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Fabrice Duval, Christophe Elie-Dit-Cosaque

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Les managers et les décisions fondées sur l'intelligence artificielle : explorer les processus de construction de sens dans les contextes de transformation digitale

Fabrice Duval, MEMIAD, Université des Antilles, Martinique, France

Christophe Elie-Dit-Cosaque, MEMIAD, Université des Antilles, Martinique, France

Résumé :

Prendre des décisions efficaces est vital pour les organisations afin d'assurer leur compétitivité et leur pérennité. Beaucoup attendent des décisions fondées sur l'intelligence artificielle (IA) qu'elles contribuent à révolutionner le monde des affaires. Nous en savons très peu sur la façon dont les managers interprètent, donnent du sens et répondent à ces défis de transformation digitale. Afin de répondre à ce problème et d'améliorer la compréhension de la façon dont les managers donnent du sens à la transformation digitale, en particulier la transformation digitale axée sur l'intelligence artificielle, nous proposons d'analyser leurs représentations des décisions fondées sur l'IA et les forces en jeu dans les processus de construction de sens. Pour ce faire, nous comptons mener une étude qualitative fondée sur des entretiens avec des managers impliqués dans la transformation digitale en Martinique, une île des Caraïbes. Les implications attendues pour la recherche et la pratique sont discutées.

Mots clés :

Sensemaking ; transformation digitale ; intuition ; intelligence artificielle

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Abstract:

Making effective decisions is vital for organisations to ensure their competitiveness and sustainability. Many expect decisions based on artificial intelligence (AI) to help revolutionise the business world. We know very little about how managers interpret, make sense of and respond to these digital transformation challenges. To address this issue and improve the understanding of how managers make sense of digital transformation, in particular AI-driven digital transformation, we propose to analyse their representations of AI-driven decisions and the forces at play in the sensemaking processes. To do so, we intend to conduct a qualitative study based on interviews with managers involved in digital transformation in Martinique, a Caribbean Island. The expected implications for research and practice are discussed.

Keywords:

Sensemaking; AI-driven decisions; intuition; artificial intelligence

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1. Introduction

The booming interest for generative Artificial Intelligence (AI) such as conversational bots, like ChatGPT or Google Bard, let envision some of the stakes and challenges organisations will face in the years ahead. While the traditional approach of management articulates managerial intuition with data and information as the support for decision making, what about managerial decision making when the course of action is already processed by *intelligent* technology?

Cognitive technologies, presented as the new AI tools, are, according to Bader and Kaiser (2019), Davenport and Ronanki (2018), Duan et al. (2019), Makarius et al. (2020), among those technologies that will revolutionise the business world. According to Davenport and Ronanki (2018), 35% of managers surveyed believe that AI will allow them to make better decisions. For example, Reilly et al. (2019, p. 3) declare that: "*84% of C-suite executives believe they need to use Artificial Intelligence (AI) to achieve their growth objectives.*". While those technologies raise extremely interesting perspectives for managers and organisations, a fundamental concern is about how to effectively leverage its capabilities. For Davenport and Ronanki's work, profound organisational changes are made necessary to get the most of it. Indeed, they argue that a "*systematic redesign of workflows is necessary to ensure that humans and machines augment each other's strengths and compensate for weaknesses*" (Davenport & Ronanki, 2018, p. 9). As stated by Jarrahi (2018) and Stone et al. (2020), the frontier between humans and computers in management is moving from operational to strategic, which increasingly questions the evolutions of the work content and roles of managers.

In fact, while managers are key actors in those processes, both as potential promoters and as objects of digital transformations, with AI-driven decisions being one facet of digital transformation, little do we know about how they make sense of the way AI-based technologies drive transformations in the workplace and how managers participate to those transformations (Vial, 2019). These limitations in our knowledge hinder our theoretical and practical understanding of organisations and the sensemaking of managers in their decision-making processes in AI-based digital transformations.

What managers think of and how they promote AI-driven decisions, in their organisation and community, is therefore an important issue to be addressed, as those tools may create uncertainty and ambiguity in the essence of their work and roles. In addition, the use of AI-driven decisions may highlight issues related with the legitimacy and credibility of such AI-driven decisions and thus with the acceptability of these new tools. These new decision-making procedures also deserve a better understanding with respect to their articulation with the various work roles of managers and construction of meaning for improving our conceptual approaches of managerial work transformation. Given their roles in the success of technology

transformations, the issue of managers' mental constructions regarding this phenomenon and the integration of AI-driven decisions then becomes crucial. As stated by Berente et al.: *“Because of the focus on addressing both the social and the technical, the information systems field is well positioned to become the reference discipline for managing AI.”* (2021, p. 32).

To address the mental constructions around digital transformation, and most particularly AI-driven decisions, the concept of sensemaking in organisations introduced by Weick is interesting. Weick defines sensemaking as a process from which managers use their past experiences and associated mental schemes to acknowledge and interpret a situation (Weick, 1979, 1988, 1995). More recently, Mikkelsen et al. (2020) and Meziani and Cabantous (2020) have worked on the motivational forces and intuition underpinning sensemaking and how they induce a behavioural response. Accordingly, this study examines how managers make sense of AI-driven decisions, mobilising a research model based primarily on Weick's works.

The concept of sensemaking addresses the question of the construction and transformation of meaning by managers: *“Sensemaking is not about truth and getting it right. Instead, it is about continued redrafting of an emerging story so that it becomes more comprehensive, incorporates more of the observed data, and is more resilient in the face of criticism.”* (Weick et al., 2005, p. 415). Maitlis and Christianson (2014, p. 57) later state that *“Sensemaking is the process through which people work to understand issues or events that are novel, ambiguous, confusing, or in some other way violate expectations”*. Consequently, this research aims to improve the understanding of how managers make sense of AI-driven decisions, and that of the forces that may drive or impede the sensemaking processes. The paper therefore tackles the two following research questions (RQ):

- RQ1. How do managers make sense of AI-driven decisions in organisations?
- RQ2. How do managers represent the forces which drive or restrain these AI-driven decisions?

To answer those research questions, this paper articulates research on sensemaking (Weick, 1988, 1995; Weick et al., 2005; Sonenshein, 2007), specifically with the “sensemaking intuition model” (SIM) and Field Forces theory (Lewin, 1943, 1997).

The SIM makes it possible to discern the mental processes that managers and leaders develop according to their position, how they construct their representation of these issues, exercise their intuitive judgment, and justify their choices. Following this approach, this study will help improve our understanding of how managers perceive, interpret and promote AI-driven decisions in their environment. In addition to exploring managers' sensemaking per se, this paper examines the forces that play a role in this process. To do this, Lewin's Field Force theory offer an interesting lens, emphasising how human endeavours are subject to internal or external forces, which may be enabling or restrictive.

The rest of the paper is as follows. We first review the relevant literature on AI-driven decisions and the transformation of work practices. We then develop a model based on sensemaking

(Weick et al. 2005, Sonenshein, 2005) and Field Forces theorising. The design of an exploratory, qualitative investigation is presented. We conclude with the perspectives of the work for research and practice.

2.Literature review

2.1 AI, Managers and Digital Transformation/AI-driven decisions

“Digital transformation is about adopting disruptive technologies to increase productivity, value creation, and the social welfare” (Ebert and Duarte, 2018, p. 16). Digital transformations have important consequences on the work content and practices of managers. This is even more the case when the technologies, such as AI, have uncertain consequences on managers’ work and roles. Indeed, in view of certain elements introduced years ago by Ackoff (1967), one could expect that managers’ decisions would be increasingly supported, and that they might even one day be "replaced" by AI for decision-making tasks in organisations (Davenport & Ronanki, 2018; Duan et al., 2019). Berente et al. (2021) perceive AI as a process and define AI as the ever-evolving frontier of computational advancements that references human intelligence in addressing ever more complex decision-making problems.

In contrast, other authors suggest that we should rather seek to articulate the managers’ unique capabilities, such as their intuition, with business intelligence (BI) tools based on AI. For them, this would allow bringing back the human thinking, its cognitive biases, and heuristics (Gigerenzer & Gaissmaier, 2011), potentially in the decision algorithm itself, or at least by the means of complementary decision-making processes (Gilboa et al., 2018; Stone et al., 2020; Toniolo et al., 2023). As Schmitt put it: *“The integration of AI with human ingenuity is a promising area of future research.* » (Schmitt, 2023, p. 6).

Fontaine et al. envision that: *“When AI is adopted broadly, employees up and down the hierarchy will augment their own judgment and intuition with algorithms’ recommendations to arrive at better answers than either humans or machines could reach on their own.”* (Fontaine et al., 2019, p. 5), but they alert that for this process to work, it requires the individuals to legitimise the algorithms’ outputs (Fontaine et al., 2019; Yeomans et al. 2019). Shrestha et al. (2019) emphasise that managers remain responsible for the outcome of the decision. They posit that managers need to develop capabilities to decide on the inputs to the algorithm, the algorithms themselves and the interpretation of the predictions. In this way, managers will trust the outcome, especially if they know they have the final say (Fontaine et al., 2019).

Those insights suggest that introducing an AI-driven decision-making tool in managers’ work is not neutral, as AI should overall have major consequences on managerial work. Nevertheless, we know very little about how managers make sense of these issues and subsequently make decisions about them. We believe that the concept of sensemaking is particularly relevant to better understand how managers interpret the contributions of AI-driven decisions to the evolution of the decision-making process, to the creation of value and to the challenges of transforming work practices, considering the individual (e.g., expectations, experience) and external factors such as social ones.

2.2 Sensemaking

The concept of sensemaking was first introduced by Brenda Dervin and adapted for management research and organisations by Karl Weick. Weick has developed an approach based on the collective creation of meaning in an organisational context. The concept of sensemaking is at both the individual and collective level because it is based on the way in which social actors interpret information and emotions, themselves shaped by their social environment and the representations they develop.

Weick (1988, 1995) and Weick et al. (2005) aimed at explaining the responses of people in organisations when faced to uncertainty, a situation that often characterises digital transformation projects: “*Sensemaking is about the interplay of action and interpretation rather than the influence of evaluation on choice.*” (Weick et al., 2005, p. 409). Weick argued that to deal with uncertainty, people in organisations search for meaning, conclude with plausibility and act (Weick et al., 2005, p. 419). With respect to managers, research has long treated them as rational actors in organisations, making rational evaluations of their surroundings to decide about which course of action to follow. Rather, managers often make use of their intuition to make judgements and to respond to problems, especially when confronted to digital transformation issues. While this phenomenon is perceptible in some “emergent” approaches to IS change (e.g., Markus and Robey, 1988), it has not been fully theorised to understand the sensemaking processes at play and how it develops during digital transformation initiatives.

Later, Sonenshein developed the “sensemaking intuition model” (SIM), based on Weick's model, to analyse how managers deal with ethical issues and construct their representation of these issues. Sonenshein (2007) emphasises that rationalist approaches postulate that individuals use deliberate and extended moral reasoning to make moral judgments about how to respond to problems. Through the SIM, Sonenshein (2007) offers an alternative explanation which considers individuals first use intuition and then use post-hoc moral reasoning to explain and justify these judgments.

Although Sonenshein intended his model to be primarily applicable to ethical issues, it is based on Weick's work on sensemaking and how organisational actors construct the meaning of an issue and act. We believe that the SIM approach can be adapted to better understand the complexity of digital transformation issues and the interpretations that managers make before acting, which we do in this article.

2.3 Field Forces

Multiple driving and restraining forces may influence the way managers make sense of their work surroundings. Kurt Lewin developed the Field theory which helps “*identify the forces within and between groups and show how individuals behave in response to these.*” (Burnes, 2004, p. 1997). Lewin posits that individuals and groups are confronted with limitations imposed by the structure of their world and that psychological and non-psychological forces influence behaviour and perceptions. There are internal and external forces that influence each other and alter individual perception and the way they act and make decisions (Lewin cited in

Elie-Dit-Cosaque et al., 2011, p. 205). These forces influence each other and result in a Field Force that alter the behaviour of the individual.

Building on Lewin Field theory and Sonenshein SIM, we develop a model to examine how managers give meaning to AI-driven decisions, and construct their representation of this transformation, in an environment where driving and restraining forces, both internal and external, are at play.

2.4 Research Model

Sonenshein (2007) pointed out that many researchers and theories claim that individuals use extensive moral reasoning when faced with ethical issues, neglecting the fact that under real world conditions, with uncertainty and equivocal responsibility, they instantly rely on moral intuition. The author proposed an alternative model to rationalist approaches, based on perspectives of social psychology and sensemaking, which he calls the “sensemaking-intuition model” (SIM). The SIM design is made up of three stages: issue construction, intuitive judgment, and explanation and justification (Sonenshein, 2007, p. 1027).

First, Sonenshein suggests that the SIM is triggered when individuals use sensemaking to respond to conditions of equivocality and uncertainty (Sonenshein, 2007, p. 1028). The SIM then states that when individuals are confronted with an ethical issue, they instantly make an intuitive judgment that comes from an individual level factor (experience) and a collective level factor (social pressure).

In the next and final step of the SIM, individuals will explain and post hoc justify the intuitive judgment they have built on the ethical issue, using moral reasoning and rational analysis. In our research, rational analysis is used by managers to explain and justify their views on digital transformation and AI-driven decisions. Sonenshein developed his model in a context of ethical issues, and some elements such as moral reasoning are not in the scope of this research. We therefore go back to the initial principles of Weick's work, keep the three central blocks developed by Sonenshein, and immerse them in Lewin's field forces which reflects the environment of managers and the forces that influence their behaviour. Based on sensemaking and Field Force theorising, our research model is depicted in Figure 1 below.

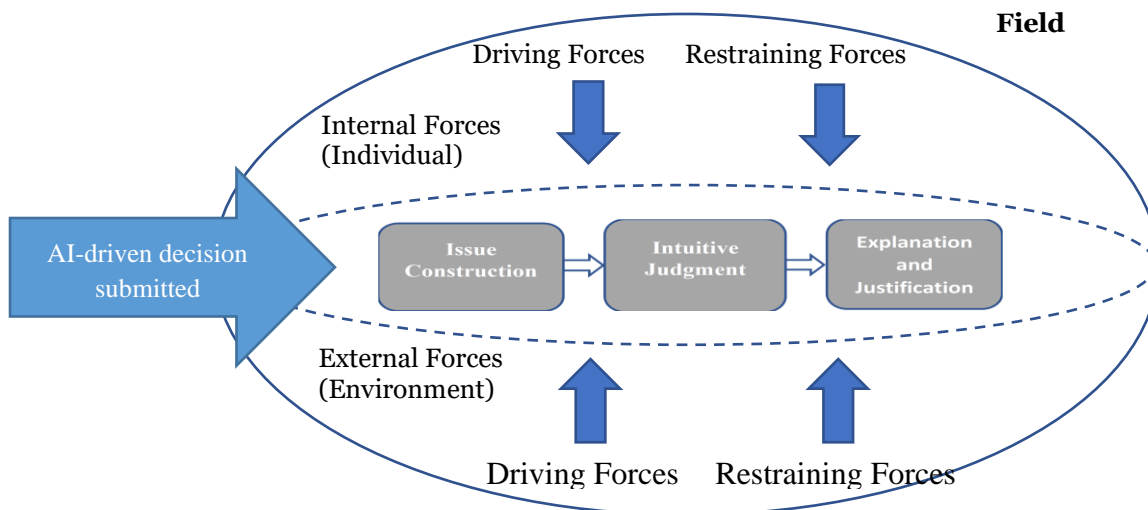


Figure 1: Research Model

3. Research Design and Methods

To answer our research questions, we conducted a qualitative investigation in two steps among managers in the digital domain in Martinique, France. The first step, with a general, exploratory purpose, consists in a qualitative exploration of managerial decision making in the context of the rise of AI in several organisations. The second step (ongoing, not presented here), will consist in a qualitative investigation around the discourses of managers who must transform their practices by integrating AI decision making tool in the work. A tentative field of research is expected to be that of the appropriation and use of AI tools by the staff (inspectors) of the French Ministry of Finance, for improving the efficiency of their work, for example regarding tax collection and fraud detection.

Considering the first step, ten exploratory semi-structured interviews face-to-face and on telephone with leaders of professional organisations within the digital industry and leaders of SMEs and organisations involved in digital transformation. The objectives were to capture the vision of the digital transformation through the discourses of senior executives and consultants who are confronted every day with digital transition issues. These interviews allowed us to collect their feelings and interpretations on the difficulties and challenges encountered in the field, and on the way they perceive managers give meaning to BI tools and AI-driven decisions and enabled us to draft the research model. The manager profiles are presented in Table 1 below.

Type of Organisation	Position	Interviewees
Public service delegation entities	Secretary General [1;2]	2
Professional organisations	President [1;2;3]	3
IT and digital transformation consulting firms	CEO or COO [1;2;3]	3
Business incubator	Director [1]	1
Local council	Executive [1]	1
Total interviewees		10

Table 1. Exploratory Interviews

The qualitative study itself will be conducted with operational middle managers. Middle managers are indeed the most impacted in their work practices and they show a great influence to participate in the change in the organisations (Balogun & Johnson, 2004).

Analyses will be conducted according to the standard of qualitative research (Miles and Huberman, 1994), following a critical realist paradigm (Mingers, 2004). Indeed, it should be noted that while the research on sensemaking is mostly rooted in the interpretive tradition, research underlying Lewin's forces is mostly positivist. In some ways, the critical realist perspective helps reconcile those apparently opposite approaches. Indeed, while we understand that knowledge may emerge from the discourses of social actors, we also recognise the existence of a reality independent from the mind of these actors. The different components of the research model are coded, such as the issue construction of the problem, the intuitive judgment and the dimensions of explanation and justification.

Based on Lewin's Field theory (1943, 1997), the Field Forces in contrast are intended to emerge from the analyses of the discourses of the managers. We believe we will identify the forces that contribute to the sensemaking process, whether these are driving or restraining forces. The sensemaking approach based on the SIM is also particularly suited to the context of the island of Martinique. Indeed, many uncertainties surround the implementation of emerging technologies. Organisations are faced with small and captive markets, remoteness, and insularity, which raises specific concerns. Small communities, inside and outside organisations, contribute to social pressure and stakeholder's representation of issues. In such a business context, decisions may not always result from rational choice. The model intends to confront the limitations of rationalist approaches by dealing with equivocality, uncertainty and by relying on the manager's intuition to make a decision (Sonenshein, 2007, p. 1024).

In practice, the projected research model should illustrate how managers in Martinique i) interpret the digital transformation and the challenges of implementing and using AI in organisations, ii) make intuitive judgments and iii) justify their analysis.

The interviews will also help highlighting the driving and restraining forces that are at play in the construction of managers' sensemaking processes in digital transformation context in Martinique. They construct their representation of the Field Force, make an intuitive judgment based on their experience and altered by the social pressure around them, and explain and justify post hoc their judgment, as if it had been elicited by extensive reasoning and a rational choice.

4.Expected contributions

This research work is part of an ongoing research that aims to contribute to an emerging field of IS, which questions the articulation between technology and humans, the integration of technology into the work practices of managers, and the contribution of technologies for decision-making (Grace et al. 2018; Jarrahi 2018). It is expected to have three major contributions to research and practice.

First, while we overall still know little about digital transformation processes (Vial 2019), this paper conceptualises managers' sensemaking process in AI-driven digital transformation contexts. So doing, it leverages and articulates Sensemaking theorising and Field Forces theories. We believe this study will therefore be a step towards a better understanding of not

only how they interpret and integrate AI-driven decisions into their work practices, but also how the managers may promote those transformation within and outside their organisation.

Secondly, this study is conducted in the particular and insular context of Martinique, a small Caribbean Island. While most research on digital transformation focuses on traditional, large, Western or Asian organisations, we believe that there is still much to know and learn from extreme contexts in terms of specific geographical, economic, and managerial constraints as well as culture and history. Arguably, this specific and somewhat unique context can also be seen as a limitation, restricting our ability to construct generalisable knowledge. We therefore plan to discuss the implications of the results for organisations in more traditional contexts.

Third, this work will make important practical contributions. The AI Index 2018 Report published by Stanford University (Shoham et al. 2018), has increasingly identified job vacancies that require AI skills. AI will inevitably be part of the future of work, and as such questions arise about managers' representations of AI and its impacts in day-to-day business operations and strategic decision-making processes. The present work may help better understand the important forces at play in organisations with respect to AI-driven decisions, and to better understand managers needs and mental processes in the course of their interactions with digital initiatives and innovations.

5. Conclusion

This research aims to arrive at a better understanding of the representation that managers have of the challenges and benefits of AI-driven decisions in context of digital transformation. To do this, it relies on the sensemaking and Field Forces theorising to conduct a qualitative study among managers in Martinique. Further, research, beyond the scope of the present one, may seek to better understand the contribution of next-generation BI tools to value creation through 1) the evaluation of the contribution of these tools to the decision-making performance of the manager, from the point of view of the manager and the organisation and, 2) the development of knowledge which, we hope, will allow better integration of human thought (intuition, improvisation, mindfulness) with the technology of decision support tools, making it possible to highlight new opportunities linked to technologies for organisations.

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