

The influence of risk perception, misconception, illusion of control and self-efficacy on the decision to exploit a venture opportunity

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ABSTRACT

This paper reports on decision-making cognitions just before and during the start-up decision within the entrepreneurial process. It uses empirical results based on responses collected through questionnaires from entrepreneurs, managers, employees and students as respondents. The importance of entrepreneurial cognitions is reported, and the possible implications during the decision-making process are explored.

Using a case design required respondents to read a case and decide whether they would start the venture or not. First viability thoughts about the venture happened as early as reading 12% into the case, and 81% of the respondents had their first thought about the viability of the venture before reading 36% of the case. As all the financial information was attached at the end, viability was judged to a large extent without reading financial information. This confirms that respondents appear to have used heuristics (shortcuts) and biases to make the start-up decision.

Correlation and inter-correlation strengths and directions between business risk perception, misconceptions, self-efficacy and illusion of control bias with the start-up decision and viability thoughts were established. Highly significant differences between those that supported the start-up and those that did not were observed for business risk perception and misconceptions, and significant differences for illusion of control bias, but none for self-efficacy.

The paper recognises the importance of cognitions in entrepreneurial thinking and the tendency to make judgements without complete information. This may lead to decisions that can contribute to failure, or may alternatively be the reason why some entrepreneurs are successful.

Keywords: entrepreneurial cognition, risk perception, start-up decision, misconceptions

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INTRODUCTION AND BACKGROUND TO COGNITION

The field of entrepreneurship seeks to understand how opportunities are discovered, created and exploited (Markman, Balkin & Baron 2002: 149). The cognitive perspective, however, emphasises the fact that mental processes influence everything we think, say or do during this start-up process. These mental processes include the cognitive mechanisms through which we acquire, store, transform and use information (Baron 2004: 221). The cognitive perspective provides us with some useful lenses with which to explore entrepreneurial-related phenomena and to address some meaningful issues that to this point we have been largely ineffective in probing (Mitchell, Busenitz, Lant, McDougall, Morse & Smith 2002: 93).

Shepherd & Krueger (2002: 177) confirm that social cognition research offers considerable direction to understanding entrepreneurial thinking. Recent research has demonstrated the impact that cognitive and social processes have on entrepreneurial behaviour (Gatewood, Shaver, Powers & Gartner 2004: 187). Although cognitive research has been going on for over a century, research in the entrepreneurial domain has prospered over the last two decades (Baron 1998: 278) and led to the identification of several areas where cognition is specifically relevant for entrepreneurship, namely:

- Our capacity to process new information about the world around us is severely limited and can readily be exceeded (Baron 1998: 278).
- We use sense-making processes to scan through information (Forbes 1999: 415).
- As human beings, we seek to minimise cognitive effort in coping with the information overload. As a result, we often use various heuristics (shortcuts) in our thinking; such techniques reduce mental effort (Baron 1998: 278).
- Because of our limited information processing capacity, our tendency to minimise mental effort and several other factors (for example, the powerful impact of emotions on thought), we are often less than totally rational in our thinking (Baron 1998: 278).
- The environment in which entrepreneurs operate is complex and demands quick decisions, while the concepts of cognitive psychology are increasingly being found to be useful tools to help probe entrepreneurial-related phenomena.
- The role of the intuitive (sensing), as opposed to the rational (thinking), is underestimated in information on decision-making (Hayes & Allison 1994: 59)
- The use of shortcuts, or heuristics, is sometimes efficient in that they facilitate judgements without tremendous information processing costs (Gowda 1999: 60), as typically faced by the entrepreneur.
- Human judgement theory and decision-making are characterised by biases, errors and the use of heuristics (Watson, Rodgers & Dudek 1998: 495).

The cognitive perspective should be viewed as complementary to, rather than incompatible with, other points of view in entrepreneurship, such as personality and characteristic traits. The cognitive perspective may provide additional insights into the complex process of entrepreneurship (Baron 2004: 237).

While the importance of entrepreneurial cognitions is acknowledged, this paper attempts to better understand the thinking of respondents when faced with the decision on starting or not starting a business venture based on the perceived opportunity. Manimala (1992: 478) proposes the cognitive approach to entrepreneurship as an alternative to both traits and characteristics for which the findings proved mostly inconclusive (McClelland 1986, in Manimala 1992: 479).

PROBLEM STATEMENT

Several authors identify the use of cognitions by entrepreneurs as different from those of non-entrepreneurs. Prospective and nascent entrepreneurs are faced with the same complex situations, and lack of experience and previous exposure may force them to use certain thinking biases and heuristics.

Cognitions have to do with several complex interrelated systems that may vary over subjects and environments. Although there are several theories about these relationships, few have been tested empirically for the start-up decision.

AIM OF THIS PAPER

This paper endeavours to explore cognitions (thinking biases and heuristics) associated with decision-making when faced with a venture opportunity. It is specifically concerned with establishing the strength and direction of these correlations and how they may impact the start-up decision. A better understanding of the difference between entrepreneurially oriented and other groups will help to establish the extent, if any, of such relationships. The secondary objectives are therefore to:

- Determine how information is used, given the information overload
- Investigate whether biases and heuristics are applied
- Identify relevant constructs associated with the decision (see also Figure 1)
- Determine the relationships between the relevant constructs.

THE NEW VENTURE CREATION PROCESS

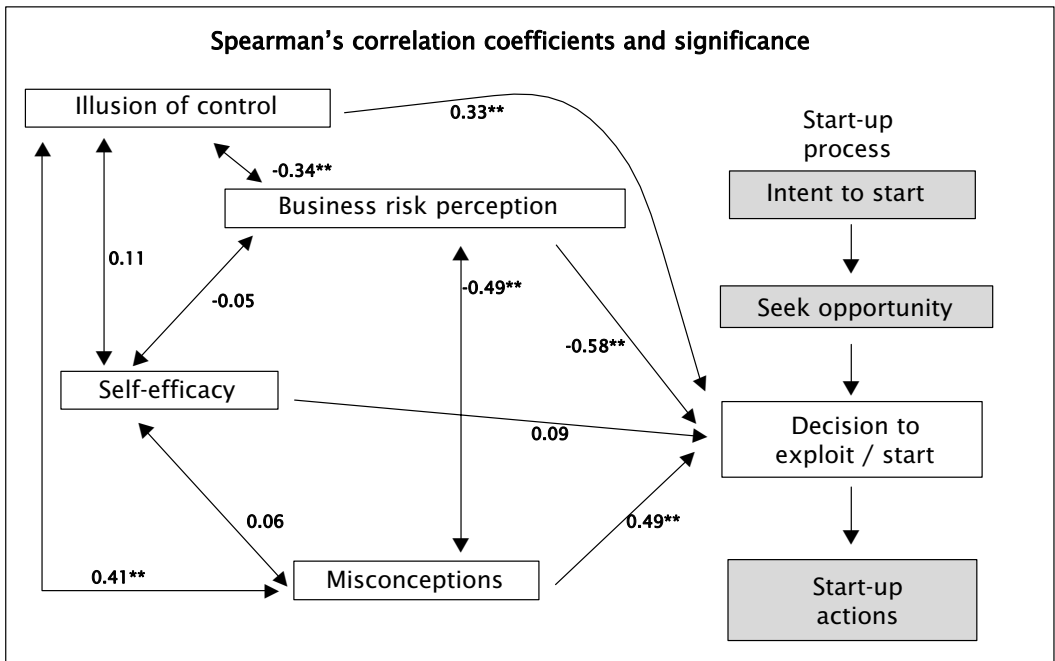
Shook, Priem & McGee (2003: 381) propose an organising model that includes the following four stages (also shown in Figure 1) of venture creation, namely:

- Entrepreneurial intent to start-up
- Searching for and discovering an opportunity

- Taking the decision to exploit the opportunity by new venture creation
- Engaging in the exploitation activities.

Within each of these stages, the role of the enterprising individual has been studied. It would seem that there is room for research to develop the understanding of cognitive processes during the different stages but simultaneously point out that the number of variables that determine each specific venture creation situation are so numerous that meaningful comparison of entrepreneurs is virtually impossible as a result of the complexities associated with each of the combinations of variables.

This article focuses on the thinking of respondents before and when they take the decision to start or not to start a venture. At the time respondents take the decision, the opportunity has been found (through whatever process might have been relevant at the time), and evaluation of the opportunity is foremost. At this point, the entrepreneur is normally overloaded with data and information of different kinds. (Figure 1 shows the focus of this study relative to the entrepreneurial process as well as the specific constructs investigated and reported on.)



Note: Inter-correlations between independent variables are also shown where *= $p < 0.05$ and **= $p < 0.01$.

Figure 1: Research model with Spearman's rank correlations between independent variables investigated in relation to the decision to start the entrepreneurial process (dependent variable)

THE ROLE OF COGNITION IN ENTREPRENEURIAL DECISION-MAKING

Cognition and the entrepreneurial decision

Cognition (mental models) and cognitive psychology concern themselves with the study of individual perceptions, memory and thinking (Mitchell et al. 2002: 96). They involve all processes by which sensory input is transformed, reduced, elaborated, stored, recovered and used. Social cognition theory considers that individuals exist within a total situation or configuration of forces described by two pairs of factors, one being cognition and motivation and the other being the person in the situation.

Cognition has to do with mental processing (thoughts) that individuals use to interact with their environments and helps to distinguish between entrepreneurs and non-entrepreneurs. Entrepreneurial cognitions have to do with the knowledge structures that people use to make assessments, judgements or decisions involving opportunity evaluation, venture creation and growth (Mitchell et al. 2002: 97). In other words, research on entrepreneurial cognitions is about understanding how entrepreneurs use simplifying mental models to piece together previously unconnected information that helps them to identify and invent new products or services, and to assemble the necessary resources to start and grow businesses as well as pursuing opportunities, or deciding not to do so.

Baron (1998: 297) suggests that entrepreneurs are more exposed to factors such as information overload, high uncertainty, high novelty, strong emotions, time pressure and fatigue than non-entrepreneurs. This leads them to increasingly being susceptible to the use of heuristics and biases such as counterfactual thinking, regret-affect infusion, self-serving bias, planning fallacy, illusion of control, over-confidence, belief in the law of small numbers and self-justification. Finding the role of business risk perception, self-efficacy, misconceptions and illusion of control bias is further explored.

Business risk perception and decision-making

Risk perception refers to the subjective judgement of the amount of risk inherent in a situation and has been found to differ between entrepreneurs and non-entrepreneurs (Keh, Foo & Lim 2002: 129). Reduced perception of risk therefore contributes to the reason why some people become entrepreneurs while others do not (Baron 2004: 237).

Palich & Bagby (1995: 426) report that entrepreneurs did not vary significantly in their responses to a risk propensity scale, meaning that they did not perceive themselves as being any more predisposed to taking risks than non-entrepreneurs. However, multivariate tests revealed that entrepreneurs categorised equivocal business scenarios significantly more positively than did other subjects, and

univariate tests demonstrated that these perceptual differences were consistent and significant (in other words, entrepreneurs perceived more strengths than weaknesses, opportunities than threats, and potential for performance improvement than deterioration).

Risk perception is also influenced by cognitive biases. Simon, Houghton & Aquino (1999: 113) report that before the decision to exploit the venture creation opportunity is taken, risk perceptions may differ because certain types of cognitive biases lead individuals to perceive less or more risk. These cognitive biases are common types of mental shortcuts used to make judgements. While judgement is at the heart of the decision-making process, it involves several cognitive processes.

Based upon the tenets of cognitive theory, entrepreneurs may simply categorise and subsequently frame the same stimuli differently from non-entrepreneurs. What has been widely described as a propensity for risk on the part of the entrepreneur may instead be an artefact of alternative framing based on misconceptions. Entrepreneurs may not necessarily prefer to engage in less risky behaviour; instead, their behaviour may be the result of different misperceptions about a given situation, and they may choose to start the venture on the basis of these misconceptions.

Misconceptions and decision-making

In the whole problem of a misfit between the entrepreneurs' cognitive make-up and the varying demands of the new venture over time, the central element is the individual entrepreneur. Both Busenitz & Barney (1997) and Baron (1998) found that entrepreneurs and managers use different biases and heuristics when faced with complex situations. These findings may explain the fact that entrepreneurs tend to operate in more uncertain and complex environments than do other individuals (Brigham & De Castro 2003: 42).

Very often entrepreneurs ignore the likelihood that the new venture will encounter substantial competition. According to Simon & Houghton (2002: 10), underestimating competitive response can be defined as the extent to which a company will gain an advantage by pioneering its contingent upon the actions of its competitors.

Entrepreneurs are often overly optimistic in their perception of market acceptability. They believe that the output from this new venture will achieve its planned acceptance in the market place. According to Simon & Houghton (2002: 11), the belief in small numbers bias may explain why entrepreneurs overestimate demand, because individuals who utilise limited amounts of information may unintentionally select positive rather than negative information, which could lead to overly optimistic forecasts of their sales and in turn the potential demand for their product.

Simon & Houghton (2002) argue that many pioneer entrepreneurs fail because they lack complementary assets, which include sales and distribution costs, storage

and stock holding, and finance for slow payment. Misjudging these is a typical cause of failure in start-up ventures. Misjudging the need for complementary assets can contribute to this misperception by creating an overly simplistic view of a very complex situation. These miscalculations may be more likely to occur in pioneering decisions, because the entrepreneur in the pioneering decision context does not have other industry models to compare with and therefore has fewer cues regarding the potential problems of lacking complementary assets (Simon & Houghton 2002: 12).

Self-efficacy (belief in own ability to effectively accomplish) and decision-making

Belief in personal efficacy constitutes the key factor in human agency. If people believe they have no power to produce results, they will not attempt to make things happen. In social cognitive theory, a sense of personal efficacy is represented as proportional beliefs that are embedded in a network of functional correlations with other factors that operate together in the management of different realities (Bandura 1997: 3).

Efficacious people are quick to take advantage of opportunity structures and to devise ways of circumventing institutional constraints or changing them by collective action. Conversely, inefficacious people are less apt to exploit the enabling opportunities provided by the social system and are easily discouraged by institutional impediments (Bandura 1997: 6).

Shepherd & Krueger (2002: 171) quote Bandura (1991) and Waung (1995) to describe people with high self-efficacy as those who have a high-level belief in their capacity to perform. Self-efficacy refers to the conviction that one can successfully execute the behaviour required or the amounts of faith entrepreneurs have in their own ability to succeed (La Pira & Gillin 2004: 272). It thus reflects the perception of a personal capability to carry out a particular job or set of tasks. Self-efficacy impacts one's perceived control, how much stress, self-blame and depression one experiences while coping with taxing circumstances, and the level of accomplishment one realises (Markman et al. 2002: 152). High self-efficacy leads to increased initiative and persistence and thus improved performance. Indeed, people with high self-efficacy think differently and behave differently from people with low self-efficacy.

Scholars of entrepreneurship have found that self-efficacy is positively associated with the creation of a new independent organisation (Shepherd & Krueger 2002: 171). It may be argued that the impact of self-efficacy is more related to the intent and opportunity identification phases of the entrepreneurial process, but this study attempts to determine the correlation with the decision to exploit the opportunity, as well as its correlation with the risk perception. This discussion suggests that people with higher levels of self-efficacy might perceive opportunities differently from those with lower levels.

Entrepreneurial self-efficacy is widely regarded as a moderator of the relationship between individual perceptions and the development of entrepreneurial intent. Demographic characteristics appear to influence perceptions of feasibility, desirability and social support, and entrepreneurial self-efficacy within a complex set of cognitive mechanisms (Shook et al. 2003: 385). In short, perceived self-efficacy is central to most human functioning, and since actions are based more on what people believe than on what is objectively true, thoughts are a potent precursor to one's level of motivation, affective states and actions (Markman et al. 2002: 152). Shook et al. (2003) state that self-efficacy impacts on entrepreneurial pursuits.

Illusion of control bias and decision-making

Bias is common in mental processing tasks as diverse as target recognition, heuristic estimation and social judgement. Cognitive biases reflect the silent operation of neural modules that enhance adaptive behaviour and work automatically. By definition, bias refers to a systematic preference, which primes either the selection of targets or the recruitment of operational modes that results in weighted options in cognitive routines. Such weightings usually produce efficient performance, but can also lead to false observations or deductions (Tobena, Marks & Dar 1999: 1047).

Illusion of control is one such bias in which an individual overemphasises the extent to which his or her skills can increase performance in situations where chance plays a large part and skill is not necessarily the deciding factor. For example, people fail to respond differentially to controllable and uncontrollable events (Langer 1975, in Keh et al. 2002: 131) and report two reasons for this illusion of control, namely (1) that people are motivated to control their environment, and the feeling of competence would result from being able to control the uncontrollable and (2) that skill and chance factors are closely associated and it is often hard to discriminate between them. People that exhibit an illusion of control will therefore underestimate risk because they believe their skills can prevent negative occurrences (Keh et al. 2002: 131).

RESEARCH METHODOLOGY

Hypotheses

To lead the thinking of the research in this process setting, four main hypotheses were set (see Figure 1 for the factors that were considered). All the null hypotheses proposed that there is no relationship with the decision to start, while the alternative hypotheses all proposed a correlation between the factors and the decision to start.

H₀₁: Business risk perception has no correlation to the start-up decision (H_{a1}: there is a correlation)

- H0₂: Misconceptions have no correlation to the start-up decision (H_{a1}: there is a correlation)
- H0₃: Illusion of control bias has no correlation to the start-up decision (H_{a1}: there is a correlation)
- H0₄: Self-efficacy has no correlation to the start-up decision (H_{a1}: there is a correlation)

Design and process

Similar to Simon et al. (1999: 120), a case was designed that describes a revolutionary new concept, namely animal fodder manufactured from cut lawn (kikuyu grass). In addition to describing the venture's proposed product and market, processes as well as expected performance and resource requirements are explained. The case provides both encouraging and discouraging information, covering the four thinking preference types (factual, systematic, affective and explorative), regarding the potential of the venture. The case length (eight pages including financials, or 240 lines plus the financial statement), its ambiguity and complexity required respondents to apply all possible information processes to determine whether they would start the venture or not.

Using the case method eliminated many of the environmental factors that complicate comparison of the individual's thinking and behaviour between situations associated with different entrepreneurs, macro and market environments, industries, competitive levels, venture characteristics and so forth. Using the case ensured that all subjects analysed the same venture and complexities. Korunka, Frank, Lueger & Mugler (2003: 26) suggest that the difference in environmental conditions should always be considered in relation to entrepreneurial character, resources and organising activities as it plays a crucial role. This approach allows for 'control' of an external variable.

To ensure the elimination of potential information framing effects – such as attribute framing, goal framing and risky choice framing, as described by Levin, Gaeth & Schreiber (2002: 412) – care was taken with the presentation of the case. Positive and negative information, advantages and disadvantages as well as positive and negative consequences were balanced. Respondents were requested to avail themselves for an hour to participate in the research. Of this, the reading of the case took between 20 and 30 minutes, whereafter the respondents were urged to start with the questionnaire. Time was specifically limited to enhance the use of biases and heuristics and simulate the information overload that prospective entrepreneurs would face at this point in the entrepreneurial process.

Instrument

A questionnaire was designed to cover the various aspects related to the problem (Le Roux 2005). It covered questions on information used for decision-making,

information requirements to make an improved decision, self-efficacy, risk perception (Keh et al. 2002: 141), illusion of control, misconceptions (Simon & Houghton 2002: 114) associated with start-up mistakes and how individuals tend to frame their environments.

Subjects

Students from a major university in South Africa, entrepreneurs with their own businesses (representing the 'real thing'), managers from various backgrounds, and employees willing to give up an hour of their time were asked to participate (see also Table 1). Student respondents were drawn from different groups namely:

- BCom students majoring in entrepreneurship (representing those who have already made a choice in favour of entrepreneurship and are planning to start a business – thus potential or nascent entrepreneurs)
- BCom students not majoring in entrepreneurship (representing those who have made a choice in favour of a career in the business domain but not necessarily their own business)
- Students from humanity majors (representing a choice 'against' entrepreneurship and business)
- Postgraduate (MPhil and PhD entrepreneurship candidates, representing a late choice in favour of involvement in the entrepreneurial domain).

The student components all represent the 'typical' individual who might be faced with pursuing a venture opportunity. In South Africa, given employment opportunities, a large percentage of these respondents will not be able to secure employment and will therefore be forced to pursue their own businesses as an employment route. Thus, determining their use of biases and heuristics may provide valuable information, especially to educators in entrepreneurship.

It is also important to recognise that entrepreneurs are not the only ones faced with venture opportunities. Many individuals may face such situations in the course of their lifetime, such as managers (in an intrapreneurial setting) and employees (in an alternative consideration setting). The interest of this study is therefore the identification of such cognitions for opportunity evaluation so as to eventually use them in comparing entrepreneurs and non-entrepreneurs.

The concern with respect to using student respondents was to some extent countered by also using real entrepreneurs, managers and employees. Gordon, Slade & Schmitt (1986: 192) also report that some authors in their study considered it prudent to use student respondents in cases of 'theory building', while others find it acceptable for behaviour-related research. As this study explores cognitions, the student respondents assisted in determining the use of such cognitions.

Statistical procedures

Each of the constructs described previously was evaluated by respondents with statements (several items per construct) on a seven-point Likert-scale, where 1=strongly disagree, 2=disagree, 3=slightly disagree, 4=unsure, 5=slightly agree, 6=agree and 7=strongly agree, as reportedly used in previous studies namely:

- Decision to start a venture was determined by one statement where respondents were asked to state their agreement with starting versus not starting on a seven-point Likert-scale.
- Business risk perception was measured by eight items relevant to the case, as described by Simon et al. (1999: 131). Business risk perception refers to risk in the venture but excludes the potential personal risks to self and family associated with the decision to pursue the opportunity or not. Incorporating this element in the measurement would not be possible within the methodology used for this study.
- Self-efficacy was measured by eight items scored on a seven-point Likert-scale, as described by Markman et al. (2002: 165).
- Misconception was measured by twelve questions covering issues such as the overestimation of demand, underestimation of competitive response, underestimation of resource requirements, and misjudgement of managerial fit, cash flow and profit expectations. The large number of associated variables stems from the initial attempt to identify six misconception elements as constructs with three questions each.
- Illusion of control bias was measured by four items, three of which were as described by Keh et al. (2002: 125). Qualifying questions were used to establish how strongly respondents want to establish their own businesses following the report of Markman et al. (2002: 154).

Exploratory factor analysis was then conducted to verify whether the proposed factors represented distinct constructs and to assess the discriminant and construct validity of the measuring instrument used in this study. Exploratory factor analysis (with BMDP – Direct Oblimin) allows one to test specific propositions about the factor structure for a set of variables. Selection for variable inclusion was based on contribution to the Cronbach alphas and the correlation between items within each factor. After rotation, the factor analysis suggested the existence of four factors. Oblique rotation was done because of the expected high correlations between the factors, as the literature review indicated that a correlation between risk perception and misconceptions was to be expected. The results of the exploratory factor analysis provide evidence of the discriminant validity of the instrument used to measure the constructs (see also Table 3).

Thereafter, a correlation analysis was done to determine the strength of the correlations, if such correlations exist, and lastly, analyses of variance were done to

compare construct averages for groupings, language and start-up decision as biographical data. Multiple variance analyses were also executed, but the complete results are not reported in this paper.

FINDINGS

Table 1 describes the sample subjects used in this study. Most interesting is the large percentage (81.7%) of respondents who reported that in future they want to start a business (including those already in business). Wanting to start appears to be closely related to the definition of the 'nascent entrepreneur', whom Autio (2005: 13) defines as individuals who are actively trying to start a new venture but who have not done so yet. Comparisons between the entrepreneurs and student groups (through variance analysis) indicated that no significant differences between groups were observed for business risk perception ($F=0.78$ and $p>0.56$), misconceptions ($F=0.07$ and $p>0.72$), illusion of control bias ($F=0.27$ and $p>0.92$) and self-efficacy ($F=2.16$ and $p>0.059$). This finding led to the pooling of the data and suggests that for the measured constructs, there were no differences between entrepreneurs and non-entrepreneurs (student respondents).

Table 1: Demographic data of respondents

Groups	Frequency (n)	Percentage
Occupation		
Students	156	52
Entrepreneurs with own business	47	16
Managers	50	1
Employees	46	15
Educational / work background		
B.Com Business students	73	24.33
B.Com Entrepreneurship students	29	9.67
Humanity students	20	6.67
Postgraduate Entrepreneurship students	46	15.33
Entrepreneurs in own business	44	14.67
Other (Matric only, Diploma in IT, Engineering)	88	29.33
Gender		
Male	151	50.33
Female	149	49.67

Groups	Frequency (n)	Percentage
Social background based on language		
Afrikaans	166	55.33
English	50	16.67
African	64	21.33
Other (German, Portuguese, Spanish, Greek and French)	20	6.67
Self proclaimed business experience		
No business experience	120	18.33
Previous business experience	179	81.67
Desire to start own business		
Not interested in business	55	18.33
Want to start own business	198	66.00
Already in own business	47	15.67
Total	300	100

Table 2 reports the line number where the first thought of viability (or unviability) occurred while reading the case. It is important that over 80% of respondents decided before line 90/240 of the full case (excluding the financial projections at the end of the case). This finding supports the notion that heuristics (shortcuts) and biases were probably used in the decision. There was no significant difference for the mean line of first viability thought between those who decided to start and those not starting the venture.

Table 2: Approximate line where the first thought about the viability of the venture occurred while reading the case study

Line where decision was made that concept is viable	Frequency	Percentage	Cumulative percentage
1-29	39	17.33	17.33
30-59	124	55.11	72.44
60-89	20	8.89	81.33
90-119	17	7.56	88.89
120-149	11	4.89	93.78
150-179	3	1.33	95.11
180-209	6	2.67	97.78

Line where decision was made that concept is viable	Frequency	Percentage	Cumulative percentage
210-235	5	2.22	100.00
Mean line for not-start decision	63.52	No significant difference t = 1.01 and p > 0.314	
Mean line for start decision	55.65		
Frequency missing = 6			

After rotation, four factors were observed in the data set with the factor analysis. These were business risk perception, misconceptions, illusion of control bias and self-efficacy, as shown with their Cronbach alphas in Table 3 and Figure 1.

Table 3: Spearman correlation coefficients (n=300) between factors and the start-up decisions

Factor (number of elements per factor)	Cronbach's Alpha	Mean	Std dev	Factor					
				1	2	3	4	5	
1 Start-up decision	-	5.699	1.38	1.00					
2 Business risk perception (8)	0.891	3.614	1.08	-0.58**	1.00				
3 Misconceptions (12)	0.855	4.447	1.02	0.49**	-0.49**	1.00			
4 Self-efficacy (8)	0.754	5.927	0.76	0.09	-0.05	0.06	1.00		
5 Illusion of control bias (3)	0.753	4.403	1.34	0.33**	-0.34**	0.41**	0.10	1.00	

** = p<0.01; * = p<0.05

DISCUSSION OF THE FINDINGS

Table 2 supports the apparent use of heuristics and biases in decision-making when evaluating a venture opportunity. The mean 'line of decision' did not differ between the groups, but the decision was taken very early into reading the case, indicating that both groups made use of biases and heuristics. By then, the idea was well described, but the practical implications and requirements only came later. It therefore appears that the decision could be influenced by the order of information, although the idea normally precedes the practicality of resource requirements, processes, organisation, financial implications and more.

Figure 1 indicates a high negative correlation (-0.58^{**}) between business risk perception and the start-up decision and confirms the correlation reported by Keh et al. (2002: 19). H_{01} is therefore rejected, and the direction of the correlation indicates that if higher risk is perceived, support for taking the start-up decision diminishes. High or low business risk perception is, however, not causal to the decision but acts as a moderator of the decision.

The misconceptions showed a high correlation (0.49^{**}) with the start-up decision, and H_{02} is therefore rejected. Displaying high misconceptions therefore leads to supporting the start-up decision and vice versa, again acting as a moderator of the decision.

It follows logically that if both risk perception and misconceptions are related to the start-up decision, there should be a correlation between them, which is confirmed by the high negative correlation (-0.49^{**}). Higher business risk perception is therefore associated with less misperception and vice versa. The fact that the factor analysis acknowledged them as separate measurements (constructs) recognises that they are different, while the correlation indicated that they are strongly related. The reason may be that both have a relationship with a third unknown construct not tested within this specific research questionnaire.

Illusion of control bias, however, showed significant correlations with the decision to start (0.33^{**}), business risk perception (-0.34^{**}) and misconceptions (0.41^{**}), but not with self-efficacy (0.10). H_{03} is therefore rejected, and it is accepted that such correlations do exist, although the causality is not proven. Although the means between start-up and not starting up tended to be different, the difference was not significant.

Although the literature supports the notion that self-efficacy plays an important role in human agency, the correlations between self-efficacy and the start-up decision (0.09), business risk perception (-0.05), illusion of control (0.11) and misconceptions (0.05) were all low and not significant. H_{04} is therefore accepted, namely that self-efficacy showed no influence on the decision to start the venture. The question of the reason for this arises. Possible reasons may include whether the instrument is a valid measure of self-efficacy. The measurement used, however, seemed accurate and in line with Kuratko & Whelsch (2001).

Alternatively, the reason that no correlation was found could perhaps be that the self-efficacy construct response was not normally distributed, as indicated by the mean of 5.927 on a seven-point scale leading to the majority of respondents having a high level of self-efficacy. Kuratko & Whelsch (2001: 176) suggest that self-efficacy plays an important role in the 'intention' of the individual. Its effect may therefore be found earlier in the start-up process, namely during the intention to start phase (see Figure 2). As self-efficacy influences behaviour, it may also be more related to the start-up actions during implementation than to the decision to start or not.

Of those who chose not to start a venture, 34% reasoned that the opportunity was only a good idea and not really an opportunity, while 15% thought the opportunity was not viable. Those who decided to start the venture reported the novel idea (37.5%) and the availability of the raw material (17%) as the main reasons for starting the venture.

Table 4: Comparison between dependent factor means for those who decided to start the venture and those who decided against starting (multi-way analysis of variance) as well as first viability thought

Factor	Don't start Mean (Std Dev)	Start Mean (Std Dev)	Statistic	Value	Significance level
N = 300	N = 43	N = 254	-	-	-
Misconceptions	3.442 (0.865)	4.613 (0.930)	F	22.13	< 0.0001**
Business risk perception	4.850 (1.180)	3.401 (0.908)	F	40.67	< 0.0001**
Illusion of control bias	3.566 (1.373)	4.533 (1.281)	F	4.26	0.0400*
Self-efficacy	5.875 (0.901)	5.987 (0.740)	F	1.00	0.319
	First thought is not viable Mean (Std Dev)	First thought is viable Mean (Std Dev)			
N = 300	N = 96	N = 201	-	-	-
Misconceptions	3.881 (0.943)	4.707 (0.933)	F	24.44	< 0.0001**
Business risk perception	4.203 (1.126)	3.328 (0.933)	F	19.70	< 0.0001**
Illusion of control bias	3.753 (1.452)	4.698 (1.163)	F	18.40	< 0.0001**
Self-efficacy	5.958 (0.708)	5.977 (0.792)	F	0.05	0.831

** = $p < 0.01$; * = $p < 0.05$

Note: Cronbach alphas for the factors are also indicated

IMPLICATIONS OF THE FINDINGS FOR RESEARCHERS AND EDUCATORS

Misconceptions, business risk perception and illusion of control are moderators of the decision whether to pursue the venture opportunity or not. Unfortunately, they explain only part of the variance, namely 37.1%, 38.0% and 19.7% respectively. While factors such as culture, education, previous experience, role models and thinking

preferences influence perception; attitudinal aspects and lack of knowledge also influence misconceptions, and a complex configuration of elements play a role in the development of these heuristics and biases. Awareness of the impact may sensitise potential entrepreneurs to be on the look out for these potential contributors. The question is therefore whether business risk perception and misconceptions, as relevant constructs for decision-making, can be taught to potential entrepreneurs, as well as how to achieve that.

It was expected that business risk perception may be influenced by self-efficacy, but this could not be confirmed in the present study ($r=0.05$). The literature supports the role of self-efficacy in the intention to start a venture, but it appears not to play a role in the decision to start the venture after the opportunity has been identified.

LIMITATIONS AND FUTURE RESEARCH

Although Markman et al. (2002: 150) make a case against the use of students when attempting to understand cognitions of entrepreneurs, researchers such as Chowdhury & Endres (2005) argue that although caution should be applied in generalising the findings of students, the use of students is appropriate when studying behavioural concepts, because students often exhibit various attitudes of society in general. In this study, the use of students seemed beneficial for the following reasons:

- They were not exposed to the entrepreneurial environment (real world) and few had any previous practical experience in the field of entrepreneurship or business.
- Not having experience in the field might enforce the use of thinking heuristics, biases and information preferences as determined by thinking preferences.
- Gonzales, Lerch & Lebiere (2003: 597) suggest that novices must engage in more thorough information searching to determine the principles that are applicable to the problem situation and that may benefit the study when compared to entrepreneurs with experience.
- Being forced to complete the exercise within an hour creates pressure that may enhance the use of heuristics and biases even further, as thinking is known to change during pressure situations (Herrmann 1995).
- Being forced to become entrepreneurs because there are no jobs available may indicate the existence of typical biases and misconceptions during the start-up decision and add to the pressure of the decision.

However, being at university already implies a selection process based on the performance of the individual and probably indicates a privileged position within society that may influence the representativeness of the sample for the population. For example, the group representing the choice against entrepreneurship were all candidates with an exceptionally high M-score in matric (grade 12 in secondary

school), which is the score needed to gain entrance to tertiary courses. Entry to medically related courses requires a particularly high M-score. They may therefore all have levels of self-efficacy.

Despite these limitations, the confirmed correlations have value for future research. The finding of specific misconceptions is an area that should be investigated further. Comparison of entrepreneurs and non-entrepreneurs should be extended through larger numbers of respondents. This research asks new questions namely:

- Do entrepreneurs have different biases and heuristics from non-entrepreneurs?
- How can prospective entrepreneurs be trained to change business risk perception, misconceptions and illusion of control?
- Can specific misconceptions be measured, as originally attempted in this study?
- What are the underlying reasons for viability ratings by the respondents?

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