (which contradicts the general IT turnover literature), if replicated with IT entrepreneurs, has some practical implication for IT managers. Moreover, by recognizing that events at work – and elsewhere – can influence the gradual evolution of various factors leading to turnover/entrepreneurial behaviour, IT managers (i.e., those who supervise IT workers who are “at risk” of becoming entrepreneurs) may be able to predict future evolution and future turnover.

For IT entrepreneurs, our model may offer a road map for the journey that leads to their ultimate objective: creation of their business enterprise. For example, research found that the construct of a shock, [4, p.451] is necessary for certain paths leading to IT personnel turnover, [34]; if this finding is replicated with IT entrepreneurs, this knowledge may lead IT entrepreneurs to (intentionally) provoke such a shock to occur. Moreover, by identifying trends in the evolution of their relevant factors, future IT entrepreneurs may be able to more clearly identify the subsequent steps which lead to actual turnover.

Several limitations can be addressed. First the data collection/analysis of this research is not presented here. Although we are currently working on 13 different case studies, our goal is to validate the overall research design before going too far into the data collection/analysis. Second, we recognize several challenges in this research design. Some are linked to the longitudinal aspects of the data collection (as previously discussed), others to the size of this project. To address the latter, a careful evaluation of the needed resources (e.g. funds, researchers, web designers) is necessary. Finally, following Mingers, we are conscious of the limitations of the MMR,

regarding philosophical, cultural, psychological and practical feasibility [51], however, despite the large amount of required resources, we are confident, based on the currently on-going data collection and data analysis, that those limitations are not insurmountable. Even though this paper contributes to the literature by providing two frameworks, one to analyse IT entrepreneur's turnover and the other to conduct a mixed methods research combining exploratory and triangulation design, future research will seek to apply and test those frameworks and generate interesting findings.

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