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Beyond Rationality: Quantum Decision-Making and the Upper Echelons of Conscious Leadership

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Abstract:
The present work combined the Upper Echelons Theory and Quantum Decision-Making to study the ethical decision-making traits of financial leaders in a fluctuating business environment. In the quantitative part, it is post-positivist mixed-methodological design where survey of 200 finance executives in Canada is performed to link cognitive bias, moral reasoning and intuition as a factor to leadership effectiveness. The qualitative phase adopts Interpretive Phenomenological Analysis (IPA) to uncover the point of quantum collapse in decision-making process where a multiplicity of possibilities is reduced to act ethically. The results showed that leaders with high reflective awareness are connected with high moral judgment, are less susceptible to overconfidence bias and have high levels of performance consistency. Moreover, the Quantum Decision-Making Continuum is revealed in the paper, and the passage between receptive cognition and creative consciousness is tracked. Theoretically, it is grounded in the Upper Echelons Theory that leadership cognition is not only rationality at its best but a field that is constantly animated by awareness, coherence, and intentionality. Practically, it can be used as a roadmap to develop conscious executives who can manage uncertainty with accuracy in terms of morality and flexibility in strategy.

Keywords: Upper Echelons Theory, Quantum Decision-Making, cognitive prejudice, leadership consciousness, ethical decision-making, bounded rationality, intuition.

1. INTRODUCTION

The theoretical premise of economics and strategic management long ago trapped in an ideal of the rational choice a model in which leaders are utility seeking actors who act rationally in the accuracy of their information to make the optimality of the decision (Eisenhardt and Zbaracki, 1992). This perspective, despite being gracious in its simplicity, has continued to be undermined by the complicated facts of human thought and the chaotic conditions that modern organizations must conduct business in. The pioneering contribution of Herbert Simon (1955) to this field presented a fundamental limitation of management decision-making in the form of bounded rationality that the normal decision-making of managers is inherently limited by human cognitive capacity, as well as by the limited, finite and often ambiguous nature of information on which they base their decisions. This intellectual transformation provided the fundamental foundations of the powerful Upper Echelons Theory (Hambrick and Mason, 1984) which officially assumed the result of the market forces to be the causes of organizational outcomes, whatever they be strategies, performance levels, or structural forms, but rather to be products of the unique traits, experience, and strongly held values in top executives. This theory has left the analytical focus of purely economic model of the firm and shifted to a more subtle psychological and demographic one, recognising that the field of vision of a leader will always be refracted through the prism of personal life history. Nevertheless, even with this tremendous advancement, the Upper Echelons Theory and the associated behavioral paradigms tend to have a certain mechanistic tint, even without being purely rational. Overconfidence or confirmation bias, anchoring, are cognitive biases that are usually framed as systematic errors, as a failure to conform to a normative standard of rationality (Tversky and Kahneman, 1974). Although this view is useful in the identification process, it might not capture the dynamic, fluid and deeply non-linear aspects of high stakes decision-making in leadership in high stakes, especially in situations characterized by volatility, uncertainty, complexity and ambiguity.

Within such high-performance settings, the inner world of the leader, their intuition, their moral compass, their state of consciousness per se, becomes an important, but under-researched, determinant of performance. It is here at this very curious crossroads that a new set of metaphors is proposed, based on the world of quantum physics that appears so remote, and which promises a life-changing possibility. Superposition, entanglement, and wavefunction collapse are some of the concepts that are used in Quantum Decision-Making as an effective analogy of human thinking (Busemeyer and Bruza, 2012; Yukalov and Sornette, 2011). In this opinion, the mindset of a leader in a complicated decision does not merely put the already existing options in a nominal scale. Rather, it is a condition of superposition, a co-existence, a potentiality-ridden possession of a multiplicity of conflicting ideas, moral deliberations, emotional reactions and strategic feelings. The final decision that follows is then comparable to a breakdown of this wave of possibilities to a single and manifest reality which then becomes an action in an organization. This view is a more subtle and powerful way of defining the complex interaction between reason, emotion, intuition and ethics that defines the most difficult decisions in leadership. In this article, the author intends to build a solid theoretical and empirical connection between the two fields. We put into question the remaining economic rationalism in leadership research by suggesting that the decisions made by leaders are neither confined to linear logic alone, but to a quantum field of the possibility which represents their own distinct constellation of biases, intuitions, and moral sense. We are assuming that the upper echelon is not merely a demographic or psychological category, but rather a certain locus of consciousness, which, in its quality of awareness, makes complex possibilities revert to concrete organizational facts. The research questions that will be at the center of the research are as follows: first, what is the interaction of cognitive biases and moral reasoning in determining the effectiveness of financial leaders in ambiguous situations? Second, can quantum mechanical metaphors form an effective and useful way of analyzing the lived experience of executive decision-making? And third, what role does the degree of reflective awareness of the leader play in their vulnerability to bias, as well as their ability to act ethically? In order to find answers to these questions, we used a post-positivist mixed-methods approach. A correlational study has been conducted quantitatively on 200 finance executives in Canada to make correlational relationships between key constructs. This was then subjected to a qualitative period involving Interpretive Phenomenological Analysis to explore the lived moment of the quantum moment of decision in detail. The results of our investigation lead to the suggestion of the Quantum Decision-Making Continuum, a framework according to which the shift between biased and reactive cognition toward generative and consciousness-based intelligence is traced. This can be said to expand the Upper Echelons Theory as it postulates that the cognition of leadership is not only limited, but an energetic domain that is produced by the awareness, coherence and intentionality of the leader. In practical terms, it provides a developmental model on how to nurture conscious leaders who are able to cope with uncertainty with ethical accuracy and also with any strategic flexibility.

2. METHODOLOGY

This paper is based on the philosophy of post-positivism that accepts the reality being beyond the researcher but at the same time, it is only imperfect and probable to know it (Guba and Lincoln, 1994). This worldview coincides with the fundamental quantum metaphor according to which reality, especially in the social and mental domain is a potentiality until it is seen, quantified, or performed by a conscious entity. The mixed-methods design used was sequential (Creswell and Plano Clark, 2017), where a quantitative phase provided the required information and a more comprehensive picture of a later, more comprehensive, qualitative phase. This combined method made possible the generalizable testing of hypotheses on a broader population as well as an in-depth, detailed investigation of what goes on in the underlying phenomenological experience that cannot be statistically depicted. The quantitative step involved a cross-sectional online survey of 200 financial executives, such as Chief Financial Officer, Vice Presidents of Finance, and Senior Portfolio Managers, in the key financial centers in Canada (Toronto, Vancouver, Calgary and Montreal). The sample was identified by participating in the professional

associations such as CPA Canada and CFA Society and also by conducting direct outreach on Linked In. The last sample consisted of 68 men and 32 women and with an average age of 47.2 and an average of 11.5 years in a top leadership role. All quantitative items were done using Likert scale of 7 points. The cognitive bias, namely overconfidence, was measured on a scale of 10 items based on the research of Moore and Healy (2008) that measured the behavior of people to overrate their own knowledge and predict well as compared to the actual results. The assessment of moral reasoning was done based on the established Defining Issues Test-2 (Rest et al., 1999), that provides a P-score that is the percentage of post-conventional, principled thinking that is adopted in solving complex ethical problems.

Intuitive decision making was obtained through a 6-item scale that was created by Dane and Pratt (2007) and was intended to assess affective intuition and holistic intuition as opposed to guess work. One of the key constructs of the given research, reflective awareness, was evaluated using the 12-item Reflection subscale of such scale as Insightful Awareness Scale (Grant et al., 2002) that is used to measure tendency of mindful, non-reactive self-observation. Lastly, an 8-item scale was used to measure leadership efficacy as a composite variable, that is, self-reported and team- substantiated performance indicators, strategic adaptability, and team morale in the last 12 months. The analysis of the quantitative data was performed through the application of SPSS Version 28, starting with the descriptive statistics and the analysis of the bivariate correlations to gain insights into the fundamental association between the variables. This was then accompanied by hierarchical regression analysis to determine the predictive capacity of the independent variables of overconfidence, moral reasoning, intuition, and reflective awareness on the dependent variable of leadership efficacy with the demographic variables of age and organizational tenure being the control variables. In the case of qualitative phase, a purposive sample was composed of 15 executives using the larger quantitative sample so as to provide a sample of maximum variation in the scores of individuals on the scales of Reflective Awareness and Leadership Efficacy, i.e. high, medium, and low scorers. Semi-structured interviews were carried out with these people, taking 60 to 90 minutes each. The interview guide was carefully developed to draw rich and detailed accounts of particular, recent decision-making situations that contained a lot of ethical uncertainty and stakes. Such questions as Walk me through the moment you realized that you needed to make a critical decision, What were the competing thoughts, feelings, values, and potential options in that space of deliberation, and, Reflect on the precise moment when you felt like you were in the place of weighing possibilities vs. making a commitment and taking action, were used as prompts. Interpretive Phenomenological Analysis (Smith et al., 2009) was used to analyze the interviews and is a methodology that seeks to understand how people make sense of their personal and lived experiences. It was analyzed through a detailed, line-by-line analysis of each transcript, emergent theme formation and the identification of patterns and relationships between cases to come up with a coherent description of the fundamental structures of the quantum decision making experience.

3. RESULTS

The results of this mixed-methods research give good arguments to reshape the process of executive decision-making as the combination of Upper Echelons Theory and Quantum Decision-Making. The quantitative findings provide the definite statistical connections between the mental behavior patterns and the leadership performance, and the qualitative data provide the deep understanding of the experience of the quantum collapse moment in the situation of high stakes decision making.

Survey data analysed among 200 financial executives indicated a complicated system of connections between the psychological variables and leadership efficacy. The correlation table revealed that there are many significant correlations on which our theoretical model is based. There were strong positive correlations between leadership efficacy and moral reasoning ($r = .52$, $p < .01$) and intuitive decision-making ($r = .36$, $p < .01$), which point to the fact that the leaders who apply principled ethical judgment and

rely on their holistic intuition provide better performance outcomes. On the other hand, there was a significant negative relationship between leadership efficacy and overconfidence bias (r = -.45, p =.01), which implied that those leaders that overrate their knowledge and abilities have significantly worse outcomes. Most importantly, reflective awareness was found as a focal point in this network, which has great positive associations with moral reasoning (r =.48, p <.01) and intuition (r =.39, p <.01), as well as having a strong negative relationship with overconfidence bias (r =-42, p <.01). This trend suggests that the ability to observe oneself mindfully results in leaders with greater intellectual capability to access their intuition, being able to conduct intricate ethical thinking, and most importantly, avoid the misleading impact of overconfidence.

Table 1. Descriptive Statistics and Bivariate Correlations for Study Variables (N = 200)

Variable	M	SD	1	2	3	4	5	6	7
1. Age	47.20	8.10	—						
2. Tenure	11.50	6.30	.64**	—					
3. Overconfidence Bias	4.85	0.91	-.08	-.11	—				
4. Moral Reasoning (DIT-2 P-score)	42.30	11.25	.12	.10	-.28**	—			
5. Intuitive Decision-Making	5.10	0.87	.05	.07	-.19*	.34**	—		
6. Reflective Awareness	4.95	1.02	.15*	.13	**-.42**	**.48**	**.39**	—	
7. Leadership Efficacy	5.25	0.95	.09	.08	**-.45**	**.52**	**.36**	**.61**	—

Note. M and SD represent mean and standard deviation, respectively.

- p < .05. ** p < .01.

The hierarchical regression analysis provided further evidence for the predictive power of these psychological variables. After controlling for demographic factors in Step 1, which accounted for only 2% of the variance in leadership efficacy, the introduction of psychological variables in Step 2 explained an additional 49% of the variance ($\Delta R^2 = .49$, $p < .01$), with the full model accounting for 51% of the variance in leadership efficacy. Reflective awareness emerged as the strongest unique predictor ($\beta = .38$, $p < .01$), followed by moral reasoning ($\beta = .31$, $p < .01$) and low overconfidence bias ($\beta = -.24$, $p < .01$). Intuitive decision-making remained a significant but comparatively weaker predictor ($\beta = .18$, $p < .05$), suggesting that its effectiveness may be dependent on moderation by other factors such as awareness. These quantitative findings collectively paint a clear picture: leadership effectiveness in complex financial environments depends not merely on analytical capability, but fundamentally on the executive's internal capacity for reflection, ethical discernment, and cognitive self-regulation.

Table 2. Summary of Hierarchical Regression Analysis for Variables Predicting Leadership Efficacy (N = 200)

Predictor	Model 1	Model 2
	β	β
Step 1: Control Variables		
Age	.14	.08
Tenure	.03	.01
Step 2: Psychological Variables		
Overconfidence Bias		-.24**
Moral Reasoning (DIT-2 P-score)		.31**
Intuitive Decision-Making		.18*
Reflective Awareness		.38**
R^2	.02	.51
ΔR^2	.02	.49**

F for change in R^2	1.95	48.72**

Note. β = Standardized regression coefficient.

- $p < .05$. ** $p < .01$.

The Interpretive Phenomenological Analysis of 15 in-depth interviews has provided qualitative results that are rich in phenomenological texture and bring the quantum metaphor to life. The idea of decision-making as a superposition period was overwhelmingly corroborated by the data. Managers always portrayed the first stage of coping with a complex problem not as a straightforward choice between clear-cut options, but rather as a lengthening of time during which the different possibly contradictory situations are kept in a state of simultaneous suspension. One Chief Financial Officer shared that his experience was like a commotion of conflicting voices in his mind, with the spreadsheet voice being the loudest and persistent, clamoring for a quantitative explanation, the stakeholder voice being the most cautious, fearing the loss of reputation and relationships, the voice of fear over short-term stock performance, and the voice of what was actually right in the long run, i.e., the organization's financial health, being the least vocal but more incessant. They were not successive and contiguous considerations but rather parallel facts, all co-existing simultaneously, neither coercive nor yielding. This superposition condition was not interpreted as inactivity resulting from uncertainty but as a vibrant and active and even psychologically taxing field of possibilities which comprised rational analysis, emotional currents, ethical intuitions, and even somatic sensations.

The choice was moment that we suggest to be the collapse of the wave function was revealed in during the interviews as a very and in a lot of cases clear psychological transformation. The most significant part of such a collapse varied in a remarkable way between the leaders with high and low reflective awareness scores. In case of the less aware, the fall was mainly characterized as a reaction to the pressure caused by external forces. One portfolio manager with a high overconfidence the rating stated it was like a sudden snap, where I had to cut through the noise and trust my gut, which was usually this strong belief I had made the right analysis with some opposing evidence. Such a quick and instinctive breakdown often led to decisions that the participants themselves later classified as biased or too simplistic in retrospect. Staggeringly different from that, the executives who scored high in reflective awareness delineated a more thoughtful, generative process of collapse. They referred to deliberately producing a vessel of the superposition, of having the ambiguity in hand, not trying to push it out prematurely. A top member of the high-awareness team clarified that I needed to be trained to sit in the fire of the not-knowing. It is very uncomfortable, but when you able to remain in that state of being uncomfortable without frantically searching to find a quick fix, then another form of clarity will eventually come. It is not really that you make a rational decision based on a list; rather, it is more as though the most rational and morally correct action that makes sense will emerge out of the fog of choices. It is a decoherence process through which several potentialities would be reduced to one actuality which these individuals did not consider a chance but rather a deliberate exercise of consciousness.

Moreover, qualitative data shedding light on the quantum notion of entanglement in organizational leadership was provided. The participants have repeatedly explained how their internal condition, that is the degree of nervousness, sharpness, or moral belief, also appeared to influence the whole system of the organization around them instantly and non-locally. It would have immediate repercussions, not only on the morale of the team, the confidence of stakeholders, but also on how a problem is framed in common by the team leader making a conscious collapse into a confident values-based decision. The team can feel the uncertainty very deeply, one of the CEOs said. They can also tell if you have really made a decision not only in your mind but also in your heart. This qualitative change in my inner state affects the energy in the whole room and very automatically activates the new organizational direction, as it were, in motion already. The phenomenon of entanglement shows the deep connectivity between the leader's inner

conscious field and the external organizational reality they co-create, indicating that the quality of the collapse moment is as important as the substantive content of the decision itself.

Table 3

Emergent Themes from Qualitative Analysis of Executive Decision-Making Experiences

Quantum Concept	Theme	Representative Quote	Prevalence (n=15)
Superposition	Holding Multiple Potentials	"It's not A versus B, but holding A, B, C, and the emotional truth of each, all at once."	15/15
	Dynamic Cognitive Field	"The options weren't static; they kept shifting and evolving as I considered them."	13/15
Collapse	Reactive Collapse (Low Awareness)	"I just had to decide. The pressure was too much, so I went with my gut instinct."	6/15
	Generative Collapse (High Awareness)	"The right path emerged when I stopped forcing it and allowed the complexity to just be."	9/15
Entanglement	Non-local Impact	"The moment I reached clarity, I could see the entire team's posture change in response."	14/15
	Systemic Coherence	"My internal conflict was creating conflict in my team; my resolution created organizational resolution."	11/15

Combining the data of both quantitative and qualitative results shows that there is one thing the same high-scoring individuals on the test of reflective awareness have much higher performance outcomes than the rest of the sample, but they also report having different experiences of making a decision reflectively by being tolerant of ambiguity, consciously engaging with complexity, and coming up with a solution. The combination of evidence is indecisively in favor of the suggested Quantum Decision-Making framework as a valid and potent framework of understanding how the executive consciousness manifests organizational reality by reducing the reality of potentialities to real act.

4. DISCUSSION

The results of this work are eloquently arguing against the remnants of the rational actor model in the leadership theory and offer a strong argument to support a more complicated and dynamic and consciousness-focused perspective. The quantitative data support the conclusive fact that the conventional indicators of leader toolkit such as analytical skill and experience are not only needed but also cannot guarantee high performance in volatile environments. The group of predictive equal importance of reflective awareness, and its negative correlation with overconfidence imply that the secret of successful leadership is not to have no bias whatsoever, which is not achievable, but to have the meta-cognitive ability to notice the patterns of thinking and feeling that one engages in without being subject to them. This result conforms and largely confirms the ideals of Upper Echelons Theory. We suggest that UET has hitherto given a relatively fixed map of the executive mind - a topography of demographics, experience, and personality characteristic. The variable of consciousness is the dynamic aspect that is presented in our study. This does not only take place based on what a leader thinks (what leader thinks) and how the leader thinks (how leader thinks), but the quality of awareness with which the leader perceives his/her own thinking is what ultimately determines how the idiomatic upper-echelon traits might be translated into the decision-making process. With little knowledge a leader with an aggressive growth background may, in a high risk/low awareness way, bring possibilities to collapse into reckless acquisition through overconfidence.

Even high reflective awareness by the same leader can reduce possibilities in a disciplined and strategic pivot that optimizes the experience of the leader but minimizes the risks involved in the same. The qualitative evidence is so strong that it confirms the application of quantum metaphors beyond using a poetic analogy. The mentioned superposition, collapse, entanglement experiences are not only philosophically intriguing but provide an accurate and just-loud-enough language of such phenomena, which have been challenging to describe using classical models of psychology. The quantum collapse moment as outlined by high-awareness leaders - a generative emergence of clarity through a consciously held field of potential is a distant cry over the traditional image of a leader who is rationally considering a decision-tree. The metaphor can be used to re-conceptualize the decision-making environment as a field that is probabilistic and subject to the state of the observer. This contributes to the essence of the theoretical contribution of this paper, which is the Quantum Decision-Making Continuum. This continuum refers to a continuum of leadership cognition. On one end, there is Reactive Collapse, in which decisions are instigated by outside or inside forces or subconscious prejudices. The superposition state is put into short-circuit; the wave function falls off at high speed and tends to be largely incoherent and thus results in defensive, politically inclined, or short-sighted choices. The consciousness of the leader is to a great extent a captive of his/her cognitive and emotional conditioning. On the other end of the continuum is Generative Collapse whereby the leader, through developed reflective awareness, would be able to bear the discomfort of superposition. They can maintain a multifaceted, interwoven apparatus of possibilities data, ethics, intuition, and stakeholder issues without premature closure. The resultant collapse is then not an active response but an active creative action, bringing into being a new and consistent way ahead.

Such a decision-making is marked by the ethical accuracy, since the leader has admitted a broader variety of moral factors to stay within the superposition arena and strategic flexibility, since the decision is not a blueprint but is a coherent course that may develop with new information. This model extends UET because it suggests that cognition of the executive is not only limited but is a dynamic field the system that may be in states of differing coherence, depending on intentionality of the leader and his/her level of awareness. A leader who experiences high coherence (low internal conflict, high values-alignment) will reduce possibilities into more consistent, authentic and, ultimately, effective decision-making that is better suited to negotiating complex systems. This addresses a paradox in the research of leadership: since the background and intelligence of two leaders are similar, why then can they make such radically different choices in matters of ethics and strategy? Their hardware may not be much different, but rather the consistency and quality of their conscious field. Practically, this study provides a very clear imperative of leadership development. Conventional training based on the cases and case studies is insufficient in development of the capacities found here. Rather, the development should be redirected towards the practices developing reflective awareness and inner coherence. These encompass mindfulness meditation to improve meta-cognitive ability, moral growth courses that compel leaders to investigate the intricacies of their own moral structures, and coaching strategies that have leaders become aware of their own standard patterns of reactive embarrassment. We can then prepare leaders to deal with ambiguity through training them to be more conscious of what they are looking at as a quantum field, and in this way enable them to make decisions not only at the strategic level, but also of a systemic level, and of an ethical level.

5. CONCLUSION

This conceptual gap was to be bridged by this study which would connect the demographic and psychological concentration of the Upper Echelons Theory and the dynamic and consciousness-based metaphors of Quantum Decision-Making. The findings are clear to suggest that this convergence is not only possible but must be carried out in order to have a more holistic view of the executive leadership in the 21st century. The statistical data confirms the hypothesis that reflective awareness was a significant predictor of leadership performance, it can buffer the harmful effects of overconfidence and induce more moral reasoning. Qualitative narratives provide a phenomenological articulate report of the decision

making as a conglomeration of opportunities and termination at a point, that is reactive or generative, depending on the awareness of the leader. The proposed Quantum Decision-Making Continuum is a single model, which follows the line of the transformation of a leader as a passive channeling conduct of his/her biases to the leader as an active and conscious organizer of organizational reality. This work overcomes the limitation of limited rationality through re-conceptualising the higher order as the place of conscious energy, which contracts potential to action. It presupposes that there is no absolute limit of leadership, which is merely cognitive, but conscious. Its implications are extensive since it implies that the future of leadership development is not in the improvement of a rational mind but the expansion of the sphere of awareness where all decisions and consequently organizations all emerge. Future research should then seek to longitudinally trace the development of leaders in terms of this spectrum, get to know about neurophysiological correlations of reflective awareness and quantum collapse incidences, and ways of organizing organizational cultures to promote a generative rather than reactive mode of decision making. The journey beyond rationality is not a rejection of reason, but an invitation to a deeper, more coherent, and more conscious form of intelligence at the highest levels of leadership.

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