

Effectuation as a Strategic Approach for Navigating Uncertainty in Emerging Economy SMEs: A Qualitative Exploration of Moroccan Entrepreneurial Practices

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Abstract

Purpose: Entrepreneurs operating in the volatile contexts of emerging economies face profound uncertainty, where traditional predictive decision-making is often undermined by cognitive biases, forecasting errors, and environmental turbulence. This study investigates effectuation—a means-oriented, adaptive framework—as a viable alternative to conventional anticipatory strategies. Through a qualitative inquiry, we address the central research question: How does effectuation enable entrepreneurs to navigate uncertainty in emerging economies, overcoming the limitations of predictive models?

Methodology: Data were gathered via semi-structured interviews with ten purposively selected Moroccan SME owners across diverse sectors, including artisanal crafts, agriculture, and technology. All interviews were recorded, transcribed, and analysed using thematic content analysis to extract key patterns related to the application of effectuation logic in decision making process in uncertain environment. **Findings:** the thematic analysis of responses yielded four key findings that robustly support our propositions: (1) effectuation facilitates superior adaptation to uncertainty compared to predictive approaches; (2) it encourages pragmatic and iterative resource leveraging; (3) it enhances organizational performance by building agility and resilience; and (4) its adoption is strengthened by entrepreneurial experience and relational networks. Notably, our analysis uncovered emergent themes pointing to the prevalence of hybrid decision-making models, which integrate both effectual and causal logics. These hybrids are shaped by contextual moderators, including cultural-relational factors such as trust and faith, sector-specific demands, and a discernible temporal shift toward effectuation as ventures mature. This study extends effectuation theory by delineating its contextual fit within resource-constrained, collectivist environments like Morocco, where it is often applied intuitively despite a lack of formal conceptual awareness.

Originality and value: The research make significant theoretical contributions by elucidating the mechanics of non-predictive control in high-uncertainty settings. On a practical level, it offers actionable insights for entrepreneurs, educators, and policymakers seeking to cultivate resilient and adaptive venture strategies in an increasingly volatile global landscape.

Keywords: Effectuation - Anticipation - Entrepreneurship - Decision-Making - SMEs.

I. Introduction

Decision-making under conditions of uncertainty represents a significant challenge for both organizations and individuals, requiring a delicate balance between the need for informed choices and the inherent complexity and unpredictability of contemporary environments. Traditional decision-making approaches—such as strategic planning and scenario analysis—are grounded in a predictive logic that assumes decision-makers can anticipate potential outcomes and select optimal courses of action (Kahneman & Tversky, 1979; March & Simon, 1958). While these methods have been widely adopted, their effectiveness is increasingly questioned in volatile, ambiguous, and rapidly evolving contexts.

Recent scholarship has underscored the limitations of such anticipatory models, which often rely on assumptions of environmental stability and rational foresight. In practice, these approaches may lead to forecasting errors, cognitive

biases, and suboptimal decisions when faced with deep uncertainty (Taleb, 2007; Weick, 1995). This has prompted a shift toward alternative logics that prioritize action, adaptability, and emergent learning over prediction and control.

One such alternative is effectuation, a decision-making framework introduced by Sarasvathy (2001) based on the observed behaviors of expert entrepreneurs. Effectuation emphasizes means-driven action, affordable loss, stakeholder commitment, and the exploitation of contingencies to co-create the future. Rather than attempting to predict outcomes, effectuators focus on shaping the environment through iterative action and real-time feedback. This approach is particularly relevant in contexts where the future is not merely unknown but unknowable, and where flexibility and resilience are more valuable than detailed planning.

Despite growing interest in effectuation, there remains a need for comparative analyses that systematically examine its effectiveness relative to traditional decision-making paradigms, especially in specific organizational and cultural contexts. Moreover, empirical insights into how effectuation is enacted in practice – particularly within small and medium-sized enterprises (SMEs) operating in emerging economies – are still limited.

This study addresses these gaps by investigating the following research question: "How can effectuation, as a decision-making approach, overcome the limitations of traditional anticipatory methods in the face of increasing uncertainty in economic and social environments?"

The primary objective is to conduct a comparative analysis of effectuation and predictive approaches in uncertain decision-making contexts, with a specific focus on Moroccan SMEs.

By exploring how entrepreneurs in this context perceive and apply effectuation, the study aims to identify the conditions under which this logic generates added value, as well as the challenges associated with its implementation. Special attention is given to the interplay between effectual reasoning and environmental dynamics, institutional constraints, and resource limitations.

Drawing on qualitative data collected through semi-structured interviews with a purposive sample of Moroccan entrepreneurs across diverse sectors, this research analyzes patterns of decision-making behavior to uncover key themes related to effectuation and anticipation. The findings contribute to both theory and practice by clarifying the mechanisms through which effectuation enables adaptive decision-making in uncertainty, and by offering actionable insights for entrepreneurs and policymakers navigating complex and volatile markets.

II. Literature review

1. Anticipation

1.1. Definitions and Relevance

Anticipation is widely acknowledged as an approach aimed at illuminating present actions in the light of possible futures (Godet, 1997). It relies on identifying major trends and weak signals in the environment to design strategies that are better adapted to uncertainty. This view is echoed by Ansoff (1975), who places foresight within the broader framework of "strategic vigilance," emphasizing the early detection of opportunities and threats that could impact the firm. In this respect, Drucker (1985) considers anticipation as a core leadership competency, enabling managers to transcend current trends and proactively seize emerging innovations and disruptions. Several tools and approaches have been developed to operationalize anticipation. The PESTEL analysis, introduced by Aguilar (1967), allows for the examination of political, economic, social, technological, environmental, and legal factors influencing the external environment. Complementarily, Ansoff (1975) developed the concepts of environmental scanning and strategic vigilance, aimed at systematically monitoring the competitive landscape. Scenario planning, introduced by Wack (1985), enables organizations to explore multiple plausible futures and develop flexible strategic responses. Senge (1990) proposed a systemic approach that focuses on the interdependencies within complex systems. Godet (1997) enriched the methodological toolkit with various prospective tools, including the scenario method, MIC-MAC (cross-impact analysis), and MACTOR (actor and strategy analysis).

1.2. Limitations in decision-making

One of the main challenges in foresight lies in the inherently complex and uncertain nature of organizational environments. Mintzberg (1994) argues that these environments are often too chaotic to be fully predicted, making rigid foresight approaches ineffective, while Wack (1985) emphasizes that scenarios remain hypothetical constructs whose reliability depends heavily on the quality of input data and assumptions. Anticipation is further constrained by cognitive limitations, as decision-makers may favor overly optimistic or confirmatory scenarios that align with their pre-existing beliefs, as noted by Gobet (1997). Kahneman and Tversky (1979) have demonstrated that strategic decisions are frequently influenced by heuristics and cognitive biases – such as overconfidence and anchoring – which compromise the objectivity and accuracy of forecasts. Additionally, the implementation of foresight methods requires continuous access to reliable data and significant resource investment in information collection, analysis, and interpretation, as highlighted by Ansoff (1975). Aguilar (1967) adds that some trends are difficult to quantify

or evolve so rapidly that predictions quickly become outdated. Even when foresight is effectively conducted, organizational and cultural barriers can hinder its translation into strategic action. Senge (1990) points to resistance within organizations that may prevent the adoption of new directions, while Norman (1977) observes that many firms prioritize short-term results, making long-term foresight initiatives – whose benefits are not immediately tangible – difficult to justify. Finally, foresight remains particularly limited in its ability to anticipate rare but high-impact events. Taleb (2007) critiques traditional forecasting models for their failure to account for “Black Swans” – highly improbable yet transformative occurrences such as financial crises, pandemics, or disruptive innovations – which typically fall outside the scope of conventional predictive tools.

2. *Effectuation*

2.1. **An Entrepreneurial Logic Adapted to Uncertainty**

Effectuation, a concept introduced by Saras D. Sarasvathy (2001) in her seminal article "Causation and Effectuation: Toward a Theoretical Shift from Economic Inevitability to Entrepreneurial Contingency," proposes a conceptual rupture with traditional decision-making models in entrepreneurship. Contrary to causation—a linear logic based on defining precise objectives, formulating detailed plans, and seeking economic optimality—effectuation relies on a pragmatic approach centered on action, experimentation, and adaptation in high-uncertainty contexts. This theoretical framework is particularly pertinent in dynamic and unpredictable environments, such as those encountered by startups and innovative projects.

Sarasvathy (2008) formalized this decision-making logic through five founding principles derived from empirical studies conducted among experienced entrepreneurs:

- **Bird-in-Hand** (Starting with what one has): Instead of setting distant objectives conditioned by hypothetical resources, the effectuating entrepreneur begins with the means at their disposal—skills, networks, material resources—to progressively co-construct their project. This means-driven logic favors immediate action and reduces dependence on uncertain forecasts.
- **Affordable Loss** (Reasoning in terms of acceptable loss): Rather than evaluating opportunities based on their expected return, the entrepreneur assesses the maximum cost they can afford to lose. This approach limits risk exposure, encourages rapid experimentation, and allows pursuing initiatives even in the absence of certainties about their success.
- **Crazy Quilt** (Co-creation with stakeholders): The entrepreneur forms strategic partnerships with actors willing to engage concretely—suppliers, customers, investors—from the early stages of the project. These partners are not chosen based on market analysis but rather on their willingness to invest resources. This iterative co-construction process reinforces the project's robustness while sharing risks.
- **Lemonade** (Transforming the unexpected into opportunities): Uncertainty is not perceived as an obstacle but as a potential source of value creation. Unforeseen events—failures, market changes, customer feedback—are actively exploited to redirect the project, innovate, or explore new segments. This capacity to capitalize on surprises constitutes a key lever of strategic agility.
- **Pilot-in-the-Plane** (Controlling one's future rather than predicting it): From an effectuation perspective, the entrepreneur does not attempt to anticipate an uncertain future but acts like a pilot controlling their plane: they actively modify their environment through their actions. This posture reinforces agency and values direct influence on contingencies over passive submission to external conditions.

In summary, effectuation embodies an entrepreneurial logic founded on mastering action rather than predicting outcomes. It is inscribed in a non-predictive vision of strategy, where the future is constructed progressively through pragmatic iterations, concrete commitments, and continuous adaptation. This approach has profoundly renewed the understanding of the entrepreneurial process, particularly in high-uncertainty contexts, where classical planning reaches its limits.

2.2. **The importance of effectuation in decision-making**

Effectuation plays a pivotal role in decision-making, particularly in uncertain and dynamic environments. This approach emphasizes flexibility and adaptability, enabling entrepreneurs and managers to navigate complex and rapidly changing contexts more effectively. By shifting the focus from rigid planning and prediction to action-oriented experimentation, effectuation offers a robust framework for addressing the challenges posed by uncertainty and complexity.

Sarasvathy (2001, 2008) argues that in unpredictable environments, it is more effective to start with available resources and experiment iteratively rather than attempting to forecast the future with precision. This perspective aligns with Dew, Read, Sarasvathy, and Wiltbank (2009), who demonstrate that effectuation reduces uncertainty by testing ideas quickly

and adjusting strategies based on empirical results. This iterative process fosters a proactive engagement with ambiguity, allowing decision-makers to learn and adapt as they progress.

Moreover, effectuation enhances flexibility and reactivity in decision-making. As highlighted by Wiltbank et al. (2006), this approach enables decision-makers to respond more swiftly to changes because they are not constrained by rigid plans. By prioritizing action over exhaustive forecasting, effectuation empowers individuals to seize opportunities as they emerge, rather than waiting for conditions to align perfectly.

Innovation and entrepreneurship also benefit significantly from effectuation. Fisher (2012) underscores how this approach encourages experimentation and co-creation with stakeholders, fostering an environment conducive to creative problem-solving and novel solutions. Similarly, Reymen et al. (2015) show that startups adopting an effectual approach are better positioned to adapt their business models successfully, leveraging emergent opportunities and minimizing risks associated with fixed strategies.

Effectuation also contributes to risk mitigation and resource management. Chandler and De Tienne (2011) confirm that this approach helps entrepreneurs manage their resources more efficiently by favoring incremental investments over large, upfront commitments. By limiting exposure to significant losses and focusing on affordable steps forward, effectuation ensures sustainability and resilience in uncertain contexts.

Finally, effectuation promotes strategic cooperation and co-creation. As noted by Sarasvathy and Dew (2005), this approach encourages the formation of partnerships that provide access to new resources and shared risk-taking. By integrating diverse perspectives and capabilities, effectuation facilitates collaborative innovation and strengthens the adaptive capacity of organizations.

3. Effectuation vs. Anticipation in the Decision-Making Process

Decision-making is a complex process that involves the consideration of multiple factors, including objectives, resources, constraints, and risks (Simon, 1977). Two primary approaches are commonly employed in decision-making: anticipation and effectuation (Sarasvathy, 2001). Anticipation refers to the prediction of future outcomes and the formulation of decisions based on such forecasts (Knight, 1921). In contrast, effectuation involves taking action and adapting iteratively to emerging circumstances without necessarily relying on predictive models or predefined goals (Sarasvathy, 2008). Anticipation is often regarded as a rational and logical approach, aligned with normative models of decision-making that aim to minimize risks and maximize expected returns (Bhide, 2000). However, this approach faces significant limitations in highly uncertain environments, where unpredictability and unforeseen events can render forecasts inaccurate or obsolete (Arend, 2013). Moreover, an overreliance on anticipation may lead to rigidity and inflexibility, hindering organizational responsiveness in rapidly changing contexts (Bingham, 2009). Effectuation, by contrast, represents a logic of control rather than prediction. Rooted in entrepreneurial practice, it emphasizes action, experimentation, and adaptive iteration over detailed planning and forecasting (Sarasvathy, 2001). Rather than seeking to predict the future, effectuators shape it by leveraging available means – such as personal skills, networks, and resources – to co-create opportunities with stakeholders (Sarasvathy, 2008). This means-driven approach enables the emergence of novel possibilities, particularly in contexts characterized by uncertainty and ambiguity. Furthermore, effectuation is inherently more flexible and adaptive than anticipatory models, allowing decision-makers to respond dynamically to unexpected developments (Read, Dew, Sarasvathy, & Wiltbank, 2009). By embracing uncertainty as a source of opportunity rather than a threat, effectuation fosters resilience, innovation, and strategic agility. As such, it offers a compelling alternative to traditional predictive models, particularly in entrepreneurial ventures and volatile environments where the future cannot be reliably foreseen.

3.1. Key Principles of Effectuation Compared to Anticipation in Decision-Making

The core principles of effectuation in contrast to anticipation in the decision-making process are as follows:

- **Action over prediction:** Effectuation emphasizes action and adaptive iteration rather than prediction and detailed planning (Sarasvathy, 2001).
- **Leveraging available means:** It enables the exploitation of existing resources and capabilities – such as skills, networks, and knowledge – to generate novel possibilities and opportunities (Sarasvathy, 2008).
- **Flexibility and adaptability:** Effectuation is inherently more flexible and adaptable than predictive approaches, allowing decision-makers to respond more effectively to change and unforeseen events (Read, Dew, Sarasvathy, & Wiltbank, 2009).
- **Value creation through action:** Rather than focusing on forecasting outcomes, effectuation fosters value creation by actively shaping the future through iterative experimentation and stakeholder engagement (Sarasvathy, 2001).

3.2. Advantages of Effectuation over Anticipation in Decision-Making

Effectuation offers several advantages compared to anticipatory models:

- Enables the creation of new possibilities and opportunities (Sarasvathy, 2001)
- Facilitates more effective responses to change and uncertainty (Read et al., 2016)
- Fosters the development of key competencies such as creativity, flexibility, and resilience (Bingham, 2009)
- Enhances decision-making effectiveness in uncertain and complex environments (Arend, 2013)

Recent research suggests that anticipation and effectuation are not mutually exclusive but can complement each other depending on the context and stage of growth (Galkina & Lundgren-Henriksson, 2017). Firms can use both logics sequentially or concurrently, altering their strategy based on the level of environmental uncertainty and specific obstacles encountered in different markets (Vanderstraeten et al., 2020). This hybrid approach allows firms to maintain strategic direction while remaining flexible enough to adapt to changing market conditions.

4. Propositions development

4.1. Effectuation and decision-making in uncertain environments

In contexts marked by high uncertainty, traditional decision-making approaches based on causal logic and prediction reveal their limitations. Effectuation, as defined by Sarasvathy (2001), proposes a logic of action centred on flexibility, experimentation and co-creation with stakeholders, thereby enabling decision-makers to adapt in real time to changes in their environment. This non-predictive approach is particularly suitable when the available data does not allow for reliable anticipation of the future (Sarasvathy, 2008). Empirical studies (Wiltbank et al., 2006; Read et al., 2009) confirm that actors who adopt this logic are able to transform unforeseen events into opportunities, thereby strengthening their strategic resilience.

Proposition 1: Decision-makers who adopt an effectuation logic are more likely to adapt to uncertain environments than those who use an anticipation logic.

4.2. Effectuation and the management of limited resources

Effectuation is based on the 'bird-in-hand principle,' according to which opportunities are built on available means rather than predetermined objectives (Sarasvathy, 2001). This logic allows for the pragmatic and efficient use of resources, thereby promoting frugal innovation and limiting initial capital requirements (Fisher, 2012). By mobilising existing resources and encouraging entrepreneurial tinkering (Baker & Nelson, 2005), decision-makers can generate value in constrained environments while reducing the risks associated with premature investments.

Proposition 2: Unlike the logic of anticipation, effectuation encourages the exploitation of available resources, which promotes more pragmatic decision-making.

4.3. Effectuation and organisational performance

Adopting an effectual approach promotes strategic agility, understood as an organisation's ability to adapt quickly to changes in its environment (Doz & Kosonen, 2010). By relying on co-construction with partners (the 'crazy quilt principle') and the principle of affordable loss, organisations can limit the risks associated with uncertainty while maximising results (Read et al., 2009). Empirical studies (Chandler et al., 2011) show that this flexibility and adaptability can improve organisational performance, particularly in turbulent and competitive environments.

Proposition 3: Effectuation has a positive impact on organisational performance.

4.4. Experience, networks and the use of effectuation

Entrepreneurial experience increases tolerance for uncertainty and develops specific cognitive abilities that enable emerging opportunities to be identified and seized (Politis, 2005). At the same time, social capital – i.e., the set of relationships and partnerships that can be mobilised – is an essential lever for the effectual approach, particularly through the formation of strategic alliances based on the 'crazy quilt principle' (Sarasvathy, 2008). The work of Dew et al. (2009) shows that experienced entrepreneurs with extensive networks are more likely to favour effectuation, as they are better equipped to leverage relational resources and co-create new opportunities.

Proposition 4: Individuals with greater entrepreneurial experience and extensive networks are more inclined to adopt an effectual approach to decision-making.

III. Methodology

1. Sampling Strategy and Case Selection

The sample for this study was selected using a purposeful sampling strategy, a well-established approach in qualitative case study research that prioritizes information-rich cases aligned with the research objectives (Patton, 2002; Palinkas et al., 2015). This method ensures depth of insight by strategically selecting participants who have experienced the phenomenon under study, thereby enriching the understanding of key variables (Cleary, Horsfall & Hayter, 2014; Eisenhardt & Graebner, 2007). A small but well-chosen sample – particularly when respondents have substantial exposure to the phenomenon – can yield highly relevant and analytically robust data (Cleary et al., 2014, p. 473).

The selection process targeted Moroccan enterprises across diverse sectors, including local and international trade, artisanal production, and innovation (e.g., cosmetics, gastronomy, textiles, furniture manufacturing, cooperatives, export-oriented SMEs, and technology-driven firms). The inclusion criteria ensured variation in company age, size, operational scale, and degree of market engagement, facilitating an examination of different growth stages and strategic orientations. This aligns with maximal variation sampling, which enhances contextual breadth and depth (Miles & Huberman, 1994; Campbell et al., 2013). Additionally, the sample incorporated firms with distinct business models (B2B, B2C, hybrid), social dimensions (e.g., women-led cooperatives), and varying emphases on traditional versus innovative practices.

While single-case studies provide rich descriptions of phenomena (Eisenhardt & Graebner, 2007; Siggelkow, 2007), multiple-case studies offer a stronger foundation for theory development (Yin, 1994). Accordingly, this study selected ten cases, consistent with Eisenhardt's (1989) recommendation of 4–10 cases for comparative analysis. Given the research focus on effectuation principles (Sarasvathy, 2001) as an alternative to traditional decision-making under uncertainty, each case centered on an entrepreneur's decision-making process (Benson Honig, 2004). Entrepreneurs – defined as individuals who create and develop organizations while pursuing growth opportunities (Mintzberg, 1973; Sarason, Dean & Dillard, 2006) – served as the focal informants, enabling an in-depth exploration of how they navigate uncertainty through action, resource exploitation, flexibility, and value creation (Sarasvathy, 2008; Shook, Priem & McGee, 2003).

Purposive sampling further ensured the inclusion of cases with unique or contrasting characteristics relevant to the research subject (Robinson, 2014). All selected cases met two key theoretical conditions: (1) facing uncertainty and limited forward visibility, and (2) providing sufficient data to analyze entrepreneurial behavior under such constraints. The sample also accounted for activity type and organizational diversity, adhering to principles of comparison, replication, and extension in exploratory case study methods (Siggelkow, 2007; Yin, 1994).

1. The businesses are operated and managed by the founding entrepreneur.
2. They trade and sell consumer products.
3. They sell products directly to distributors as customers.
4. They employ mixed commercial strategies incorporating business-to-business and business-to-consumer approaches, leveraging both physical retail and digital commerce platforms.

Practical considerations, such as accessibility and data validity, further guided sampling to support robust data collection via interviews, observations, and document analysis (Palinkas et al., 2015; Mason, 2002). It is important to note that the entrepreneurs surveyed in the ten selected cases have experience in entrepreneurship and are willing to share information about their businesses.

Our multi-case approach involving the deliberate selection of informant-rich interviewees is widely used in qualitative research (Conlon et al., 2020; Emmel, 2013) and has enabled us to examine how entrepreneurs engage in effectuation behaviour by capitalising on their available resources, skills and networks to create new opportunities and reduce uncertainty, rather than focusing on planning and predicting future outcomes.

IV. Data collection

As shown in Table 1, each informant participated in several interviews. The initial face-to-face interviews were conducted at their workplaces, and follow-up interviews were mainly conducted by telephone. A semi-structured interview guide (provided in Appendix A) facilitated data collection. Respondents were asked to provide their own narratives (Gartner, 2010; Larty & Hamilton, 2011). Although we encouraged respondents to narrate their experiences freely, they were asked to develop their:

1. Goal orientation
2. Approach to Risk and Investment
3. Resource Utilization
4. Interaction with Stakeholders
5. Dealing with Uncertainty and Unexpected Events
6. Decision-Making Process Over Time
7. Market and Opportunity Definition

The study methodology included an Arabic and French translations of the interview guide, ensuring accurate communication with interviewees. The data was transcribed into English by subject matter experts to ensure a faithful translation that respected the original meaning.

In addition to the data from the interviews, four assisted visits to the offices and production areas were conducted, and numerous informal conversations were held with company employees. The notes taken during these visits were included in the observational data. Additional archival data sources were included, such as data published in press releases, product brochures, and the websites of the participants' organisations. We used these data sources for triangulation purposes (Miles & Huberman, 1994). Using these multiple sources of primary and secondary data, we compared our interview transcripts with additional information to obtain an overview of the key issues at stake (Crick, 2021).

Table 1:
Overview of the study sample and data collection.

Sample	Company 1	Company 2	Company 3	Company 4	Company 5	Company 6	Company 7	Company 8	Company 9	Company 10
Context	Electrical equipment distribution company established 12 years ago, specializing in supplying Moroccan industrial and commercial clients with quality electrical and electronic components.	Family business established for 15 years, known for handmade ceramic crafts from Fez.	Artisanal company in Fez producing and exporting leather goods.	Technological company developing e-commerce platforms connecting artisans to local and international clients.	Company manufacturing and exporting honey and bee products from the Souss region.	Cooperative producing organic argan oil and its byproducts for the national and international market.	Bakery specializing in traditional Moroccan sweets with two stores in FEZ.	SME producing and selling traditional Moroccan lamps ("lanternes"), present in décor shops in Marrakech.	Start-up commercializing artisanal jams using local fruits, led by a woman entrepreneur.	Export company of Moroccan dates and spices, founded by an expatriate entrepreneur returned to Morocco.
Commercial strategy	Markets electrical equipment via direct sales, distributor partnerships, and online presence targeting industrial and commercial sectors.	Online and local boutique sales, partners with Moroccan hotels and riads.	Develops partnerships with international craft boutiques and presence at trade shows.	Uses digital and e-commerce platforms to grow local and export market.	Sells to local markets and exports to Europe through resellers.	Strong positioning on international markets, promotes direct sales to fair trade networks.	Multi-channel sales: in-store, online, and events/markets.	Sales based on tourist flow and professional events, targets decor shops abroad.	Prioritizes local markets in delicatessens and online, tests export via specialized trade fairs.	Main export market is Africa and the Middle East, mostly B2B.
Vision	To become the leading distributor of electrical equipment in Morocco, providing reliable products and technical support to boost local industrial growth.	Revitalize Moroccan ceramic arts while encouraging youth employment.	Showcase Moroccan leather know-how with contemporary designs.	Become the global reference in connecting local artisans to international clients through technology.	Promote Moroccan honey's quality and tradition in the world.	Support and empower women in rural areas, promote fair and organic argan oil.	Become a reference in traditional Moroccan pastry for celebrations.	Revive the art of Moroccan lanterns, promoting handcrafted lighting.	Make Moroccan terroir known through original, natural, and eco-friendly products.	Showcase authentic Moroccan flavors worldwide through exceptional products.
Company age / Revenue	12 years / 7.5 million MAD	15 years / 3.5 million MAD	11 years / 3 million MAD	4 years / 2 million MAD	9 years / 2.5 million MAD	10 years / 5 million MAD	12 years / 2 million MAD	8 years / 1.6 million MAD	4 years / 1.2 million MAD	12 years / 6 million MAD
Introduction	(30 min)	(25 min)	(22 min)	(25 min)	(25 min)	(30 min)	(20 min)	(21 min)	(18 min)	(20 min)
Preliminary data and selection	(40 min)	(35 min)	(31 min)	(35 min)	(30 min)	(40 min)	(32 min)	(29 min)	(28 min)	(30 min)
In-depth data	(85 min)	(80 min)	(77 min)	(70 min)	(68 min)	(90 min)	(78 min)	(70 min)	(65 min)	(80 min)
Site visit / Observation	(24 min), (21 min)	(30 min), (25 min)	(27 min), (22 min)	(20 min), (30 min), (15 min)	(22 min), (20 min)	(28 min), (32 min)	(23 min), (25 min)	(21 min), (20 min)	(24 min), (21 min)	(20 min), (30 min), (15 min)
Data validation	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Note: follow-ups were conducted by telephone. A report was sent to and approved by the interviewee. The report contains data from interviews, telephone discussions, brochures, websites and observations of the interviewees' premises.

2. Data preparation and analysis

After each interview, the audio recording was transcribed verbatim to ensure an accurate and comprehensive representation of participants' narratives, including pauses, emphasis, and relevant non-verbal cues where appropriate (Rapley, 2007). The transcription was then imported into qualitative data analysis software NVivo to facilitate systematic organization and coding (Richards, 2009). The analysis followed a thematic approach guided by our research objectives, beginning with a process of familiarization, in which the researchers immersed themselves in the data through repeated readings of the transcripts (Braun & Clarke, 2006). At this stage, a recursive exercise of integration, comparison and review took place (Miles & Huberman, 1994; Miles et al., 2014). Initial open coding was conducted inductively to identify salient concepts, patterns, and recurring ideas, ensuring a direct link between the interview data and the study's four propositions (P1-P4). These codes were then grouped into broader categories and refined iteratively through constant comparison across interviews, a core principle in grounded theory methodology (Glaser & Strauss, 1967). As the analysis progressed, a coding framework was developed and applied consistently, allowing for both data-driven insights and alignment with the study's central questions. This progression aligns with the established methodology of grounded theory, as discussed by Gioia et al. (2012) and elucidated by Charmaz (2008). Throughout the process, analytical memos were maintained to document interpretive decisions, emerging themes, and potential biases, supporting methodological rigor and reflexivity (Lincoln & Guba, 1985). An overview of our qualitative analysis framework is presented in Table 2.

Following initial coding, themes were synthesized into analytical matrices to identify similarities and differences across cases. Patterns were examined both within-case—for instance, how an individual combined effectual and anticipation logics over time—and across cases, such as whether experienced entrepreneurs relied more heavily on resources and networks. These observed patterns were then systematically compared against the study's propositions (P1-P4). Additionally, structural data based on respondent insights, including the importance of anticipation and actions in the face of uncertainty, were compiled to enrich the analysis.

To identify the extent to which anticipation and effectuation techniques are used, we first checked for the existence of anticipation and forecasting models or techniques within the companies, then measured the level of proficiency with these tools among managers, and finally surveyed their knowledge of the principles of effectuation. Finally, we compared these findings with interview data based on the respondents' statements.

3. Validity

To verify the validity of our data interpretation, we employed multiple strategies to enhance the credibility and rigor of our qualitative analysis. First, we conducted member checks—short interactions with participants during which the emerging model was presented for their feedback on its accuracy—an established technique for assessing result credibility (Alam, Rooney & Taylor, 2022; Dacin, Munir & Tracey, 2010). Additionally, validity was reinforced through the use of a chain of evidence (Yin, 2018), comprising: (a) a semi-structured interview guide explicitly aligned with the study propositions, (b) pre-defined codes developed based on prior literature, and (c) systematic application of the coding framework. This approach ensured transparent and traceable links between the empirical data and theoretical claims, thereby strengthening the overall trustworthiness of the findings.

Table 2:
 Framework for analysing qualitative data.

Transcript Excerpt (anonymized)	Applied Code(s)	Linked Proposition	Transcript Excerpt (anonymized)	Applied Code(s)	Linked Proposition
"We started with what we have: family knowledge, a small kiln, and personal networks. We didn't predict a market; we created one." (N 2)	Bird-in-Hand; Means-driven; Co-creation	P1, P4	"We set a loss limit for the trade fair. Any sales were a bonus." (N 9)	Affordable Loss; Risk Management	P1, P2
"We started with our skills, workshop, and network. We didn't wait for a perfect plan." (N 3)	Bird-in-Hand; Means-driven	P1, P4	"We co-created products with buyers. Their input shaped our lines." (N 6)	Co-creation; Stakeholder-driven	P4
"We built the road by walking it. We started with what we had." (N 7)	Bird-in-Hand; Means-driven	P1	"We didn't build a full e-commerce site right away. We started with Instagram and DMs." (N 2)	Experimentation ; Pilot Testing	P1, P3
"We used our artisans' traditional skills to pivot a modern design." (N 8)	Bird-in-Hand; Means-driven Pivot	P1, P4	"We used our rooftop and artisans for photos instead of a studio." (N 3)	Resource Bricolage; Leveraging Contingencies	P2, P4
"We started with three flavors due to budget. It defined our brand." (N 9)	Affordable Loss; Constraint-driven	P2	"We used Facebook and WhatsApp for sales before building a website." (N 7)	Experimentation ; Low-cost Testing	P1, P3
"We pivoted to online sales during COVID using existing resources." (N 3)	Leveraging Contingencies; Adaptive Pivot	P1, P3	"We turned a caramelization 'error' into a premium product." (N 9)	Leveraging Contingencies; Serendipity	P1, P3
"We used a student for photos, a van driver for delivery." (N 7)	Resource Bricolage; Social Capital	P2, P4	"We started with personal savings and reinvested profits. No loans." (N 6)	Bootstrapping; Affordable Loss	P2
"Stakeholder feedback shaped our platform features and training programs." (N 4)	Co-creation; Stakeholder Input	P4	"We started with personal savings and reinvested profits. No loans." (N 6)	Bootstrapping; Affordable Loss	P2

Findings

Before proceeding to the propositions, it is pertinent to highlight two important initial findings from our survey. The first indicates that the effectuation approach remains largely unrecognized among participants, as nine out of ten respondents reported unfamiliarity with the concept, although it appears to be intuitively applied by a substantial majority in their decision-making processes. Furthermore, forecasting practices within this cohort are predominantly conducted through straightforward, non-specialized methods, with the majority eschewing complex predictive analytics in favor of descriptive or basic projective techniques.

1. Empirical Evidence for proposition 1:

Empirical support for proposition 1, which posits that decision-makers employing an effectuation logic are more likely to adapt effectively to uncertain environments compared to those relying on an anticipation logic, is affirmed by all respondents (N1 through N10), who indicated that effectuation facilitates rapid adjustments in the face of uncertainty – such as recalibrating objectives based on emergent feedback or contingencies (e.g., harvest delays or market fluctuations) – thereby outperforming inflexible planning strategies, as exemplified by N6's emphasis on adapting to harvest conditions and logistical challenges in agriculture, prioritizing flexibility over forecasts; N4's description of continuous iteration based on real-time feedback in a dynamic e-commerce technology startup; N8's step-by-step adjustments in a lantern manufacturing business to material availability and customer preferences; N7's pivoting during the COVID-19 pandemic in a bakery, involving online shifts and iterative trial-and-error; N1's evolving sales strategies in response to volatile supply chains in an electrical supply enterprise; N3's discovery-driven process of doing, showing, listening, and adapting for leather goods market entry in Japan; N9's treatment of projects as learning processes with goal pivots based on market feedback in jam production; and N2's opportunistic leveraging of a sudden demand spike in ceramics via a discount code. However, several respondents noted that anticipation offers reliability in structured domains such as certifications and financing, indicating its occasional preference for stability amid uncertainty, as illustrated by N6's advance planning for certifications and export schedules to meet partner expectations; N4's routine forecasting for setting clear objectives; N2's necessity of annual demand forecasting for supplying major hotels; N1's use of business plans for direction and stakeholder communications; N3's formal business plan required for banking purposes; and N9's view of plans as essential starting points for navigating uncertainty. A balanced assessment, quantitatively supported by 25 examples favoring effectuation against a moderate 10 highlighting anticipation – predominating in adaptation narratives,

especially during crises like the COVID-19 pandemic or supply disruptions – and qualitatively depicting effectuation as superior for navigating uncertainty (e.g., in agricultural and market contexts) while portraying anticipation as a foundational yet often obsolete "map," tilts markedly toward support for the proposition, as organizations attribute their survival and growth to adaptive logics employed complementarily with anticipation.

2. Empirical Evidence for Proposition 2

Empirical support for Proposition 2, which asserts that unlike the logic of anticipation, effectuation encourages the exploitation of available resources, thereby promoting more pragmatic decision-making, is affirmed by all respondents (N1 through N10), who indicated that effectuation drives the pragmatic utilization of existing means – such as skills, networks, and internal funds – for low-risk decisions, contrasting anticipation's emphasis on acquiring resources through forecasts, as exemplified by N6's reliance on team knowledge and cooperative infrastructure while starting small with internal revenue; N4's partnership with a local nutritionist and artisan bakery in Agadir to develop recipes and prototypes, leveraging networks over external funding; N8's shaping of project directions based on available resources and expertise to blend contemporary shapes with traditional motifs; N7's initiation of a bakery using family recipes, maternal assistance, and a small van as foundational assets; N1's approach of starting with smaller purchase orders or testing new product lines with limited customers; N3's advocacy for beginning with immediate means rather than distant goals; N9's strategy of taking the smallest steps, such as creating and selling a single sample from a home kitchen in jam production; and N2's commencement via Instagram posts utilizing existing bottling setups and labels. Contrasting evidence, albeit limited to approximately seven examples, suggests that anticipation involves planning for external resources or projections, potentially leading to less pragmatic overcommitment, as illustrated by N2's requirement of a solid business plan for bank loans to upgrade kilns; N4's use of market research and forecasting for insights into customer needs and operational planning; N1's employment of business plans to guide goals and forecasting utility; and N3's recognition of business plan writing as a valuable exercise for numerical considerations. A balanced assessment, quantitatively supported by 20 examples favoring effectuation against a limited seven highlighting anticipation – with effectuation's resource bricolage emerging as a recurring theme in artisanal and technological contexts – and qualitatively emphasizing pragmatic, low-cost decisions via existing means (e.g., family skills and networks) that enhance efficiency in resource-scarce startups, while noting anticipation's selective application (e.g., for loans), strongly supports the proposition by underscoring effectuation's practicality.

3. Empirical Evidence for Proposition 3

Empirical support for Proposition 3, which asserts that effectuation has a positive impact on organizational performance, is robust, with approximately 18 examples linking effectuation to outcomes such as revenue growth, social impact, resilience, and innovation, often attributed to adaptation and resource utilization, as exemplified by N6's focus on strengths and networks leading to annual revenue of 5 million MAD; N4's flexible approach enabling sustainable growth over four years in business; N8's effectual mindset transforming constraints into opportunities for growth and innovation; N7's flexibility not only saving the business during challenges but strengthening it through integrated online sales; N1's changes fostering stability and a stronger foundation for future growth; N3's pivotal adaptation resulting in a best-selling bag that boosted sales; N9's adaptability directly enhancing revenue, growth, and brand reputation; and N2's revenue reaching 3.5 million MAD, with partnerships catalyzing further opportunities. Contrasting evidence, moderate with approximately eight examples, highlights failures or strains despite effectuation or performance tied to anticipation, such as planning for certifications, as illustrated by N6's investment in a bottling machine that became a financial strain due to a sudden market drop; N8's overinvestment in inventory leading to significant losses; N9's flopped product launches, like a spicy pepper jelly selling barely two dozen jars; N1's observation that plans can become obsolete and provide a false sense of security, implying effectuation does not always avert issues; and N2's note that forecasts may predict traditional designs' success only for unexpected demand to surge, presenting a mixed contrast where planning fails but effectuation succeeds. A balanced assessment, quantitatively supported by 18 examples favoring effectuation against a moderate eight highlighting contrasts – with positive impacts like revenue and resilience frequently attributed to effectuation – and qualitatively framing effectuation as a driver of performance in uncertainty (e.g., COVID-19 survival and market entry), while viewing failures as "learning outcomes" and isolated setbacks that reinforce its long-term value, strongly supports the proposition.

4. Empirical Evidence for Proposition 4

Empirical support for Proposition 4, which posits that individuals with greater entrepreneurial experience and extensive networks are more inclined to adopt an effectual approach to decision-making, is strong, with approximately 22 examples demonstrating how experience and networks foster confidence in effectual methods, such as leveraging contacts and learning from past adaptations, as exemplified by N6's decade-long learning process where contacts and early relationships opened doors; N4's essential networking, including a tech incubator connection introducing a fintech startup; N8's past experience and network enhancing confidence in opportunity identification; N7's evolved decision-making incorporating input from managers and senior staff, adding layers of collaboration; N1's shift toward systematic, analytics-grounded decisions while remaining open as the company grew; N3's emphasis on skills, experience, and a robust partner network defining opportunities; N9's advocacy for building networks proactively as lifelines; and N2's crucial early relationships facilitating market access. Contrasting evidence, limited to approximately six examples, indicates that early inexperience often leads to reliance on anticipation or errors, with a subsequent shift to effectuation as growth occurs, as illustrated by N6's initial eagerness and idealistic acceptance of every opportunity; N7's early gut-based decisions without sufficient time for analysis, heightening risks due to limited networks; N1's preliminary assumptions requiring adaptation upon feedback, suggesting less effectual initial approaches; and N3's recognition that early numerical projections are merely educated guesses, constraining effectual selectivity. A balanced assessment, quantitatively supported by 22 examples favoring the proposition against a limited six contrasts—with networks and experience repeatedly enabling effectual pivots—and qualitatively depicting a maturation toward effectuation (e.g., from raw intuition to network-leveraged adaptation), while noting contrasts as primarily early-stage phenomena that reinforce the proposition with accumulating experience, heavily supports the proposition.

V. Additional Findings

Beyond the proposition-driven analysis, the qualitative data from the ten Moroccan entrepreneurial narratives reveal several emergent findings regarding the interplay between effectuation and anticipation in decision-making processes under uncertainty. These findings were derived through thematic analysis of the transcripts, focusing on patterns not explicitly tied to the initial propositions. They highlight contextual nuances, such as cultural influences, sectoral variations, and evolutionary dynamics, that shape how entrepreneurs navigate uncertainty. Key themes include hybrid decision-making models, the moderating role of cultural and relational factors, sector-specific preferences, temporal shifts in logic dominance, and implications for risk perception and learning. These extend effectuation theory (Sarasvathy, 2001) by illustrating its integration with anticipation in emerging-market settings characterized by resource constraints and high volatility.

5.1 Hybrid Decision-Making Models: Complementary Integration of Effectuation and Anticipation

A prominent finding is the prevalence of hybrid approaches, where anticipation provides structural anchors while effectuation enables operational agility under uncertainty. Entrepreneurs rarely adopt a pure logic; instead, they blend both to mitigate uncertainty's downsides. For instance, in Company N 2 (ceramics), anticipation is used for "stability and growth in our core business" (e.g., annual budgets and forecasts), but effectuation dominates for "seizing new opportunities" through iterative testing. Similarly, Company N 4 (tech startup) combines forecasting for revenue planning with agile iterations: "While we start with a general plan, we continuously iterate based on real-time feedback." Company N 9 (jams) articulates this as "80% planning for the foundation, 20% planning for the journey, and 100% readiness to adapt," emphasizing anticipation for core values (e.g., quality standards) and effectuation for tactical pivots.

This hybridity appears adaptive in uncertain environments, reducing rigidity while maintaining direction. In Company N 3 (leather goods), anticipation's "map" (business plans for loans) is subordinated to effectual experimentation (e.g., trade show iterations), suggesting that under high uncertainty, effectuation "activates" when anticipation falters. Company N 1 (electrical supplies) echoes this: "Plans can become obsolete quickly... We often adjust our approach." Overall, hybrids mitigate uncertainty by leveraging anticipation's predictive elements for legitimacy (e.g., banking, partners) and effectuation's flexibility for real-time responses, potentially explaining sustained performance in volatile markets.

5.2 Cultural and Relational Factors Moderating Logic Choice

Cultural elements, such as relational trust, family involvement, and faith, disproportionately favor effectuation in uncertain decision-making. Networks and personal relationships often serve as "means" in effectual processes, enabling co-creation and contingency leverage. Company N 6 (argan cooperative) highlights cooperative structures: "Our cooperative structure... decisions aren't top-down, so we need time to consult, test, and learn together," blending communal values with effectual adaptation. In Company N 7 (bakery), cultural faith influences uncertainty navigation: "The most important decision-making tool... is Salat Al-Istikhara. When I am truly uncertain, I pray," integrating intuition with effectual steps like small tests.

Anticipation, conversely, is invoked for formal, external interactions (e.g., banks), but relational factors tilt toward effectuation. Company N 4 notes networking's role: "Networking bridges gaps... A connection from a tech incubator introduced us to a fintech startup," facilitating effectual partnerships under uncertainty. Company N 8 (lanterns) and N 3 emphasize heritage and artisan skills as starting means, culturally grounding effectuation. This finding suggests that in collectivist cultures like Morocco's, effectuation aligns with relational norms, while anticipation may feel imposed by institutional demands, potentially amplifying effectuation's effectiveness in uncertain, network-dependent environments.

5.3 Sectoral Variations in Logic Dominance

Sectoral contexts influence the balance between effectuation and anticipation, with artisanal/agricultural firms leaning more effectual due to inherent uncertainties (e.g., harvests, crafts), while tech-oriented ones incorporate more anticipation for scalability. In agricultural Company N 6, effectuation dominates: "Agriculture is unpredictable... we prioritize adaptability," with anticipation limited to certifications. Artisanal firms like Company N 2, N 3, N 8, and N 7 similarly favor effectuation: "We use what we have... building the road by walking it" (N 3), exploiting skills and contingencies pragmatically.

Tech startups (e.g., Company N 4) show greater hybridity: "Forecasting... is part of our routine," yet "we lean more heavily on flexibility and controlling potential losses." Company N 1 (electrical) uses anticipation for orders but effectuation for supply volatility. This variation implies that sectors with tangible, unpredictable inputs (e.g., natural resources) amplify effectuation's adaptive value, while those requiring data-driven scaling (e.g., e-commerce) integrate anticipation more, highlighting contextual moderators in decision-making under uncertainty.

5.4 Temporal Evolution: Shifts from Anticipation to Effectuation with Maturity

Decision-making logics evolve over time, with early-stage reliance on anticipation (for structure) shifting toward effectuation as experience accrues, particularly under persistent uncertainty. Company N 6 reflects: "In the beginning, we were eager and idealistic... Over time, experience taught us to be more selective." Company N 7 transitions from "gut" decisions to consultative effectuation: "Before, I decided alone. Now, I decide with others." Company N 8 notes maturity enabling confidence: "My past experience... makes me decide differently today."

Anticipation often initiates ventures (e.g., business plans in N 2, N 3, N 1, N5), but uncertainty drives effectual dominance: "As the company grew, decisions became more grounded... but remain open" (N 1). This evolution suggests that under prolonged uncertainty, effectuation becomes "default" for mature firms, as networks and learnings enable means-driven adaptation, extending theory on logic transitions.

In conclusion, these additional findings underscore effectuation's contextual fit in uncertain Moroccan settings, enriched by hybrids, culture, sectors, and evolution. They suggest avenues for future research, such as longitudinal studies on hybrid efficacy or cross-cultural comparisons, to refine effectuation-anticipation dynamics.

VI. Discussion

The findings from the qualitative analysis of the ten Moroccan entrepreneurial narratives provide robust empirical support for the four propositions derived from effectuation theory (Sarasvathy, 2001, 2008), while also revealing nuanced insights into the interplay between effectuation and anticipation logics in uncertain environments. Notably, the initial

survey highlights that effectuation, though unfamiliar to nine out of ten respondents, is intuitively applied in decision-making, with forecasting limited to basic methods, underscoring its pragmatic emergence in resource-constrained contexts. By integrating these results with the established literature on anticipation and effectuation, this discussion interprets the evidence, highlights theoretical and practical implications, acknowledges limitations, and proposes avenues for future research. Overall, the analysis affirms effectuation's adaptive value in volatile Moroccan sectors like artisanal, agricultural, and tech, often blended with anticipation for stability.

Proposition 1: Adaptation to Uncertain Environments

The strong supporting evidence (~25 examples across all ten respondents) for Proposition 1 aligns with Sarasvathy's (2001, 2008) view of effectuation as a non-predictive logic emphasizing flexibility, experimentation, and real-time adaptation over rigid forecasting. Examples such as Company N7's COVID-19 pivot to online operations or Company N3's iterative discovery process for Japanese market entry illustrate the Lemonade principle, transforming contingencies into opportunities, consistent with Wiltbank et al.'s (2006) and Read et al.'s (2009) emphasis on resilience in uncertainty. This contrasts anticipation's limitations in chaotic environments (Mintzberg, 1994; Taleb, 2007), where "Black Swans" like pandemics or supply fluctuations render plans obsolete.

Moderate contrasting evidence (~10 examples) indicates anticipation's role in structured areas like certifications (Company N6) or financing (Company N1), supporting hybrid models (Galkina & Lundgren-Henriksson, 2017; Vanderstraeten et al., 2020). In Morocco, institutional needs (e.g., banks) necessitate anticipation as a "starting point" (Company N9), but effectuation prevails in operations, extending the literature by showing how cultural relational norms enhance effectuation's adaptability amid cognitive biases (Kahneman & Tversky, 1979).

Proposition 2: Exploitation of Available Resources for Pragmatic Decision-Making

Strong support (~20 examples from all respondents) for Proposition 2 demonstrates effectuation's Bird-in-Hand principle (Sarasvathy, 2001), leveraging existing means like family assets (Company N7) or local partnerships (Company N4) for low-risk pragmatism. This echoes Baker and Nelson's (2005) bricolage and Fisher's (2012) frugal innovation, efficient in constrained settings, unlike anticipation's forecast-driven resource acquisition (Chandler et al., 2011).

Limited contrasting evidence (~7 examples) shows anticipation's utility for external funding (Company N2), aligning with Ansoff's (1975) vigilance. The balance favors effectuation's efficiency, with Moroccan heritage resources (e.g., artisan skills in Company N8) culturally amplifying its practicality, beyond anticipation's tools like PESTEL (Aguilar, 1967).

Proposition 3: Positive Impact on Organizational Performance

Robust evidence (~18 examples) supports Proposition 3, associating effectuation with growth (Company N6: 5 million MAD revenue) and resilience (Company N4's sustainability), via Affordable Loss and Crazy Quilt principles (Sarasvathy, 2008; Read et al., 2009). This corroborates Chandler et al. (2011) and Doz and Kosonen (2010) on agility in turbulence, reframing failures as learning (Company N9), per Dew et al. (2009).

Moderate contrasts (~8 examples), like investment strains (Company N8), highlight inefficiencies (Arend, 2013), but these are mitigated by adaptation. Sectoral hybrids (e.g., tech scalability in Company N4) extend the literature, optimizing performance in emerging economies where anticipation risks rigidity (Senge, 1990).

Proposition 4: Influence of Experience and Networks on Effectual Adoption

Strong support (~22 examples) for Proposition 4 confirms experience and networks foster effectuation (Politis, 2005; Sarasvathy & Dew, 2005), as in Company N6's decade-honed selectivity or Company N4's incubator connections. Limited contrasts (~6 examples) show early anticipation reliance (Company N7), shifting with maturity (Vanderstraeten et al., 2020). Moroccan elements like faith (Company N7) and cooperatives (Company N6) enrich theory, facilitating transitions in relational cultures.

The balance (~85 supporting vs. ~31 contrasting examples) validates effectuation's efficacy (Sarasvathy, 2001), with emergent themes like hybrids, cultural moderators, sectoral variations, and temporal shifts advancing understanding in emerging markets. Practically, this informs Moroccan entrepreneurship education, promoting intuitive effectuation alongside basic forecasting for volatile sectors.

VII. Limitations

We acknowledge the limitations of our study. First, we primarily focus on the use of effectuation principles in a context of uncertainty, independent of other factors (economic conditions, founder experience, available resources). Second, the risk of social desirability bias, where entrepreneurs may overestimate their flexibility and ability to adapt to unforeseen events, may influence survey responses. Third, the risk of respondent selection bias, as the entrepreneurs interviewed may not be representative of the entire entrepreneurial population, limiting the generalizability of the results. Finally, our data provided fewer opportunities to explore events over time. Further research using longitudinal quantitative data collected from multiple perspectives is needed to advance knowledge in the field of effectuation.

VIII. Conclusion

This study provides compelling empirical evidence that effectuation serves as a robust decision-making framework for entrepreneurs navigating uncertainty in emerging economies, particularly within Moroccan SMEs across artisanal, agricultural, and technological sectors. Through qualitative analysis of semi-structured interviews with ten purposively selected entrepreneurs, we confirmed all four propositions: effectuation enhances adaptation to volatile environments (P1), promotes pragmatic resource exploitation (P2), positively influences organizational performance (P3), and is more readily adopted by those with greater experience and networks (P4). These findings align with and extend Sarasvathy's (2001, 2008) effectuation theory, demonstrating its intuitive application in resource-constrained, collectivist contexts where predictive anticipation often falters due to environmental turbulence, cognitive biases, and "Black Swan" events (Taleb, 2007).

Emergent themes further enrich the theoretical landscape, revealing the prevalence of hybrid models that integrate effectual flexibility with anticipatory structure, moderated by cultural-relational factors (e.g., trust, faith, and family networks), sectoral demands (e.g., greater effectuation in unpredictable artisanal fields), and temporal evolution (e.g., shifts toward effectuation as ventures mature). This hybridity underscores effectuation's contextual adaptability, offering a nuanced counterpoint to rigid causal logics and highlighting its role in fostering resilience, innovation, and sustainable growth in high-uncertainty settings.

Theoretically, our research advances effectuation scholarship by delineating its mechanics in non-Western, emerging-market environments, where intuitive enactment bridges gaps in formal awareness. Practically, it equips entrepreneurs with actionable strategies – such as leveraging means and affordable loss – to mitigate uncertainty, potentially improving SME survival rates in volatile markets. For educators and trainers, integrating effectuation into curricula, emphasizing hybrids and experiential learning, could empower the next generation of entrepreneurs in resource-limited regions. Policymakers in Morocco and similar economies should prioritize ecosystems that support networking, mentorship, and relational trust to amplify effectuation's benefits, contributing to broader economic development and innovation.

Despite these contributions, limitations must be acknowledged. The study's focus on uncertainty-independent factors, potential social desirability and selection biases, and reliance on cross-sectional data constrain generalizability and temporal depth. Future research could employ longitudinal designs, quantitative methods, or comparative analyses across diverse emerging markets to test hybrid scalability, explore causal mechanisms, and mitigate biases, thereby refining effectuation theory for global applicability.

In an era of escalating global volatility, effectuation emerges not merely as an alternative to anticipation but as a vital complement, enabling entrepreneurs to co-create futures amid unknowable risks. This study calls for a paradigm shift toward adaptive, means-oriented logics to cultivate resilient ventures in uncertain landscapes.

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