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Kontakt/Contact

ZBW – Leibniz-Informationszentrum Wirtschaft/Leibniz Information Centre for Economics
Düsternbrooker Weg 120
24105 Kiel (Germany)
E-Mail: [rights\[at\]zbw.eu](mailto:rights[at]zbw.eu)
<https://www.zbw.eu/econis-archiv/>

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The Heuristics of Entrepreneurs

Andrea MAKINGS and Brian BARNARD*

WITS Business School, The University of the Witwatersrand, South Africa

The study considered and investigated the heuristics of entrepreneurs in the fields of management, strategy, innovation, marketing, sales, HR, and tactics. Overall, a very sophisticated heuristic set was surfaced. None of the areas studied can be described as under-developed. The sophistication of the heuristic set contrasts strongly with previous research on entrepreneurs' heuristics. Entrepreneurs did not always and initially acknowledge their use of heuristics. It equally implies entrepreneurs may not be actively developing their thinking at all times. Although impressive, comprehensive, and original, the heuristics set may not truly be that distinct from the typical heuristics set of business leaders. Entrepreneurs differ in terms of the level of maturity or comprehensiveness they have reached in terms of the heuristics they consider and use. Entrepreneurs demonstrate natural proficiency and deficiency in terms of heuristics pertaining to areas they excel in and struggle with, respectively. Entrepreneurs may develop heuristics through experience. Education impacts the development of heuristics. Some entrepreneurs make up for the areas in which they lack, by seeking help, assistance, expertise, etc. Entrepreneurs may also pick up and learn heuristics from others.

Keywords: entrepreneurship, heuristics, management, strategy, innovation, marketing, sales, human resources, tactics, entrepreneurship development.

JEL Classifications: O30, L26

1. Introduction

Heuristics entail golden rules or rules of thumb (Cossette, 2014). Professionals typically use heuristics on a daily basis to simplify their decisions, tasks and obligations (Brannon and Carson, 2003). Entrepreneurs are no exception. On the contrary, given that they are generalists and deal with the business as a whole, they are expected to employ an even broader range of heuristics (Alvarez and Busenitz, 2001). Uncertainty is a characteristic of entrepreneurship, which is why entrepreneurs frequently use heuristics to make quick decisions (Wright et al., 2000). Heuristics are strategies (Artinger et al., 2015) that enable the entrepreneur to make a focused decision, based on previous experience (Bingham et al., 2007), instead of becoming overwhelmed by factual-based logic (Alvarez and Busenitz, 2001). Heuristics provide an entrepreneur with a competitive advantage through the creation of new insights (Hackman and Wageman, 1995) and the ability to manage risk effectively (Lyytinen et al., 1998).

Heuristics within the context of entrepreneurship have been studied before (Manimala, 1992; Busenitz

* Corresponding Author:

Brian Barnard, Wits Business School, University of the Witwatersrand, South Africa

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and Barney, 1997; Wickham, 2003). However, this has mostly emphasized cognitive biases and/ or has taken a very shallow perspective towards heuristics and also their value. Cossette (2014) notes that the notions of heuristic and bias are often confused due, to the ambiguous nature of the two. Bias and heuristics have both been defined as simplifying strategies that individuals rely on to make decisions in uncertain and complex conditions. He further argues that decisions made using heuristics are not rational, as they are based on invalid or imperfect information. However, this doesn't mean that the decision will result in a negative outcome. Elms and Brown (2013) mention the dangers that could arise from the uncritical use of heuristics, but agrees that they can be useful when difficult decisions need to be made.

To effectively operate his business, the entrepreneur is essentially simultaneously engaged in management, strategy, marketing, sales, operations, accounting, finance, economics, innovation, technology, human resources and negotiations. The list goes on. This already suggests that entrepreneurs have an extensive, well-developed heuristics foundation that they draw from. At the same time, management, innovation and technology continually borrow from other fields. Also, one can note relatively strong similarities between professions like medical doctors, engineers, architects, etc. on the one hand, and entrepreneurs on the other. This would imply that the primary heuristics base of entrepreneurs can be further expanded.

The purpose of the study is to further examine and delineate the heuristics base of entrepreneurs.

The study addresses the following research question: What constitutes the heuristics base of entrepreneurs? What are the common heuristics entrepreneurs draw from? In line with this, heuristics in the areas of management, marketing, sales, human resources, strategy and tactics are considered.

2. Literature Review

2.1. Heuristics

Heuristics provide the entrepreneur with cognitive problem solving tools or shortcuts when they need to make a decision or solve a problem. Heuristics are based on previous experiences, and become rules of thumb or golden rules that an entrepreneur follows when a quick decision is required (Cossette, 2014).

Alvarez and Busenitz (2001) note that entrepreneurs tend to use heuristics in their decision making far more than their managerial counterparts, which results in them coming up with more innovative ideas. It is important to understand the entrepreneur's ability to use heuristics in decision making as they regularly encounter uncertainty when pursuing a new venture. When an opportunity for a new venture presents itself, an entrepreneur who chooses to base his decisions on factual-based logic may become overwhelmed and cost-averse, whereas the entrepreneur who uses heuristic-based logic will be able to exploit opportunities and avoid any barriers that may occur.

There are many heuristics that influence an entrepreneur's thinking, however for the purpose of this study, only management, marketing, sales, strategy, human resource and tactical heuristics will be discussed.

2.2. Management Heuristics

Entrepreneurs consider processes; procedures; routines and timing (Bingham et al., 2007); learning; adapting and error (Hackman and Wageman, 1995); risk and uncertainty (Lyytinen et al., 1998); flexibility (Mishra et al., 2012), capacity and capacity balancing (Kimms and Muller-Bungart, 2006); and finally coordination, planning and integration heuristics (Alspaugh et al., 1999).

There are two streams of research regarding how organizational processes become high-performing (Bingham et al., 2007). The one stream is based on organizational learning from experience, and the second relates to organizational cognition. The second stream notes that gaining experience is not enough, firms have to translate their learned experiences into articulated heuristics (Bingham et al. (2007) suggested types of countries, customers, mode of entry), so they are able to recognize and capitalize on specific opportunities that will meet their unique demands, instead of every opportunity that is available to them.

Heuristics create high performing processes, because they enable an individual to focus, thereby saving time; they allow for improvisation, due to their flexibility; and they limit errors, by providing guidelines on how an individual should respond to future events (Bingham et al., 2007).

Bingham et al. (2007) state that firms learn lower order heuristics (which include selection and procedural heuristics), temporal heuristics, and priority heuristics. Selection heuristics are the rules followed when selecting an opportunity, and procedural heuristics are the rules that dictate what action the firm should take to execute the chosen opportunity. Temporal heuristics improve process performance, by synchronizing the various work groups, and help managers maintain momentum. Priority heuristics are the rules that are followed when ranking the available opportunities.

Hackman and Wageman (1995) highlight the importance of process-management heuristics in

enhancing team effectiveness. Learning in the context of entrepreneurship may also have some important links to the use of heuristics in decision-making. Decision-makers are able to generate new insights based on the failures and successes of previous opportunities. A competitive advantage can be obtained through knowledge-creation and decision-making capabilities. This is achievable through lower-level and higher-level learning. Whereas lower-level learning is short-term and consists of repetitious observations, higher-level learning involves the formation and use of heuristics to generate new insights into solving ambiguous problems. Although this heuristic-based logic uses less information and tends to be less accurate, the use of individual, specific clusters of knowledge enables rapid response to emerging trends.

Chillarege et al. (2003) develop an approach to training called “error management training” (EMT), which is based on the belief that trainees should rather learn to deal with errors than avoid them. EMT uses a set of heuristics to help computer trainees re-frame errors into a positive experience, by encouraging them to view errors as part of the training process, and to reassure them that they can overcome the error situation.

Lyytinen et al. (1998) note that risk management encompasses risk factors, risk resolution techniques, and heuristics. The attention shaping component of risk management is achieved through the combination of the risk factors and heuristics. Risk management approaches assist organizations to organize their risks according to urgency or type, which provides measures for the reliability of observations. Heuristics combined with risk resolution techniques, constitute the intervention planning part of the approach. Determining how certain interventions may impact a risky situation, risk resolution techniques can be created that will decrease or avoid a risky incident. Heuristics link the risky incident with would-be-effective managerial interventions, as they incorporate knowledge of cause-effect chains within the environment and decision-making routines that follow a rule format.

Artinger et al. (2015) state that heuristics are strategies which solve problems that logic and probability theory cannot. Whereas strategy is a sequence of operations, a heuristic is the specific creation of a strategy based only partially on the information available in the problem space. It is fast and frugal, as adaptive choices are made with minimal time, knowledge and computation. To create effective strategies for the organization’s constantly changing external and internal environment, the human mind will need to operate with limited information, time and computational capacity.

Satisficing is an important strategy for decision making. Unlike maximization, which requires an optimal solution to be found, it relies on finding a ‘good enough’ solution. Another heuristic strategy is tallying, whereby resources are equally distributed across different units. ‘Elimination by aspects’ and ‘take the best’ are lexicographic heuristics that implement sequential decision making. Heuristics are not general-purpose tools, but rely on a match with the environment (Artinger et al., 2015).

Heuristics are successful decision strategies which are highly functional in uncertain environments. Uncertainty is a characteristic of entrepreneurship, as timely decisions are often required without the benefit of data from past experiences. Wright et al. (2000) note that entrepreneurs typically operate under conditions of decision uncertainty and decision complexity, which is why entrepreneurs frequently use heuristics to piece together limited information to make quick decisions during turbulent times. The pursuit of new opportunities will become too overwhelming and costly, if the decision maker seeks a factual base, instead of making use of heuristic-based logic. Heuristics also enable the entrepreneur to make decisions that exploit brief windows of opportunity, as he won’t be subjected to the elaborate policies, procedural routines and structural mechanisms of established organizations. A heuristic-based approach to decision making enables an entrepreneur to deal with uncertain situations quickly, which leads to faster learning and the creation of innovative solutions. The extensive use of heuristics provides the entrepreneur with the ability to easily navigate through a vast array of problems and irregularities that may arise when pursuing new opportunities.

Alspaugh et al. (1999) note that scenarios are being used in various intellectual communities as a way to understand customers’ work practices, organization goals and system requirements. Establishing tool support for scenario management strategies will assist an entrepreneur in identifying similar scenarios, which will prevent redundancy and ensure consistency is achieved. Episode and coverage heuristics help guide goal and scenario analysis, by considering possible obstacles and hidden requirements.

2.3. Marketing Heuristics

Marketing heuristics incorporate customers and sales (Wübben and Wangenheim, 2008); customer satisfaction and customer value (Chevalier and Mayzlin, 2006); customer decision-making (Hauser, 2014); marketing mix amidst competition (Albers, 2000); product mix (Borin et al., 1994); distribution (Shang et al., 2009); product usability (Bertini et al., 2006); new product development (Merlo et al., 2008) and trends (Gaudelli, 2009).

Wübben and Wangenheim (2008) note that heuristics are often mentioned in managerial literature on

customer relationship management or database marketing. The diffusion of simple heuristics can be explained by the opportunity costs that managers experience when investing time and effort in managerial decision making. Taking opportunity costs into consideration, managers aim to minimize time and effort, and will therefore resort to well-established, simple heuristics, instead of complex strategies.

Albers (2000) state that optimality conditions are also helpful for deriving heuristics, when allocating a budget or effort across customers. The use of near-optimal heuristics will help to determine how much effort and budget should be spent on individual customers, based on past performance.

Hauser (2014) points out that experimental studies have shown that decision heuristics are common, and represent reasonable benefit-vs-cost tradeoffs. A consumer will use the consider-then-choose decision process when faced with numerous product choices. Managerial decisions are based on the ability to identify and react to these heuristic decision and consideration-set rules.

Dawar and Parker (1994) note that customers also make use of heuristics when determining the quality of an unknown product across competitive products. Hauser (2011) notes that recognition-based heuristics help consumers to decide which products to purchase in frequently-purchased categories, whereas other heuristics are more relevant in durable-goods categories.

Dzyabura and Hauser (2011) note that both simple and more complex heuristics are used when consumers need to make a choice or decision regarding a product. Simple heuristics include conjunctive ('must-have'), disjunctive (level of 'excitement' created), lexicographic (by features), take-the-best (ranking of the product), and elimination by aspects (remove unacceptable products), whereas the more complex heuristics include subset conjunctive (consider a product based on certain acceptable features) and disjunctions of conjunctions (two or more acceptable aspects). Heuristic rules often represent a rational trade-off among decision costs and benefits. Therefore, firms that understand a consumer's needs and how they use heuristics in their decision making, will be able to customize their marketing efforts to encourage consumers to purchase their products.

Borin et al. (1994) point out that a category management model aids retailers in deciding what product assortment to stock, and how much shelf space to allocate to those products. This enables management to develop a heuristic solution procedure based on stimulated annealing.

Shang et al. (2009) note that location and convenience factor highly in consumer decisions, and retailers have attempted to strategically locate their stores to reach more customers. In addition, they have used heuristic algorithms to modify their distribution networks, to reduce costs and improve efficiency.

Merlo et al. (2008) state that heuristics are applied when developing a new product, as decision makers need to facilitate fast project completion. Heuristics that act as risk-reduction mechanisms in the pre-purchase and information-seeking states of the purchase process, as well as pricing and product quality heuristics also exist.

Balakrishnan and Jacob (1996) state that firms seeking a competitive advantage require an optimal product design, which requires heuristic solutions, as it constitutes a NP-hard problem. In selecting a product to introduce to consumers, various factors need to be considered. However, as the number of attributes increase, so does the number of product profiles, and it becomes impossible to obtain an optimal solution within a reasonable timeframe. This has led to the specification of heuristics for solving the problem.

2.4. Sales Heuristics

Sales heuristics cover sales management and forecasting (Cox and Summers, 1987); customer interaction; pitch and negotiation (Guercini et al., 2015); and attracting customers (Reed and Robbins, 1985).

Guercini et al. (2015) note that in customer-supplier relationships, a number of adaptive problems are solved, and relationships are formed through the interaction of the companies' representatives. These individuals have to adapt their behaviours based on rules and heuristics, due to the limited time, information and processing capacity available to them. Heuristics used in these interactions encompass the degree of adaption to the specific counterpart, how to react to unexpected developments, and a general code of conduct. Heuristics are also used when preparing for these meetings, to define the information to collect, its sources and how to use it. Their study suggests that the heuristics that are used are personal, original both in organizational norms and personal experiences, and are seldom shared with others.

An extensive literature review highlighted that few papers in consumer decision-making focus on heuristics, instead focusing on cognitive-based strategies, despite evidence that shows that many consumers' everyday purchase decisions are most likely heuristic in nature (Lockshin and Cohen, 2011).

Petropoulos et al. (2013) note that accurate forecasts for linking inventory costs with revenues, customer satisfaction, stock-out costs, and lead time, are critical to ensure cost savings. They argue that individuals who use heuristics are able to improve measured forecasting and accuracy.

2.5. Strategy heuristics

Entrepreneurs may consider strategy heuristics to manage resources (Ireland et al., 2003), and to determine future direction (Kuratko and Audretsch, 2009) and tactics (Holstius and Malaska, 2014).

Ireland et al. (2003) argue that strategic entrepreneurship (SE) involves taking entrepreneurial actions with strategic perspectives. Firms incapable of exploiting identified opportunities, won't be able to create wealth, thereby under-rewarding stakeholders. Firms who have a competitive advantage and choose not to pursue opportunities, risk exposing their stakeholders to market changes, which could either diminish the rate of wealth creation, or worse, reduce previously created wealth. Opportunity seeking behaviour and effective advantage seeking behaviour are necessary for the creation of wealth.

Sirmon and Hitt (2003) state that strategic actions enable companies to develop and exploit current competitive advantages, while supporting entrepreneurial actions that utilize current opportunities to create a future competitive advantage for the firm. A competitive advantage is created when a customer differentiates the value of a good or service between a firm and its rivals. Through entrepreneurial actions, a firm is able to identify and seek opportunities not yet noticed or exploited by their rivals.

Intangible resources are more likely to contribute to a competitive advantage, compared to tangible resources, as they are socially complex, and potential rivals will find it difficult to understand and imitate them (Sirmon and Hitt, 2003).

Entrepreneurs often apply heuristics unknown to their decision making processes, which allows the entrepreneur to achieve unique and higher-level learning, thereby enhancing their knowledge base (Sirmon and Hitt, 2003).

Sirmon and Hitt (2003) argue that resources need to be managed appropriately, if a firm wishes to produce a sustainable competitive advantage. Amit and Shoemaker (1993) point out that the challenge for managers is to identify, develop, protect and deploy resources and capabilities in a way that provides the firm with a sustainable competitive advantage. Managerial decisions concerning resources and capabilities are usually made in settings that are characterized by uncertainty, complexity and intra-organizational conflicts.

Kuratko and Audretsch (2009) state that strategic entrepreneurship can take one of five forms – strategic renewal (redefines and alters how the firm competes), sustained regeneration (regularly and continuously introducing new products or entering new markets), domain redefinition (proactively creating an unrecognized product market arena), organizational rejuvenation (sustain/ improve competitive standing, by altering internal processes, structures and/ or capabilities), and business model reconstruction.

Foss et al., (2008) note that an alternative view describes entrepreneurship not as alertness to existing opportunities, but rather a judgement regarding an uncertain future. This view traces its origins to the first systematic treatment of entrepreneurship, which views entrepreneurship as judgemental decision making under uncertainty.

Venkataraman and Sarasvathy (2001) point out that the logic of prediction states that, to the extent that we can predict the future, we can control it. The preferred strategy under this logic is to make decisions based on future trend predictions, which were made after analysing the history and structure of the environment. Effectuation brings into existence a new decision domain that previously has been inaccessible to systematic understanding, as it involves the absence of predictive rationality, pre-existent goals, and environmental selection.

Holstius and Malaska (2014) note that the four offensive strategies of Sun Tzu refer to a type of strategic principle and related manoeuvre, which forms part of a specific framework for tactical operations. These strategies are:

1. The highest form of generalship is to attack the enemy's strategy.
2. The next best policy is to disrupt his alliances.
3. The next best policy is to attack his army.
4. The worst policy of all is to besiege walled cities.

2.6. Human Resource Heuristics

Human resource heuristics involve skills (Chick et al., 2003); teams (Keebler et al., 2012); task management and allocation (Ash, 1999); and routines (Wright and Snell, 1998).

Colbert (2004) point out that the resource based view (RBV) literature asserts that management is, at its core, a 'heuristic discipline' and requires the development of useful heuristics to deal with organizational complexity. Heuristics as HR principles can help guide the dialogue processes in the organization. Process principles are also management heuristics for nurturing complex living systems.

Keebler et al. (2012) note that research is currently underway to determine how teams of humans will be integrated with teams of intelligent robots or agents. They note heuristics that are seemingly the most

congruent with human-robot (HR) teams, are supporting precise and accurate communication, diagnosing communication errors, instituting frequent practice opportunities, building team orientation, and preparing the team.

Pahl-Wostl and Ebenhöf (2004) argue that, when developing policies to promote sustainable resource management regimes, human behaviour is one of the key factors that needs to be taken into account. They have chosen a pragmatic approach to represent human behaviour, by assuming individuals can be characterised by a set of attributes, and their behaviour can be described by a set of simple decision heuristics.

Ash (1999) states that the scheduling challenge in a multi-project setting, is the assigning of resources to specific activities from multiple projects, requiring decisions to be made quickly. The availability of a heuristic that is known to be effective in the minimizing of project extensions and the maximizing of resource utilization, is extremely valuable in these circumstances. Optimization techniques are only feasible for small projects, and when any change occurs, a new optimal answer must be found. Changes in project planning and scheduling are inevitable and constant. The practical solution is therefore the use of heuristic decision rules. Project characteristics do have an impact on the performance of different heuristics, when different performance objectives are stipulated. These heuristics can be simple or complicated, depending on the activity they relate to.

Ash (1999) continues that the rules used to prioritize personnel resources usually relate to skill set or experience level, but career path and technical interest may be considered when developing an organization's core competencies. The heuristics can be run whenever a significant change occurs.

Roch et al. (2000) note that a resource allocation task occurs when a group of individuals have access to a common resource pool, and each member decides how much of the pool to claim for themselves. It is argued that the equality rule serves as a decision heuristic, due to a number of properties. Empirical research has clearly demonstrated the salience of the equity heuristic in a variety of resource sharing tasks.

Roch et al. (2000) continue that the heuristic-systematic model (HSM) is a multiple-mode information processing model that delineates between heuristic and systematic processing. The heuristic mode is an effortless processing mode, and is the application of simple decision rules, whereas the systematic mode is an effortful mode of processing that is characterized by careful analysis of the available information. An individual who has situational constraints will engage in heuristic systematic processing.

2.7. Tactical Heuristics

Entrepreneurs may consider military-type tactical heuristics to deal with competition (Aberdeen et al., 2004); vigilance and responsiveness (Williams, 2010); and fluidity and adaptability (Abbass et al., 2006).

In general, tactical heuristics focus on completing missions, assignments and goals, in the wake of hostility.

Williams (2010) notes that operating environments that are characterized by uncertainty, complexity and ambiguity, require professionals to make sense of this paradoxical and chaotic setting. In order to succeed in this environment, an emergent style of decision making is required, and individuals must be willing to embrace improvisation and reflection. Those willing to try new approaches and experiment on the spot in response to surprises, will critically examine the heuristics by which they make decisions. An organization's culture can shape an individual's mental processes when making a decision, which in turn shapes these heuristics.

Williams (2010) surveys three important heuristics to military decision making. Availability (comparing a new situation with a past, similar situation), representativeness (a heuristic used to assess the probability that an event falls within a larger category of event) and anchoring (adjusting the original appraisal of a problem as time unfolds). These heuristics impact interaction, engagement and success.

According to Knighton (2004), the availability bias occurs when an individual bases the likelihood of something happening on the ease of retrieving a similar example. The description of the event therefore greatly influences the individual's perceived risk.

Knighton (2004) argues that when an individual makes use of representativeness heuristics, the laws of probability are violated, and the individual bases his decision on how closely an option resemble the problem scenario. The laws of probability are based on the likelihood that two uncertain conditions occurring together, is less likely than either happening alone.

Knighton (2004) refers to Kahneman and Tversky's findings that the effect of anchoring and adjustment is the final bias. Their research suggest that people refine estimates by adjusting their starting point. This is determined through the initial framing of the problem, through intuition, a partial calculation, or guess.

2.8. Conclusion

From the literature review it is clear that the entrepreneur has access to and possesses a rich and deep heuristics base that he draws from on a daily basis, as part of his normal conduct. The literature reviewed only considers a sub-set of the extensive array of heuristics available to the entrepreneur, and that he may have developed and draw from. The literature review considered heuristics in the fields of management, marketing, sales, strategy, human resources and tactics.

It is also clear that heuristics have not been covered in depth within entrepreneurship, and that a far greater depth of study, as well as insight, are possible. In light of this, the literature review concludes with the following research question: What are the common heuristics entrepreneurs draw from? In light of this, specific emphasis is placed on management, marketing, sales, strategy, human resources and tactical heuristics.

3. Methodology

In order to study the heuristics of entrepreneurs, semi-structured interviews were carried out, and purposive sampling was used. The focus was on entrepreneurs with extensive entrepreneurship experience, as experienced entrepreneurs would possess developed heuristics sets. 10 experienced entrepreneurs were interviewed, all with at least 1 successful business, and at least 3 years entrepreneurship and innovation experience. Sampling was not constrained according to industry, as the impact of industry on the study was deemed negligible. Participants were identified through professional and business networks. Interviews on average lasted 1 hour. Interviews were recorded, transcribed, coded, and further analyzed.

4. Results

4.1. What constitutes the heuristics base of entrepreneurs? What are the common heuristics entrepreneurs draw from?

4.1.1. Management Heuristics

The entrepreneur as manager and leader takes charge, exerts influence, and gives direction to scenarios, cases, etc - pushes scenarios, cases, etc into a desirable direction. The entrepreneur prioritizes tasks, work, and time, and should guard against being too busy with the wrong things, and focusing on the wrong things at the wrong time. The entrepreneur should plan ahead. The entrepreneur is a competent project manager, who breaks down work and tasks into simple(r) tasks and sub-tasks, assigns tasks, plans and distributes resources, monitors progress, and quickly re-evaluates with new developments. The entrepreneur plans capacity, and closes any capacity gaps. Clear and frequent communication is important. The competent entrepreneur has learned to efficiently and effectively delegate, to unlock and increase the capacity and performance of the business. No entrepreneur or business can avoid risk. Risk is an integral and important part of entrepreneurship and business. The entrepreneur should know and manage his risk propensity. He must take on a healthy portion of risk, but at the same time should ensure the business can stomach the risk, and must manage the risk. Just as important, is the culture of the business. The entrepreneur is responsible for building strong culture, morale and ethics. The entrepreneur must make sure he understands the business, has sound perspective, and makes informed decisions. The entrepreneur must actively manage the profitability of the business.

As an architect, the entrepreneur should standardize, optimize, and streamline the systems and processes of the business, to improve resource utility, and to increase efficiency. This is in contrast to running things from his head. Leadership, also personal leadership, are important. In some ways, leadership is paradoxical: being both stringent and autocratic, and open and caring. As leader, the entrepreneur must both push others, and support them. The entrepreneur must constantly guard against complacency, and should look after his own well-being.

Table 1. Management heuristics

Direct
<ul style="list-style-type: none"> • Manage the things that are in your control - take note of things starting to deviate from the plan. • Swift and decisive decision making. • Respond swiftly to problems. • Don't shift blame. Deal with and focus on resolving the situation.
Prioritize
<ul style="list-style-type: none"> • Use proper, accurate KPIs. • Plan/ consider capacity. Don't over-commit. Leave cushion for agility.

<ul style="list-style-type: none"> • Manage time; don't over-commit. • Manage your capacity (time) to think. • Make sure that you work on the most important thing at all times, don't simply be busy. • Allow priorities to arise naturally, incorporate them into plans and schedules. • Deal with work as it arrives, don't postpone anything. • Priority categories: urgency, relevance, flexibility, potential. Priority according to task nature or type, e.g. operational tasks vs development tasks.
<i>Plan</i>
<ul style="list-style-type: none"> • Understand seasonality and trends.
<i>Schedule</i>
<ul style="list-style-type: none"> • Proper project management and planning. • Break down activities, assign tasks/ sub-tasks. • Break down long or complex tasks, allocate resources accordingly. • Proper, clear task allocation; check on progress and quality. • Monitor tasks: The team leader should monitor tasks. • Plan and spread resources according to priority and need. • Deal with work as it arrives. Don't postpone anything – any work. Sort out work as it arrives. • Keep a loose schedule: Don't predetermine most of the tasks in terms of timelines. • Allocate and reallocate tasks and resources as new tasks and problems arise. • Optimize the processes of task allocation and task prioritization. • Quickly and frequently re-evaluate and reassign task schedules.
<i>Capacity</i>
<ul style="list-style-type: none"> • Examine capacity, and the capacity required, and decide on the best approach. • Empower your staff - upskill when necessary. • Acquire the necessary expertise.
<i>Communicate</i>
<ul style="list-style-type: none"> • Open and regular communication ensures everyone is on same page, and prevents complacency and familiarity.
<i>Delegate</i>
<ul style="list-style-type: none"> • Capacity and capacity planning enable the entrepreneur to delegate. • The entrepreneur must delegate, to improve/ increase capacity. • The entrepreneur who doesn't distribute leadership and management prevents employees from giving their best. • Assign tasks based on where the organization is heading. • Evaluate whether your position warrants the work you are doing, or whether you should not rather delegate it. • Delegate, communicate, get feedback and evaluate.
<i>Risk</i>
<ul style="list-style-type: none"> • Know your risk profile and propensity. • Risk is specific to the task or project. • Analyze the market and the risk. • Take risks/ chances. • You can't avoid risk; take on a healthy portion of risk. • Take risks, but make smart bets. • Establish the risk you are able to take on. Only make mistakes you can afford to lose and recover from. Build and improve as you go. • Manage your risk. Ensure the business can handle the risk. Have a tabled risk plan. • Diversify so that income doesn't come from one source.
<i>Culture and morale</i>
<ul style="list-style-type: none"> • Build good culture, morale, and ethics. • Create a culture of responsibility and accountability. • Avoid complacency, by creating urgency and challenges. • Create challenges through goals, assign accountability and responsibility to each department.
<i>Comprehension</i>
<ul style="list-style-type: none"> • Be informed. Know your business. Work on gut feel, and then get data to support it.

<ul style="list-style-type: none"> • Have support when making key decisions. • Think holistically. • Leverage off collected data.
<i>Profitability</i>
<ul style="list-style-type: none"> • Ensure each unit contributes positively (to profit), and is profitable. • Keep an eye on expenses. • Minimize operational costs, e.g. buy stock strategically.
<i>Perspective</i>
<ul style="list-style-type: none"> • Maintain perspective. Don't get stuck in detail. See the big(ger) picture.
<i>Structure, organize, systematize</i>
<ul style="list-style-type: none"> • Formalize thinking. • Streamline the processes, output, and governance of the business. • Use systems to ease resource requirements and increase efficiency. • Run the business on reliable systems, and train employees on these systems. • Put down some kind of system (create a play book). Don't run things from memory or the top of your head. • Have pre-packaged ways to deliver services, solutions, and solve problems. • If unstructured, put systems in place to help bring/ restore order. • Evaluate, assess and refine processes – each process must positively contribute to value. • Work processes should have a quick return. • Delineate a broad framework, but don't get bogged down. • In areas or cases without systems, or new development, form an understanding of what needs to be done. • Keep it simple. Encourage ownership of the process. Get buy-in. • Look at the constraints and optimize. Find the best trade-off/ solution. • Combine the best way vs the practical – the way the employee is most likely and capable of using it. • Use process maps. Map complicated processes. • Inputs and processes determine the outcomes.
<i>Leadership, direction, mastery</i>
<ul style="list-style-type: none"> • Self-management. • Become an efficient leader. • The entrepreneur must be good at delegating, leading, coordinating and task allocation. • Transparent, honest, flexible, diverse, foresight, communicator. • Don't micro-manage, view time as a scarce resource. • The entrepreneur should be an autocrat, more than a democrat. • Leadership: open and approachable. • Open door policy – available and approachable for advice. • Don't spoon feed, and don't give blank cheques either. Put up boundaries and perimeters. • Don't become complacent with time. Guard against stop listening, paying attention, improving, changing, etc., as you become more successful. • Have a support network or structure to help during difficult times. • Have a mechanism to deal with stress. • Important for the entrepreneur to look after his health, well-being (emotional and mental). Deal with emotions.

4.1.2. Innovation Heuristics

Innovation comes with strategy, and strategy is also associated with innovation. His innovation strategy will determine how the entrepreneur sees, approaches, and goes about innovation. Envisaging exponential growth can be effective innovation strategy, in that it is bound to push and stretch the entrepreneur and business. The business' culture and perspective on failure are very important, and are things the entrepreneur is responsible for, and shapes. The entrepreneur should be led by the market, but must also know when to lead the market. The entrepreneur should look for, and start with, the simplest solution. Innovative and creative thought entail thinking out of the box, reinventing the business, broadening thinking, but also willingness to change and improve. Opportunities come from and can be recognized, by being observant; focusing on and understanding customers; improving on existing products, markets, and processes; looking for and into new markets; trends and developments; technology; other industries; etc. Opportunities recognized are carefully screened, assessed, also against each other, and selected. Innovation should be accompanied by much evaluation and validation: testing and verifying ideas, assumptions, etc, in the market, as soon as

possible, and not moving too far, without doing so. Alongside innovation strategy, innovation thinking or philosophy is just as important, particularly perspective regarding failure. Innovation should also be very focused, and aligned with the core business. Timing of innovation is crucial. The entrepreneur must manage the risk associated with innovation, and must manage adoption of innovation. The entrepreneur may need a certain level of reputation, etc. for radical innovation.

Table 2. Innovation heuristics

Strategy
<ul style="list-style-type: none"> • View growth as linear, but exponential. • Adapt to the market and its requirements. Shape/ influence the market, depending on the market conditions. • Create an innovative culture. • Create (a) space to fail; accept failure. • Look for the simplest solution, it may not be where you look for it. • Don't reinvent wheels. • If it works, don't break it. • Be radical, agile and adaptable. • Form partnerships.
Innovation and creativity: innovative and creative thought
<ul style="list-style-type: none"> • Think out of the box. • Reinvent the business. • When it comes to adding value, everything is up for change and improvement. • Be willing to change the current business; allow room and freedom to experiment. • Reinvent yourself; do things differently; find new applications, markets and industries to move into. • Broaden your thinking; investigate what hasn't been done before; learn the industries that you are not in.
Opportunity identification
<ul style="list-style-type: none"> • Open your ears and listen. • Know what your customer wants. • Analyze and improve customer processes. • Build on existing products and markets. • Look for gaps that still exist in the market and determine what resources are required to fill these gaps. • Look out for specific trends. Identify new markets. • Scan the environment for key developments; look at technology to open opportunities. • Pursue opportunities where potential growth is perceived. Look at new markets. • Incorporate thinking from different industries. • Take trends from trending places/ markets, but make sure the market buys into the trend, and it's of good quality and standard. Trend-setters are created from/ require strong brands. • Product and new products can come from seemingly disconnected industries. A need or solution to a problem can lead to and spin off completely new, but diverse/ unrelated industries and markets. • Can only turn the market upside down so many times. Keep your existing products up to date. • Prioritize, bucket and funnel opportunities.
Verify
<ul style="list-style-type: none"> • Do analysis and market research (verification). • Innovate with market intelligence. • Test an idea first. Work on and run a pilot. • Conduct market research. Test the market. • Avoid developing products without potential customer interaction – always get feedback. • Continually review the market to determine if you are on track. • Be realistic about returns.
Philosophy (Adaptability, openness, freedom: Develop, evolve, adapt)
<ul style="list-style-type: none"> • Learn from mistakes; accept failure and don't aim to be perfect or flawless. • Analyze, evaluate and reflect. See errors as learning – realign and re-approach, correct, and try again. • Allow mistakes and encourage learning of the principle, system and process.
Focus
<ul style="list-style-type: none"> • Remain true to who you are and focus on what you do well.

<ul style="list-style-type: none"> • Enhance your core business. • Stick to what you know.
<i>Risk</i>
<ul style="list-style-type: none"> • Be aware of the risk; devote less time to more uncertain projects. • Eliminate uncertainty through testing. • Limit investment and risk, by partnering with strategic partners. Build relationships with partners.
<i>Timing</i>
<ul style="list-style-type: none"> • Timing is important.
<i>Adoption</i>
<ul style="list-style-type: none"> • Market disruptions and true innovation needs reputation. • Need reputation, brand and trust for radical innovations.

4.1.3. Strategy Heuristics

A predominant component and aspect of strategy are ambition, virtue, and excellence, and the fruit thereof: The entrepreneur continuously pushing himself and the business, also in terms of capability and boundaries, and the entrepreneur continually enhancing and redefining himself and the business. Alongside this, are vision and purpose. Vision and purpose have a significant impact on strategy, and the entrepreneur must be clear on the vision and purpose of the business.

The entrepreneur wants to get the business to stand out, particularly through strategy, vision, and purpose. Leading forms an important part of this – getting to markets first, and being number one. The entrepreneur also wants to position the business relative to the industry, and the direction the industry is taking – the future industry. Barriers are generally low, and rather than focusing on protecting and defending positions and advantages, the entrepreneur should focus on getting ahead and staying ahead. To this end, he can focus on value, brand, customer service, innovation, and building products up. The entrepreneur should move away from crowded markets and commodities.

The entrepreneur should maintain strategic fit and focus. The entrepreneur must demonstrate foresight: ensuring the long term prospects, health, and relevance of the business, anticipating the long term needs of the business, and anticipating the future of the business, and attempting to shape it.

The entrepreneur should be agile. Instead of resisting change, he should embrace change, and be willing to adapt. Also, in terms of strategy, innovation and direction, the entrepreneur should be willing to change direction in a blink. The entrepreneur should allow for the unexpected, and equally finds his way as he goes.

The entrepreneur should be informed, knowledgeable, and aware of his surroundings and environment. He should ask strategic questions, keep up to date on the environment, industry, developments, trends, early warning signals, and how these affect the business. He should continuously evaluate and re-evaluate. He should hold a holistic and clear perspective and understanding of the business. Conversations with his team, etc contribute significantly in this regard.

Strategy implementation is equally important. The entrepreneur must develop a roadmap for the business, according to and based on its vision and goals. This must be broken down into smaller goals. Strategy and implementation thereof should be continuously monitored, and the entrepreneur must allow strategy to evolve. The entrepreneur must prioritize and communicate strategy.

Competition keeps the entrepreneur and his business proactive. The entrepreneur should study the competition, and know and understand their business as well as his own. He should identify the areas in which the competition is better than the business, and know why. He can study some of the methods and strategies of the competition, like marketing, to learn from this. The entrepreneur should assess the competition, and the level of threat that they pose. He should focus on competitors that are a genuine threat to the business and its customers. The entrepreneur may partner with strong competitors, or should seek innovate solutions or positions. The entrepreneur should position the business relative to competitors. The business must have a clear position and value proposition relative to its competitors. The entrepreneur should avoid competing on price, and price wars.

The entrepreneur should consider how technology forms part of strategy, and how technology can advance the business. The entrepreneur may look to build up strategic resources to leverage off. Strategic resources may provide competitive advantage. Strategic resources may include knowledge, and access to

finance. The entrepreneur may investigate, and build up knowledge regarding strategic resources, and what it entails in the context of the business.

Strategy equally involves risk, sustainability, and personal strategy. The entrepreneur must understand and manage the risk involved with and accompanying strategy. Part of this may be to diversify goals or strategy, in the sense of working on multiple projects at the same time. Social responsibility and sustainability are becoming increasingly important and part of strategy. Strategy also entails personal strategy – the entrepreneur mindful of and advancing himself, his position, and his contribution.

Table 3. Strategy heuristics

General
<ul style="list-style-type: none"> • Consider what you are capable of. • Enhance your skills, develop your ways of thinking, and build your reputation. • Liberty and leeway to act, not being under pressure. • Reinvent yourself.
Vision and purpose
<ul style="list-style-type: none"> • Know your core business - this is a strategic resource. • Know your purpose and goal, and align activities.
Position, competitive advantage, competitiveness
<ul style="list-style-type: none"> • Have a strategy that you own, and that makes your business stand-out. • Be the first to market, and stay ahead by innovating. • Get to market first; sell products faster (reduce the product cycle). • Note where the industry is going, and how you want to position yourself in the industry. • Aim to be number one. Plan to take out your competitors. • If competitors are smart enough to imitate something, they are smart enough to come up with it, or something similar, in the first place. Rather than worrying about imitation and protecting against competitors, focus on staying ahead. • Few things are unique, or innovative. Barriers are low, even with patents and trademarks. • Build your brand to increase product rareness, and to lower the risk of imitation. • Brand and customer service can help with rareness, and to counter imitation. • Combining a number of key resources and competencies, increases the difficulty to copy. • The more value you offer, the more difficult it is to copy. • Interpret significant game changers, the implications, and how to respond to them. • Move out of commodities, into brand. • Have a strong product and brand. • Offer a holistic product. • Go into a niche area. • Focus on markets where there aren't a lot of competition.
Fit and focus
<ul style="list-style-type: none"> • Be agile, flexible and open to move on when the opportunity is not the best. • Keep focused on core competencies and look for extensions of/ to core competencies.
Foresight
<ul style="list-style-type: none"> • Ensure the long-term prospects of the business are healthy and relevant; evaluate, update, adapt and change. • Ensure the business has value and is sellable. • Anticipate, prepare and attempt to shape the future. • Incorporate aspects of scenario planning. • Technology and the future: identify the disruptions, restructuring, shifts, and transformations of the future. • Plan capacity and resources (identify skills required), both current and future.
Agility
<ul style="list-style-type: none"> • Embrace change and renewal. • Be willing to adapt. • Embrace disruptors, like technology, trends, etc. • Adapt to change; have a change management process; don't stagnate. • Be willing to change direction in a wink. Also, learn as quickly as possible. • Be innovative. Make it happen; make it up as you go. • Allow some leniency for unforeseeable events, etc.

<i>Knowledge and awareness</i>
<ul style="list-style-type: none"> • Ask strategic questions. • Be informed; have a lot of intelligence. • Keep up to date with changes in the environment. • Note trends and early warning signals. • Keep abreast of trends. • Determine to what extent industry trends affect the business. • Evaluate continuously and objectively. • Keep monitoring opportunities that you have passed on. • Connect with your team on a regular basis. Have and build a broad, holistic perspective of the organization and the world, and how it affects the business.
<i>Implementation</i>
<ul style="list-style-type: none"> • Understand the roadmap of the business, goals or objectives. • Break the vision down into goals at certain timelines. • Monitor strategy and implementation. • Allow strategy to evolve, revolve. • Communicate the reason and urgency behind timelines. Use timelines to keep focused, disciplined, and to stretch resources. • Prioritize - it is long-term.
<i>Competitors</i>
<ul style="list-style-type: none"> • Competition is healthy, keeps you proactive, competitive and innovative. • Become an irritation to your competitors. Your competition should hate you. • Evaluate the competitors. • Know your competitor's business back to front: their strategy, demographics, locations, capacity, etc. • Identify areas where/ reasons why competitors are better than the business. • Note the competition's marketing, etc. – you could learn from it. • Determine the level of threat a competitor poses. • Ignore competitors that are not a threat, and look at competitors that are stealing customers. • Partner/ collaborate with competitors who are better than you, or improve your own product to close the gap. • Market and position yourself against competitors; don't provoke or slander your competitors. • Have a clear proposition relative to the competition. Know what the completion is offering and how you are going to take on the competition. • Disrupting the market purely based on price is not sustainable. It draws attention and attracts price wars.
<i>Technology</i>
<ul style="list-style-type: none"> • Consider how technology can advance the business.
<i>Strategic resources</i>
<ul style="list-style-type: none"> • Accumulate knowledge as a strategic resource. • Money / cash flow can be a prominent strategic resource. • Have liquidity- make sure you have access to finance, or build networks with investors/ finance-related networks. • Protect, build and extend upon strategic resources. • Build and develop monopolies on/ around key resources. • Specify and acquire necessary resources. • Exchange information regarding resources with other entrepreneurs and business people. • Research resources that may help with specific tasks or projects, and then acquire or train yourself. • Leverage personal networks. • Identify and look for ways to maintain and retain key resources (incl. HR).
<i>Risk</i>
<ul style="list-style-type: none"> • Identify, understand and manage (the) risk. • Have simultaneous projects – assign priorities to projects.
<i>Sustainability</i>
<ul style="list-style-type: none"> • Be a good corporate citizen. • Have sustainable and related triple bottom line goals. • Aim for zero resource consumption.

<i>Personal strategy</i>
<ul style="list-style-type: none"> • Learn from and involve people who are smarter than you (including other industries). Challenge yourself. • Make yourself irreplaceable/ unique. • Incentivize and motivate yourself in order to reach your goals.

4.1.4. Marketing Heuristics

The entrepreneur should choose and manage his customers. He should focus less on short term customers, and think more about and in terms of long term customers. The entrepreneur must assess the potential of both existing customers and new customers. It is generally easy to market to existing customers. The entrepreneur can also consider partnerships, to tap into and reach the existing customers of the partner. The entrepreneur must consider exactly where in the value or supply chain to sell. Both competitors and marketing can raise expectations with customers, that the entrepreneur must manage.

Customer relationships are just as important. The entrepreneur can initiate partnerships with customers, and can add much more personal touch through customer relationships. Customer relationships generally facilitate and result in repeat business.

The business should be customer-centred. The entrepreneur should listen to customers, gather and incorporate feedback, be approachable and reachable, and adapt to customer needs. Customer satisfaction is equally important. Satisfying customers should be a primary priority, such that customers become fans. It should not be difficult for customers to derive the benefits of products, and focus should be on the ease of use of products. The entrepreneur should aim to maximize customer interaction, and then capitalizing on customer interaction. It is important to collect customer feedback, and to look at both what the business is currently good at, and not that good at.

Through its products, the business must assume a clear position. The brand, reputation, and expertise of the business communicate and crystallize the position of the business. The entrepreneur must manage perceptions of the business and its products.

The business needs to communicate its value proposition to customers, so that customers are aware. The business needs (to do) some promotion, to attract, engage and inform customers. The entrepreneur can make use of his or the business' network, and the plethora of communication tools available, to communicate value intelligently to customers – it is becoming increasingly easy to communicate value, and to communicate value intelligently to customers. The entrepreneur should avoid a shotgun approach to marketing, that involves cold calling customers. The product of the business is just as strategic – it affects turnover, and can shape customer decision making.

Offering value to customers equally involves ethics - integrity. It is important to think long term and repeat business, rather than quick sales and profit. The entrepreneur should over-deliver – offer more quality than what the customer pays for. The entrepreneur must ensure he has a unique value proposition, that he is relevant, and that he remains relevant. The entrepreneur must know the market, and the developments in the market. The entrepreneur must find a way to differentiate, and must look to build value into more than just the direct product. The entrepreneur must adapt the value proposition to different customer segments – have different value propositions for different customer segments. The entrepreneur can experiment with and try new fads, but should consider the probability that it will become permanent.

The entrepreneur can build competitive advantage through distribution. Typical marketing strategies include: partnerships (marketing through partners); focusing on value, service and competitive advantage, to move away from price competition; making sure customers know of the business, through clear marketing strategy that is aligned across the brand, social media and communications strategy; conducting marketing that is more than simply advertising or social media; identifying the best way to reach and communicate to the market; using complementary products and channels; diversifying products and customers; differentiating away from competitors; not going for the same opportunities everyone else is going for; etc.

Table 4. Marketing heuristics

<i>Customer management</i>
<ul style="list-style-type: none"> • Manage and choose your customers. • Determine if it is easier to convert new clients. • Reach additional customers through partnerships with customers. • Market to immediate customers first. • It is fine to lose bad customers. • Forget about short-term customers, focus on long-term customers.

<ul style="list-style-type: none"> • Determine where in the value chain or supply chain to sell products. • Expectations and budgets. Marketing can raise certain expectations. Customers may (start to) expect a certain level of marketing. • Manage customer expectations due to competitors.
<i>Customer relationships</i>
<ul style="list-style-type: none"> • Build/ create partnerships with customers. • Add personal touch. • Invest in customers; aim for repeat business.
<i>Customer focus</i>
<ul style="list-style-type: none"> • Listen to what customers want and anticipate their needs. Adapt and change to feedback. • Be approachable and reachable. • Constantly get feedback and input from customers through a variety of channels. • Adapt to customer needs.
<i>Customer satisfaction</i>
<ul style="list-style-type: none"> • Make customers your fans – satisfying customers is your number one priority. • Ease of use. • People may require product education, but the product should not require a lot of effort to obtain the benefit.
<i>Customer interaction</i>
<ul style="list-style-type: none"> • Don't offer free delivery to close-by customers, so they can visit store and purchase more.
<i>Customer feedback</i>
<ul style="list-style-type: none"> • Focus as much on the positive (trends) as well as the negative (trends) – what you are doing right, and what you are doing wrong.
<i>Position</i>
<ul style="list-style-type: none"> • Manage perceptions of your product and business. • Build a brand - what does the brand represent? • Build reputation and expertise.
<i>Promote</i>
<ul style="list-style-type: none"> • Communicate your value to customers. • Need (do) some promotion. • Use networking and communication to provide value to the customer. • Never call cold people. Rather work with lukewarm connections.
<i>Product</i>
<ul style="list-style-type: none"> • Retail products with existing, strong brands that/ to shape customer decision making. • Optimize stock turnover, keep stock that sells.
<i>Value, uniqueness, and competitiveness</i>
<ul style="list-style-type: none"> • Honesty and integrity: don't make a sale for the sake of a sale. • Think long term and future value. Think of repeat business. Don't just think of making a quick profit. • Over-deliver. Offer more quality than the customer pays for. • Unique value proposition. Be relevant. Remain relevant. • Be price relevant. • Know what and how you are selling, what the markets trends are, and what is happening in the market. • Finding a way or area to differentiate. • Build customer value in something other than the direct product. • Have different value propositions for different customer segments. • Experiment with 10 - 20%. Try new fads with tried and tested products, to some extent. Keep in mind that the likelihood of it becoming permanent is low.
<i>Strategy</i>
<ul style="list-style-type: none"> • Form partnerships. • Avoid price competition; focus on offering more value or greater service. • Build competitive advantages into your product to avoid competing on price.

<ul style="list-style-type: none"> • Make sure that you have a clear, focused marketing strategy – that customers know you exist. • Have a brand, social media and communications strategy that are all aligned. • Marketing is not advertising or social media, but it can be cheap and worthwhile. • Identify the best way to reach and communicate to the market. • Use complementary products and channels. • Don't go for the same opportunities everyone else is going for. • Diversify and differentiate in a competitive and crowded market. • Diversify: have more than one product and more than one customer.
<i>Distribution</i>
<ul style="list-style-type: none"> • Decide whether to outsource or insource, and whether to use a central or distributed warehouse. • Efficiency of distribution - use technology to automate and manage. • Tight monitoring of and control over distribution. Good stock control. Good systems in place. Distribution has high risk of theft and fraud.

4.1.5. Sales Heuristics

With regards to sales, the entrepreneur should develop some idea of what he can sell realistically. In this regard, budgets and sales forecasts can help. The entrepreneur can build on historic data, projects in the pipeline, and (expectations based on) recent data. The entrepreneur should monitor and pay attention to sales that come in, and don't come in, as well as growth rates. The entrepreneur should raise awareness among customers, and ensure that customers know about the business and its products. Customer interaction serves to build customer relationships, collect feedback, attract customers, and demonstrate the product. The entrepreneur should sell through establishing and building connections. The entrepreneur may build on and utilize negotiation skills. The entrepreneur must segment the market, and must be very clear about the customers he is targeting.

(Presentation as a form of) first impressions are very important. Perception and reputation always make selling easier. A strong brand, focusing on brand, etc, rather than a mere commodity product, a clear value proposition, a new and vibrant product, all improve perception. The integrity, reliability, etc. the business demonstrates, contribute to its reputation.

Story-telling and social causes can help customers associate and relate with the business and product. Knowing what competitors are selling, improves and contributes to uniqueness and competitiveness. Typical sales strategies include: not competing on price; knowing the cost of production; not minding and selling to wrong customers; knowing whom to sell to; partnerships; making use of technology; diversifying and managing risk in terms of sales and customers; monitoring sales, in order to manage it; not depending on, nor discarding cheap advertising; using social media to understand markets and perceptions; etc.

Table 5. Sales heuristics

<i>Plan and forecast</i>
<ul style="list-style-type: none"> • Avoid surprises in sales – anticipate/ know the market. • Use budgets and sales forecasting to give you some direction. • Properly size the market to determine how many customers you can get from the market. • Push realistic targets. • Forecasting future sales can be difficult when there is uncertainty in the market. • Forecast based on the past, projects in the pipeline, and recent data. • Pay attention to what sales come in and don't. Focus on growth (percentages, etc). • Evaluate share gained, growth – look at direct and indirect measures.
<i>Awareness</i>
<ul style="list-style-type: none"> • Ensure customers know your product and love what you sell. • Raise awareness and self-promote.
<i>Interaction</i>
<ul style="list-style-type: none"> • Make use of events to increase awareness and interaction, and to attract customers. • Physically go and see customers, understand what they want, collaborate, encourage feedback. • Do something for one client and then invite the rest of the industry to look at the solution/ product.
<i>Connection and relationship</i>
<ul style="list-style-type: none"> • Don't cold-call.

<ul style="list-style-type: none"> • Manage customer relationships.
<i>Negotiation</i>
<ul style="list-style-type: none"> • Selling and convincing; bargaining and making concessions.
<i>Target</i>
<ul style="list-style-type: none"> • Have a defined customer base. • Segment the market; target segments with specific products.
<i>Presentation</i>
<ul style="list-style-type: none"> • Have the expert speak and the rest of the team support/ back up the champion.
<i>Perception</i>
<ul style="list-style-type: none"> • Establish a strong brand; sell brand rather than commodity. • Focus on creating the value proposition, keep the product vibrant and new.
<i>Reputation</i>
<ul style="list-style-type: none"> • Trust, accountability, integrity, open communication, transparency, open access. • Keep to agreements and promises.
<i>Association</i>
<ul style="list-style-type: none"> • Attach a social cause to your product. • Use storytelling – create a story around the product.
<i>Uniqueness and competitiveness</i>
<ul style="list-style-type: none"> • Know what competitors are selling.
<i>Strategy</i>
<ul style="list-style-type: none"> • Form partnerships. • Create strategic partnerships with channel partners who can push your product. • Use technology. • Don't compete on price - avoid price wars. • Know the cost of production. • OK to lose a sale. Don't sell to the wrong customer. Sales specific to the customer. • Determine who you should be selling to. B2B vs B2C. • Manage exposure and risk in terms of sales and customers. • Diversify. • Manage the risk. Identify and close gaps. • Advertising via the internet – the company website and social media. The cheap way of advertising that does not cost much. • Use social media to understand broader markets, perceptions, etc.

4.1.6. Human Resources Heuristics

Staff and therefore recruitment are critically important to the business. People (one person) can sink the business. It is imperative that the entrepreneur hires the right people. The entrepreneur should establish a quality recruitment process. He should consider taking in a lot of applications, properly filtering and screening, assessing applicants and getting a sense of them, getting input from the team on applicants, auditioning and testing the top candidates, establishing whether they can work with the team, and employing them on probation. The entrepreneur should holistically look at and consider attitude, knowledge, education, skills, ability to learn, ability to contribute, and ability to persevere and overcome difficulties. It helps tremendously if the entrepreneur knows where to source skills. Offering apprenticeships also helps to cultivate skill that will generally be aligned with the business.

Productivity and performance are managed through a combination of remuneration, performance monitoring and appraisal, motivation, encouragement, coaching, and training. People should be held accountable, and performance must be evaluated. It must be ensured that people are adequately incentivized. It should not be necessary to sacrifice productivity for flexibility. The business is generally (able to be) very flexible. The entrepreneur constitutes a significant and well-developed resource of the business, and is by default very flexible. Techniques like shadowing and cross-training increase the flexibility of the business. In this regard, the people and teams of the business are typically very fluid.

The entrepreneur normally manages capacity, by employing a few core staff, and then making use of temporary labour and contract-work, to fill in and complement capacity. Recognition and reward can significantly contribute to performance. It works best when it is purely based on merit, very transparent, and very objective. Everyone should receive a chance, but those who perform should ultimately receive favour. It must be clear to employees how incentives work and benefit them, and employees must perceive appraisal to be fair. A flat hierarchy, and agile and lean structure generally work best. The contribution – responsibility and reward - of each employee can rather be increased.

The entrepreneur is responsible for the culture of the business. The culture must encourage and support creativity, as well as failure, given that failure is a prominent part of innovation. The entrepreneur should incorporate different thinking and diversity into the organization. The entrepreneur should empower people, consider their development, and allow them opportunity to grow. It must be ensured that employees have everything they need, and are capable of delivering what is required of them. Employees must be comfortable asking for help and support. The example the entrepreneur sets is very important, and employees must be able to work with the entrepreneur. The skills of the business must be continuously developed. Communication within the business is very important, particularly communication of goals, vision, and values. The entrepreneur should encourage and incentivize collaboration and team work.

Table 6. Human Resources heuristics

<i>Recruitment, staff</i>
<ul style="list-style-type: none"> • People are the core of what the business is doing. • Hire the right employees; people can sink your business. • Focus on the recruiting process. Have all the screening, checks, references and questioning in place. • First employ on probation, and monitor if the candidate lives up to expectations and fits in. • Take in a lot of applications, filter according to required skills, and assess applicants to get a sense of them. Get input from the whole team. Make sure you know what you are getting. • Audition top candidates, test their abilities, and determine if the team can work with them. • Have stringent tests, but go on gut feeling when determining if the person is going to be a good fit. • Look at attitude, knowledge and education. • Consider ability to overcome, learn, and contribute. • Know where to find skills. • Offer apprenticeships.
<i>Productivity</i>
<ul style="list-style-type: none"> • (Productivity managed through) a combination of remuneration, performance monitoring and appraisal, motivation, encouragement, coaching, and training. • Evaluate performance and keep people accountable. • Incentivize: When staff lack initiative, they must be managed. • Flexibility should not reduce output, keep output constant.
<i>Flexibility</i>
<ul style="list-style-type: none"> • Many entrepreneurs are limited in number of employees - fewer than 5. The entrepreneur is usually the sum of the business' skills, and acquires the necessary skills and expertise himself. The entrepreneur is flexible by default. • People can 'quickly' and temporary come together to rally around an objective. • Shadowing. • Train and cross-train, so that employees are flexible and have the necessary skills.
<i>Capacity</i>
<ul style="list-style-type: none"> • Keep it lean; only a few core staff – use temporary/ flexible labour when needed.
<i>Reward and recognition</i>
<ul style="list-style-type: none"> • Give everyone a chance (instigate accountability and responsibility); show favour to those who are efficient. • Have transparent incentive programs so that people produce and perform to receive - have reason to work and perform. • Make sure staff evaluation and appraisal are fair and objective, and not subject to their immediate managers.
<i>Structure and hierarchy</i>
<ul style="list-style-type: none"> • Use a flat(ter) hierarchy – increase people's share of the pie. • Follow an agile structure. • Lean structure.

<i>Culture</i>
<ul style="list-style-type: none"> • Allow people to fail. • Create a space for employees to be creative. • Infuse different thinking and diversity into the organization.
<i>Support and empowerment</i>
<ul style="list-style-type: none"> • Empower people. Don't stand in their way. Think of their growth. Make room for people to advance. • Make sure people can deliver on expectations. • Ensure employees are comfortable asking for help and support. • The entrepreneur leads by example – staff must be able to think, understand and work like/ with the entrepreneur.
<i>Training and development</i>
<ul style="list-style-type: none"> • Skills aren't permanent, they must be continuously updated and acquired.
<i>Communication</i>
<ul style="list-style-type: none"> • Regular team meetings to communicate and share goals and values.
<i>Team work</i>
<ul style="list-style-type: none"> • Encourage collaboration, team work and a family culture. • Incentivize team work. • (Consider potential negative consequences of monitoring or broadcasting team performance - team players may expect a corresponding increase in remuneration, with an increase in team performance.)

4.1.7. Tactical Heuristics

Entrepreneurs are increasingly reconsidering the amount of information they make available. The entrepreneur should establish the permanence/ impermanence and (thus) relevance/ irrelevance of threats and competitors. The entrepreneur should know what he is up against. It may not be necessary to confront competitors. The market may be big enough, competitors may not really pose a threat, and it may even be possible to rather collaborate with competitors.

It is important for the entrepreneur to maintain focus. Overly focusing on the competition may actually serve to distract the entrepreneur. The entrepreneur should maintain focus, particularly on purpose, vision, goals, and values. The entrepreneur should remain focused on his product, improving his product, retaining customers, staying ahead, innovation, value, and customer satisfaction.

The entrepreneur should manage his weaknesses, and build up his strengths. Proper risk analysis and management can already close a lot of gaps, and avoid a lot of problems. He should avoid dependencies, and should diversify income streams, to be able to withstand attacks. The entrepreneur can develop product composites – have secondary and primary products that complement, protect and carry each other. The entrepreneur can build partnerships. Again, a lot of resilience lies in the purpose and vision of the business. The reputation of the business equally helps to weather attacks: Being known to deliver value, and having cultivated relationships.

The entrepreneur should be agile. He must be willing to be stretched – take on more, and risk more. He must also be willing to sacrifice some, for the sake of the business. The entrepreneur should take his time to respond, and should consider whether it is truly necessary or wise to respond. The entrepreneur should note what the competitors do, and should identify their strengths and weaknesses. The entrepreneur may simply be able to wait the competitor out, and then capitalize on the competitor's failures and mistakes. He can come up with counter-proposals to the positions that competitors take. The entrepreneur can consider competencies the competitors don't have, or struggle with. He can consider ways to turn competitor attacks back on the competitor. The entrepreneur should have counter measures in place, for when new entrants enter the market.

Table 7. Tactical heuristics

<i>Business intelligence</i>
<ul style="list-style-type: none"> • Only provide as much information as necessary; limit the information you put out there.
<i>Assess and re-evaluate</i>
<ul style="list-style-type: none"> • Temporary solutions, events, conditions, threats, etc – competitors will/ may not be able to keep or hold on to a client, position, etc. • Separate and distinguish irrelevant developments from relevant developments.

<ul style="list-style-type: none"> • Know what you are competing against. • The market may be big enough so that competition is irrelevant. It may be possible to collaborate rather than compete. • A tactical solution may not necessarily be needed for competitors; no need to view competition as negative.
<i>Focus</i>
<ul style="list-style-type: none"> • Monitor the competition, but be aware – the more you look at what your competition is doing, the more narrow minded you become. • Remain focused on the business. • Keep to your purpose, vision, goals, and values. • Focus on the product; stay ahead; put new features in products and release quickly. • Focus on retaining the customer - do far more than you initially planned to do (up your game). • Focus on customer value and satisfaction. • Focus on innovation.
<i>Manage weaknesses</i>
<ul style="list-style-type: none"> • No need for a tactical approach if proper risk analysis, evaluation and assessment are done. • Avoid dependencies. • Diversify; have multiple income streams to withstand attacks.
<i>Develop strengths, defences</i>
<ul style="list-style-type: none"> • Build product composites; have secondary products to complement and to help carry primary products. • Build partnerships. • Being established is a bonus. • Develop purpose – this will give you direction, and keep you from responding impulsively and haphazardly. • Work on a number of things at the same time.
<i>Reputation</i>
<ul style="list-style-type: none"> • Never promise what you can't deliver; under promise and over deliver. • Relationship driven.
<i>Agility</i>
<ul style="list-style-type: none"> • Be willing to take on more, risk more. • Be willing to lose a bit and sacrifice for the business and its reputation.
<i>Strategy</i>
<ul style="list-style-type: none"> • Don't run down the competition; be confident in and proud of your place, position, and offering. • Take your time to respond, particularly when it is market or competitor related. Quick responses could lead to misinterpretation. • Be mindful of how you perceive and deal with the completion. • Don't go to war if you don't have to – avoid what is weak and what is strong. • Notice what a new competitor is doing; identify their gaps and weaknesses. • Look for the counter proposal to the positions that competitors take. • Turn competitor attacks back on the competitor. • Keep the competition on their toes. Build up competencies the competitors don't have, or struggle with. • Wait the competitor out, and capitalize on the competitor's failures. • Have counter measures when new entrants enter the market (especially when they are competing on price).

5. Discussion

5.1. What constitutes the heuristics base of entrepreneurs? What are the common heuristics entrepreneurs draw from?

5.1.1. Heuristics sets

The research considered the heuristics of entrepreneurs in the areas of management, strategy, marketing, sales, HR, and tactics. It became practical to add innovation as field as well.

Management heuristics: Management heuristics involve the entrepreneur as leader (taking charge, and giving direction), project manager (prioritizing and scheduling work), and planner. It is important for the entrepreneur to spend his time wisely, plan capacity, anticipate in order to plan, delegate, and to communicate vision, goals, objectives, etc. The entrepreneur competently manages profitability, risk, and culture. The entrepreneur must thoroughly understand the business, and optimize the systems and processes of the business

(and can not simply run the business from his head). Another crucial component relates to the strength in leadership that the entrepreneur displays.

Innovation heuristics: Strategy forms an integral part of innovation heuristics. It defines how the entrepreneur approaches innovation. Innovation culture and philosophy, particularly with regards to failure, are important for innovation. The entrepreneur should both be led by, and lead the market. Innovation heuristics further entail finding the simplest solution, developing innovative and creative thought, as well as extensive and proper opportunity recognition and evaluation. The entrepreneur should continually evaluate and validate the idea and opportunity, and its premises and assumptions, in and against the market. Innovation must be very focused and aligned with the core business. Timing is very important. The entrepreneur must manage innovation risk, and adoption. Innovation may require strong business reputation.

Strategy heuristics: The ambition, virtue and excellence demonstrated by the entrepreneur, and then vision and purpose, greatly drive, set, and influence strategy. The entrepreneur wants his business to stand out, and leading (markets) forms a principal part of this. The entrepreneur wishes to position his business relative to the industry – present and future. Rather than focusing on (protection from) competitors, the entrepreneur should focus on staying ahead through: value, customer satisfaction, brand, and innovation. The entrepreneur should avoid crowded markets and commodities. Strategic fit and focus, foresight, agility, and the entrepreneur's understanding of the business and its environment, further define strategy heuristics. The entrepreneur must stay abreast of developments, and must continually (re-)evaluate strategy. It is important to monitor strategy and strategy implementation, and to communicate strategy. Competitor strategy entails studying competitors, understanding their business, knowing in which way competitors are ahead of the business, avoiding price competition, positioning relative to competitors, and clear value proposition. The entrepreneur must consider how technology can advance the business, and can build up strategic resources. Strategy equally involves risk management, sustainability, and personal strategy.

Marketing heuristics: With regards to marketing heuristics, the entrepreneur should choose and manage his customers. Marketing to existing customers generally forms a good starting point. The entrepreneur must consider exactly where in the value or supply chain to sell. The entrepreneur can further focus on being customer-centred, customer relationships, and customer satisfaction. It should be easy for customers to derive the benefits of the entrepreneur's products. The entrepreneur must maximize and then capitalize on customer interaction. The entrepreneur should collect customer feedback, to investigate both what the business is good at, and not good at. The business needs a clear position through products, brand and reputation, and must communicate its value proposition to customers. The entrepreneur must ensure he has a unique value proposition, that he remains relevant, and that he knows the market, and the developments in the market. The entrepreneur must find a way to differentiate, and must look to build value into more than just the direct product. He must adapt his value proposition to different customer segments. A number of marketing strategies further extend the heuristics set.

Sales heuristics: Sales heuristics advocate that the entrepreneur develops some idea of what he can sell realistically. There are ways through which the entrepreneur can improve sales forecasts. The entrepreneur should pay attention to sales that come in, and don't come in, as well as growth rates. The entrepreneur must ensure that customers know about the business and its products. Customer interaction serves to build customer relationships. Sales should predominantly be through establishing and building connections. The entrepreneur must segment the market, and must be very clear about the customers he is targeting. Perception and reputation always make selling easier. In this regard, a strong brand, clear value proposition, and vibrant products are important. Story-telling and social causes can help customers associate and relate with the business and its products. Knowing what competitors are selling, improves and contributes to uniqueness and competitiveness. A number of typical sales strategies round off the sales heuristics set.

HR heuristics: Staff and therefore recruitment are critically important to the business. People (one person) can sink the business. Productivity and performance are managed through a combination of remuneration, performance monitoring and appraisal, motivation, encouragement, coaching, and training. It must be ensured that people are adequately incentivized. There are a number of ways through which the entrepreneur can ensure flexibility and capacity. Recognition and reward, well managed, can significantly contribute to performance. A flat hierarchy, and agile and lean structure, generally perform well. The entrepreneur is responsible for the culture of the business. The culture must encourage and support creativity, as well as failure. The entrepreneur should incorporate different thinking and diversity into the organization. People must be empowered, and their growth and development considered. It must be ensured that employees have everything they need, and are capable of delivering what is required of them. Employees must be comfortable asking for help and support. The example the entrepreneur sets is very important, and employees must be able to work with the entrepreneur. The skills of the business must be continuously developed.

Communication within the business is very important, particularly communication of goals, vision, and values. The entrepreneur should encourage and incentivize collaboration and team work.

Tactical heuristics: The entrepreneur should establish the relevance of threats and competitors, and should consider whether it is necessary to confront competitors. It is important for the entrepreneur to maintain focus. Overly focusing on the competition may actually serve to distract the entrepreneur. Focus involves purpose, vision, goals, and values, products, customers, innovation, value, customer satisfaction, and staying ahead. The entrepreneur should manage his weaknesses, and build up his strengths. Proper risk analysis and management can already close a lot of gaps, and avoid a lot of problems. Avoiding dependencies, diversifying income, partnerships, reputation, customer relationships, agility, etc, increase resilience and the ability to weather attacks. The entrepreneur should take his time to (decide how to) respond. The entrepreneur should note what the competitors do, and should identify their strengths and weaknesses. There are a number of ways to counter competitor moves.

5.1.2. Characteristics of the Heuristics Set

The overall or grand heuristics set is evidently extensive, and demonstrates significant business acumen. Of the areas studied, there is not really a single area that can be described as lacking or under-developed. The heuristics set also contains a level of sophistication that previous studies generally failed to surface and highlight.

Although there are a number of unique and very original heuristics of note, particularly under strategy, marketing, and competition, the heuristics set equally represents a set one would also expect from business leaders. There may not be a big and significant difference between the heuristics sets of entrepreneurs and business leaders, because they both face similar conditions and challenges. The argument can be made that entrepreneurs may be more involved and experienced in innovation than business leaders, but at the same time, this may be questioned, given that business leaders are equally expected to innovate.

A number of deductions and inferences are also possible through the way the entrepreneurs (interviewees) responded:

The interviewees were not always aware and cognizant of the heuristics they use, and some were reluctant to acknowledge such, but once they reflected on these, through the prompting of the interview, it became apparent, also to them. This also indicates that entrepreneurs are not always further developing their thinking, particularly through reflection.

The heuristics set is the accumulation of all the interviewees' heuristics, and no one entrepreneur actually possesses such an extensive set. At the same time, some entrepreneurs are very developed, overall and in terms of heuristics, and may not be too far from the grand set. Others are not that strong, and may still have a long way to go, before they would reach such a stage.

Entrepreneurs generally tend to naturally perform well in heuristics that are related to and within their areas of expertise or interest. Conversely, entrepreneurs also tend to be poor in heuristics that are contrary to their areas of development and interest. Thus, cognitive orientation, setup or disposition plays a role.

Entrepreneurs may learn and develop heuristics through experience. An entrepreneur may become experienced in an heuristic, not necessarily because it is related to an area of interest, etc, but simply because the entrepreneur has gained extensive experience in that area.

Education significantly aids the development of heuristics. Education may provide the foundation and flower bed that heuristics build on and grow from.

Some entrepreneurs recognize the areas in which they lack, whilst others do not. Some take the additional step of obtaining help, assistance, expertise and consultation in that area. This then typically negate the shortcomings of the entrepreneur in that regard. It can be said that the consultant or expert lends his heuristics to the entrepreneur for a time.

Some pick up, borrow and learn heuristics from others. The entrepreneur recognizes a heuristic applied by someone more skilled in that particular area than himself, and then adopts the heuristic himself.

6. Conclusion

The study considered and investigated the heuristics of entrepreneurs in the fields of management, strategy, innovation, marketing, sales, HR, and tactics.

Overall, a very sophisticated heuristic set was surfaced. None of the areas studied can be described as under-developed. The sophistication of the heuristic sets contrasts strongly with previous research on entrepreneurs' heuristics. Although impressive, comprehensive, and original, the heuristics set may not be truly distinct from the typical heuristics set of business leaders.

Entrepreneurs did not always and initially acknowledge their use of heuristics. Entrepreneurs may also not be actively reflecting on and developing their thinking at all times. Entrepreneurs differ in terms of the level of maturity, comprehensiveness or sophistication they have reached in terms of heuristics they consider and use. Entrepreneurs demonstrate natural proficiency and deficiency in terms of heuristics pertaining to areas they excel in and struggle with, respectively. Entrepreneurs may develop heuristics through experience. Education impacts the development of heuristics. Some entrepreneurs make up for the areas in which they lack, by seeking help, assistance, expertise, etc. Entrepreneurs may also pick up and learn heuristics from others.

6.1. Future Research

Future research can look at the following:

- The heuristics set or base studied. This study considered a very basic heuristics set, by taking the general areas of business and management. More specialist heuristics sets, and more eccentric heuristic sets can be considered. In many ways, an heuristics set represents a certain way of thinking and philosophy, such that a comparison of heuristics sets across 2 disciplines constitutes a comparison of thinking and philosophy. For instance, significant overlap is expected between the heuristics utilized by medical professionals as well as detectives, and entrepreneurs.
- The learning and adoption of heuristics: Examining in greater detail how entrepreneurs (etc.) learn heuristics. Factors and sources that may be relevant in this case, include experience, education, mentors, experts, etc. Also of interest would be how quickly heuristics can be learned, and whether heuristics can speed up learning and gaining experience in any way.
- The extent and development of the heuristics sets of novice entrepreneurs. Examining the heuristics sets of novice entrepreneurs, gaps and patterns in this regard, as well as how novice entrepreneurs respond to and benefit from heuristics teaching – the impact heuristics development has on entrepreneurs' performance.
- The relationship between heuristics sets and entrepreneurship level (of expertise and maturity): to what extent does development of heuristics sets explain entrepreneurs' expertise, and maturity.
- The impact of heuristics set/ development on entrepreneurial performance: similarly, to what extent does development of heuristics sets explain entrepreneurs' performance.
- A measure of the heuristics development (level) of an entrepreneur, etc.
- The formulation of heuristics. A very relevant, yet potentially impractical question is whether the heuristics set composed here - or that can be composed through researching entrepreneurs - is comprehensive. It may be difficult to assess such a question or proposition, and the question or proposition also accompanies certain philosophical positions. A more practical question may simply be to focus on how people formulate, acquire, develop, learn, heuristics – that is, construct new heuristics.

References

- Abbass, H.A., Baker, S., Bender, A. and Sarker, R., 2006. Identifying the fleet mix in a military setting. *The Second International Intelligent Logistics Systems Conference*, Port of Brisbane, Australia, 22 February 2006 (pp. 22-23).
- Aberdeen, D., Thiébaux, S. and Zhang, L., 2004. Decision-theoretic military operations planning. *International Conference on Automated Planning and Scheduling*, Whistler, British Columbia, Canada, June 3-7, 2004.
- Albers, S., 2000. Impact of types of functional relationships, decisions, and solutions on the applicability of marketing models. *International Journal of Research in Marketing*, 17(2), pp.169-175.
- Alspaugh, T.A., Antón, A.I., Barnes, T. and Mott, B.W., 1999. An integrated scenario management strategy. *Requirements Engineering, 1999. Proceedings. IEEE International Symposium*, Limerick, Ireland, 7-11 June 1999 (pp. 142-149).
- Alvarez, S.A. and Busenitz, L.W., 2001. The entrepreneurship of resource-based theory. *Journal of management*, 27(6), pp.755-775.
- Amit, R. and Schoemaker, P.J., 1993. Strategic assets and organizational rent. *Strategic management journal*, 14(1), pp.33-46.
- Artinger, F., Petersen, M., Gigerenzer, G. and Weibler, J., 2015. Heuristics as adaptive decision strategies in management. *Journal of Organizational Behavior*, 36(S1).
- Ash, R.C., 1999. Activity scheduling in the dynamic, multi-project setting: Choosing heuristics through

- deterministic simulation. *Simulation Conference Proceedings, 1999 Winter IEEE*, Vol. 2, pp. 937-941, Phoenix, AZ, USA, USA, 5-8 Dec. 1999.
- Balakrishnan, P.V. and Jacob, V.S., 1996. Genetic algorithms for product design. *Management Science*, 42(8), pp.1105-1117.
- Bertini, E., Gabrielli, S. and Kimani, S., 2006. Appropriating and assessing heuristics for mobile computing. *Proceedings of the working conference on Advanced visual interfaces*, Venetia, Italy, May 23-26 2006, (pp. 119-126).
- Bingham, C.B., Eisenhardt, K.M. and Furr, N.R., 2007. What makes a process a capability? Heuristics, strategy, and effective capture of opportunities. *Strategic Entrepreneurship Journal*, 1(1-2), pp.27-47.
- Borin, N., Farris, P.W. and Freeland, J.R., 1994. A model for determining retail product category assortment and shelf space allocation. *Decision sciences*, 25(3), pp.359-384.
- Brannon, L.A. and Carson, K.L., 2003. The representativeness heuristic: influence on nurses' decision making. *Applied Nursing Research*, 16(3), pp.201-204.
- Busenitz, L.W. and Barney, J.B., 1997. Differences between entrepreneurs and managers in large organizations: Biases and heuristics in strategic decision-making. *Journal of business venturing*, 12(1), pp.9-30.
- Chevalier, J.A. and Mayzlin, D., 2006. The effect of word of mouth on sales: Online book reviews. *Journal of marketing research*, 43(3), pp.345-354.
- Chick, S., Sánchez, P.J., Ferrin, D. and Morrice, D.J., 2003. ROUTING HEURISTICS FOR MULTI-SKILL CALL CENTERS. *Proceedings of the 2003 Winter Simulation Conference*. New Orleans, LA, USA, 7-10 Dec. 2003.
- Chillarege, K.A., Nordstrom, C.R. and Williams, K.B., 2003. Learning from our mistakes: Error management training for mature learners. *Journal of business and psychology*, 17(3), pp.369-385.
- Colbert, B.A., 2004. The complex resource-based view: Implications for theory and practice in strategic human resource management. *Academy of Management Review*, 29(3), pp.341-358.
- Cossette, P., 2014. Heuristics and cognitive biases in entrepreneurs: a review of the research. *Journal of Small Business & Entrepreneurship*, 27(5), pp.471-496.
- Cox, A.D. and Summers, J.O., 1987. Heuristics and biases in the intuitive projection of retail sales. *Journal of Marketing Research*, pp.290-297.
- Dawar, N. and Parker, P., 1994. Marketing universals: Consumers' use of brand name, price, physical appearance, and retailer reputation as signals of product quality. *Journal of Marketing*, 58(2), pp.81-95.
- Dzyabura, D. and Hauser, J.R., 2011. Active machine learning for consideration heuristics. *Marketing Science*, 30(5), pp.801-819.
- Elms, D.G. and Brown, C.B., 2013. Intuitive decisions and heuristics—an alternative rationality. *Civil Engineering and Environmental Systems*, 30(3-4), pp.274-284.
- Foss, N.J., Klein, P.G., Kor, Y.Y. and Mahoney, J.T., 2008. Entrepreneurship, subjectivism, and the resource-based view: toward a new synthesis. *Strategic Entrepreneurship Journal*, 2(1), pp.73-94.
- Gaudelli, W., 2009. Heuristics of global citizenship discourses towards curriculum enhancement. *Journal of Curriculum Theorizing*, 25(1), pp.68-85.
- Guercini, S., La Rocca, A., Runfola, A. and Snehota, I., 2015. Heuristics in customer-supplier interaction. *Industrial Marketing Management*, 48, pp.26-37.
- Hackman, J.R. and Wageman, R., 1995. Total quality management: Empirical, conceptual, and practical issues. *Administrative science quarterly*, 40 (2), pp.309-342.
- Hauser, J., 2011. A marketing science perspective on recognition-based heuristics (and the fast-and-frugal paradigm). *Judgment and Decision Making*, 6(5), p.396.
- Hauser, J.R., 2014. Consideration-set heuristics. *Journal of Business Research*, 67(8), pp.1688-1699.
- Holstius, K. and Malaska, P., 2014. Advanced strategic thinking: visionary management. [online] Available at: <https://www.utupub.fi/handle/10024/97004> [Accessed on 11 March 2019].
- Ireland, R.D., Hitt, M.A. and Sirmon, D.G., 2003. A model of strategic entrepreneurship: The construct and its dimensions. *Journal of management*, 29(6), pp.963-989.
- Keebler, J.R., Jentsch, F., Fincannon, T. and Hudson, I., 2012, March. Applying team heuristics to future human-robot systems. *Proceedings of the seventh annual ACM/IEEE international conference on Human-Robot Interaction*, Boston, Massachusetts, USA — March 05 - 08, 2012 (pp. 169-170).
- Kimms, A. and Muller-Bungart, M., 2006. Revenue management for broadcasting commercials: the channel's problem of selecting and scheduling the advertisements to be aired. *International Journal of Revenue Management*, 1(1), pp.28-44.

- Knighton, R.J., 2004. The psychology of risk and its role in military decision-making. *Defence Studies*, 4(3), pp.309-334.
- Kuratko, D.F. and Audretsch, D.B., 2009. Strategic entrepreneurship: exploring different perspectives of an emerging concept. *Entrepreneurship Theory and Practice*, 33(1), pp.1-17.
- Lockshin, L. and Cohen, E., 2011. Using product and retail choice attributes for cross-national segmentation. *European Journal of Marketing*, 45(7/8), pp.1236-1252.
- Lyytinen, K., Mathiassen, L. and Ropponen, J., 1998. Attention shaping and software risk—a categorical analysis of four classical risk management approaches. *Information Systems Research*, 9(3), pp.233-255.
- Manimala, M.J., 1992. Entrepreneurial heuristics: A comparison between high PL (pioneering-innovative) and low PI ventures. *Journal of Business Venturing*, 7(6), pp.477-504.
- Merlo, O., Lukas, B.A. and Whitwell, G.J., 2008. Heuristics revisited: Implications for marketing research and practice. *marketing theory*, 8(2), pp.189-204.
- Mishra, M., Das, A., Kulkarni, P. and Sahoo, A., 2012. Dynamic resource management using virtual machine migrations. *IEEE Communications Magazine*, 50(9), p.1.
- Pahl-Wostl, C. and Ebenhöf, E., 2004. Heuristics to characterise human behaviour in agent based models. *9th International Congress on Environmental Modelling and Software*, 146, Fort Collins, USA, June 24-28, 2004.
- Petropoulos, F., Nikolopoulos, K., Spithourakis, G.P. and Assimakopoulos, V., 2013. Empirical heuristics for improving intermittent demand forecasting. *Industrial Management & Data Systems*, 113(5), pp.683-696.
- Reed, M.R. and Robbins, L.W., 1985. The Relationship Between Managerial Heuristics and Economics in Pricing Retail Meats. *Journal of Agricultural and Applied Economics*, 17(2), pp.87-96.
- Roch, S.G., Lane, J.A., Samuelson, C.D., Allison, S.T. and Dent, J.L., 2000. Cognitive load and the equality heuristic: A two-stage model of resource overconsumption in small groups. *Organizational behavior and human decision processes*, 83(2), pp.185-212.
- Shang, J., Yildirim, T.P., Tadikamalla, P., Mittal, V. and Brown, L.H., 2009. Distribution network redesign for marketing competitiveness. *Journal of Marketing*, 73(2), pp.146-163.
- Sirmon, D.G. and Hitt, M.A., 2003. Managing resources: Linking unique resources, management, and wealth creation in family firms. *Entrepreneurship theory and practice*, 27(4), pp.339-358.
- Venkataraman, S. and Sarasvathy, S.D., 2001. Strategy and entrepreneurship: Outlines of an untold story. *SSRN Electronic Journal*. doi: 10.2139/ssrn.275186
- Wickham, P.A., 2003. The representativeness heuristic in judgements involving entrepreneurial success and failure. *Management Decision*, 41(2), pp.156-167.
- Williams, B.S., 2010. Heuristics and Biases in Military Decision Making. *Military Review*, 90(5), p.40.
- Wright, P.M. and Snell, S.A., 1998. Toward a unifying framework for exploring fit and flexibility in strategic human resource management. *Academy of management review*, 23(4), pp.756-772.
- Wright, M., Hoskisson, R.E., Busenitz, L.W. and Dial, J., 2000. Entrepreneurial growth through privatization: The upside of management buyouts. *Academy of Management Review*, 25(3), pp.591-601.
- Wübben, M. and Wangenheim, F.V., 2008. Instant customer base analysis: Managerial heuristics often “get it right”. *Journal of Marketing*, 72(3), pp.82-93.

