



ALGORITHMIC INFORMATION AND MANAGERIAL INTERPRETATION: THE MEDIATING ROLE OF RELIANCE ON ALGORITHMIC RECOMMENDATION

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ABSTRAK

Peningkatan penggunaan kecerdasan buatan dan sistem algoritmik telah mengubah pengambilan keputusan manajerial melalui penyediaan prediksi, evaluasi, dan rekomendasi sebagai input dalam keputusan organisasi. Namun, bagaimana manajer merespons informasi algoritmik masih perlu dipahami secara lebih mendalam, khususnya mengenai mekanisme perilaku yang menghubungkan informasi algoritmik dengan interpretasi manajerial. Penelitian ini bertujuan menganalisis pengaruh Algorithmic Information terhadap Reliance on Algorithmic Recommendation dan Managerial Interpretation, serta menguji peran mediasi Reliance on Algorithmic Recommendation. Berlandaskan Bounded Rationality dan Behavioral Theory of the Firm, penelitian ini mengusulkan bahwa informasi algoritmik memengaruhi interpretasi manajerial secara langsung maupun tidak langsung melalui ketergantungan pada rekomendasi algoritmik. Penelitian menggunakan pendekatan kuantitatif dengan 150 responden, sedangkan pengujian hubungan antarvariabel dilakukan menggunakan Partial Least Squares Structural Equation Modeling (PLS-SEM). Hasil penelitian menunjukkan bahwa Algorithmic Information berpengaruh positif dan signifikan terhadap Managerial Interpretation ($\beta = 0,519$; $p < 0,001$) dan Reliance on Algorithmic Recommendation ($\beta = 0,687$; $p < 0,001$). Selanjutnya, Reliance on Algorithmic Recommendation berpengaruh positif dan signifikan terhadap Managerial Interpretation ($\beta = 0,382$; $p < 0,001$). Pengaruh tidak langsung Algorithmic Information terhadap Managerial Interpretation melalui Reliance on Algorithmic Recommendation juga signifikan ($\beta = 0,263$; $p < 0,001$), yang menunjukkan adanya mediasi parsial. Temuan ini menunjukkan bahwa interaksi manajerial dengan sistem algoritmik berlangsung melalui jalur informasi dan perilaku. Penelitian berkontribusi pada literatur pengambilan keputusan manusia-AI dengan menempatkan reliance terhadap rekomendasi algoritmik sebagai mekanisme perilaku yang menghubungkan informasi algoritmik dengan interpretasi manajerial.

Kata kunci: Informasi Algoritmik; Reliance terhadap Rekomendasi Algoritmik; Interpretasi Manajerial; Pengambilan Keputusan Manajerial; Pengambilan Keputusan Manusia-AI.

ABSTRACT

The increasing use of artificial intelligence and algorithmic systems has transformed managerial decision-making by providing predictions, evaluations, and recommendations as inputs to organizational decisions. However, the way managers respond to algorithmic information remains insufficiently understood, particularly regarding the behavioral mechanism linking algorithmic information with managerial interpretation. This study aims to examine the effects of Algorithmic Information on Reliance on Algorithmic Recommendation and Managerial Interpretation, as well as to test the mediating role of Reliance on Algorithmic Recommendation.



Drawing on Bounded Rationality and Behavioral Theory of the Firm, the study proposes that algorithmic information influences managerial interpretation both directly and indirectly through reliance on algorithmic recommendations. A quantitative approach was employed using survey data from 150 respondents, with the proposed relationships tested using Partial Least Squares Structural Equation Modeling (PLS-SEM). The results demonstrate that Algorithmic Information has a significant positive effect on Managerial Interpretation ($\beta = 0.519$, $p < 0.001$) and Reliance on Algorithmic Recommendation ($\beta = 0.687$, $p < 0.001$). Reliance on Algorithmic Recommendation also has a significant positive effect on Managerial Interpretation ($\beta = 0.382$, $p < 0.001$). Furthermore, the indirect effect of Algorithmic Information on Managerial Interpretation through Reliance on Algorithmic Recommendation is significant ($\beta = 0.263$, $p < 0.001$), indicating complementary mediation. These findings demonstrate that managerial interaction with algorithmic systems involves both direct informational and behavioral pathways. The study contributes to human–AI decision-making literature by positioning reliance on algorithmic recommendations as a behavioral mechanism connecting algorithmic information with managerial interpretation.

Keywords: *Algorithmic Information; Reliance on Algorithmic Recommendation; Managerial Interpretation; Managerial Decision-Making; Human–AI Decision-Making*

I. INTRODUCTION

The development of artificial intelligence (AI) and algorithmic systems has transformed the information environment in managerial decision-making. Algorithmic systems no longer function merely as technical support tools but increasingly generate information in the form of predictions, evaluations, recommendations, and decision outputs that managers can use as inputs in the decision-making process. In this context, the important change lies not only in the technological capability to generate information but also in how such information is processed and interpreted by humans who remain responsible for organizational decisions. Shrestha et al. (2019) demonstrate that AI can alter organizational decision-making structures, while Raisch & Krakowski (2021) conceptualize human–AI relationships through the paradox of automation and augmentation. These perspectives indicate that algorithmic systems create a new decision environment that requires interaction between algorithmic capabilities and managerial judgement. This phenomenon has become increasingly important because algorithmic information does not necessarily lead to the same decisions when received by different managers. Managers do not act as completely objective and rational recipients of information. Limitations in cognitive capacity, attention, experience, and individual understanding mean that decision-making occurs under conditions of bounded rationality. Simon (1955;1979) explains that decision-makers operate with limitations in information and information-processing capacity, while Kahneman & Tversky (1979) and Kahneman (2003) demonstrate the importance of judgement and



heuristics in human decision-making. In an algorithmic environment, these limitations become more complex because managers must not only interpret information from the organizational environment but also understand information that has already been processed by an algorithmic system. Thus, the central issue is not simply whether algorithms provide more or faster information, but how such information is understood and used in managerial decision-making.

The urgency of this study arises because reliance on algorithmic recommendations has consequences for the quality of managerial decision-making processes. Existing literature demonstrates that human responses to algorithms are not straightforward. Dietvorst et al. (2015) introduced the phenomenon of algorithm aversion, whereas Logg et al. (2019) demonstrated the possibility of algorithm appreciation. Lee & See (2004) emphasized the importance of appropriate reliance on automated systems, while Glikson & Woolley (2020) examined human trust in AI. More recent literature also indicates that reliance may involve overreliance and its associated consequences (Klingbeil et al., 2024), while Bogert et al. (2021) demonstrate that task characteristics can influence reliance on algorithms. Therefore, the decision to follow an algorithmic recommendation should be understood as a managerial decision-making process rather than as an automatic consequence of the availability of technology. This issue can also be understood from the perspective of organizational interpretation. Daft & Weick (1984) conceptualize organizations as interpretation systems, suggesting that information received by an organization does not automatically possess a shared meaning before it is interpreted by organizational actors. This perspective is particularly relevant in an algorithmic context because algorithmic information represents information generated or supported by algorithmic systems, but it still needs to be understood, evaluated, interpreted, and situated within the organizational decision context by managers. In other words, reliance on algorithmic recommendations represents a behavioral response that determines the extent to which algorithmic outputs are incorporated into subsequent managerial cognition. When managers choose to rely on an algorithmic recommendation, the recommendation becomes a more salient and influential input in the subsequent process of understanding, evaluating, and contextualizing the algorithmic output within the organizational decision context. Reliance should therefore not be understood as the final acceptance of an algorithmic recommendation after complete evaluation. Rather, it represents an initial behavioural orientation toward incorporating or following an algorithmic recommendation as an input



to the decision process. Once an algorithmic recommendation is given behavioural weight through reliance, it becomes a more salient input in the subsequent process of managerial interpretation, including understanding, evaluation, and contextualization. The construct definition developed in this study explicitly positions Managerial Interpretation as the process through which managers understand, evaluate, assign meaning to, and contextualize algorithmic information.

Contemporary literature increasingly demonstrates the importance of this issue, while also revealing a fragmented research focus. Mahmud et al. (2022), through a systematic review of algorithm aversion, demonstrate that responses to algorithms are influenced by algorithm-related, individual, task-related, and contextual factors. Cao et al. (2021) examine AI acceptance and avoidance among managers, whereas Gaczek et al. (2025) address locus of causality, attribution, and human–AI decision-making. Aysolmaz et al. (2023) examine perceptions and risk–benefit trade-offs in algorithmic decision-making. Meanwhile, Bogert et al. (2021) focus on task difficulty and reliance on algorithms, Chacon & Kaufmann (2025) examine algorithm use and judgemental biases, and Klingbeil et al. (2024) investigate trust, overreliance, and the costs associated with overreliance. This mapping reveals a research gap concerning the behavioral mechanism linking algorithmic information with managerial interpretation. Existing research explains why managers accept, reject, trust, appreciate, or over-rely on algorithms and how task characteristics influence algorithmic reliance. However, it remains less able to explain how algorithmic information becomes connected to managerial interpretation through a specific behavioural mechanism. Based on the theoretical synthesis developed in this study, algorithmic information may first influence managers' reliance on algorithmic recommendations, which can subsequently shape how managers interpret and evaluate algorithmic outputs. The present research therefore explicitly distinguishes its approach from studies that primarily examine the relationship between AI and trust, acceptance, adoption, aversion, appreciation, or performance.

This research gap becomes particularly significant when examined through the perspectives of Bounded Rationality and the Behavioral Theory of the Firm. Bounded Rationality explains human limitations in processing information and making fully rational decisions, whereas the Behavioral Theory of the Firm provides a foundation for understanding organizational decision-making as a process influenced by the behavior and limitations of organizational actors. The perspectives of



behavioral decision-making and risk perception further suggest that decisions depend not only on the objective characteristics of information but also on how information is perceived and processed. When these perspectives are integrated with Organizational Interpretation, together with the literature on the Human–AI Decision Environment and Algorithmic Judgement and Reliance, they produce a theoretical synthesis in which algorithms create a new information environment while decision-making remains dependent on human interpretation. Accordingly, the theoretical foundation of this study integrates Bounded Rationality and Behavioral Theory of the Firm. Bounded Rationality explains why managers rely on external informational inputs under cognitive and informational constraints, while Behavioral Theory of the Firm explains how such reliance becomes part of organizational decision-making behaviour. From this perspective, the ordering of the constructs is theoretically consequential. Under bounded rationality, managers cannot fully process all available information and therefore selectively incorporate informational inputs into their decision processes. In an algorithmic environment, reliance represents this behavioural incorporation of an algorithmic recommendation into the decision process.

The Behavioral Theory of the Firm further suggests that organizational decision-making is shaped by behavioural responses to information and organizational circumstances. Reliance can therefore be positioned as an intermediate behavioural process through which algorithmic information receives greater weight in managerial cognition. Managerial interpretation then concerns the subsequent process of understanding, evaluating, assigning meaning to, and contextualizing the information within the organizational decision context. Complementary insights from organizational interpretation and human–AI decision-making literature are used to explain the interpretive context in which algorithmic outputs are incorporated into managerial judgement. Based on this synthesis, the present study positions Reliance on Algorithmic Recommendation as a mediating mechanism between Algorithmic Information and Managerial Interpretation. Algorithmic Information refers to information generated or supported by algorithmic systems and made available to managers as an informational input for organizational decision-making. In contrast, Reliance on Algorithmic Recommendation refers to the extent to which managers use, follow, and depend on algorithmic recommendations as inputs when making organizational decisions. Managerial Interpretation refers to the managerial



cognitive process through which managers understand, evaluate, assign meaning to, and contextualize algorithmic outputs within a specific organizational decision context.

The theoretical synthesis suggests that the availability of algorithmic information may influence reliance because such information provides an algorithmically generated informational input that managers can incorporate into their decision processes. However, this influence may also extend to managerial interpretation through managers' reliance on algorithmic recommendations. When algorithmic information is received, managers may develop a behavioural tendency to use or follow the associated algorithmic recommendation. This reliance gives the recommendation greater behavioural weight within the decision process, which can subsequently influence how managers understand, evaluate, and contextualize the information. Such reliance may subsequently shape how managers understand, evaluate, and contextualize algorithmic information within the organizational decision context. Thus, Reliance on Algorithmic Recommendation represents the behavioral mechanism through which Algorithmic Information may influence Managerial Interpretation. The novelty of this study lies in this mechanism. The novelty lies specifically in conceptualizing reliance not merely as an outcome of algorithm acceptance or as a behavioural endpoint, but as an intervening behavioural mechanism through which algorithmic information becomes consequential for managerial interpretation. Algorithmic information does not automatically determine managerial interpretation; the behavioral response to algorithmic recommendations may also shape how such information is subsequently understood and evaluated by managers.

Accordingly, this study simplifies the broader algorithmic decision-making framework into a more focused mechanism: Algorithmic Information → Reliance on Algorithmic Recommendation → Managerial Interpretation, while retaining the direct path from Algorithmic Information → Managerial Interpretation. This model represents a focused intersection of the broader conceptual framework developed in the study by emphasizing the behavioral role of reliance in linking algorithmic information with managerial interpretation. Based on the phenomenon, urgency, research gap, and theoretical synthesis described above, the primary objective of this study is to examine the effects of Algorithmic Information on Reliance on Algorithmic Recommendation and Managerial Interpretation, and to test the mediating role of Reliance on Algorithmic Recommendation in the relationship between Algorithmic Information and Managerial Interpretation. Through this objective, the study seeks to



provide a more mechanism-oriented understanding of algorithmic decision-making by positioning reliance on algorithmic recommendations as the behavioral mechanism linking the algorithmic information environment with managerial interpretation.

II. LITERATURE REVIEW

2.1 Bounded Rationality

Bounded Rationality, introduced by Simon (1955, 1979), provides a fundamental basis for understanding that managerial decision-making does not occur under conditions of perfect rationality. Managers face limitations in acquiring, processing, and evaluating information; therefore, decisions are shaped by the information available to them, as well as by limited cognitive capacity, time, and attention. In the context of this study, the presence of Algorithmic Information refers to information generated or supported by algorithmic systems and made available to managers as an informational input for organizational decision-making. Thus, algorithms do not eliminate human cognitive limitations but introduce a new form of information that must be processed under these constraints. This position is consistent with the theoretical foundation of this study, which identifies Bounded Rationality as a primary theoretical foundation and views artificial intelligence and algorithmic systems as a technological context that creates a new information environment and decision structure rather than as constructs directly examined in the empirical model. Under such constraints, managers are unlikely to process every available informational input with the same level of cognitive scrutiny. External informational inputs may therefore receive different degrees of behavioural reliance depending on their perceived usefulness within the decision process. In an algorithmic environment, reliance can be understood as the behavioural incorporation of an algorithmic recommendation into managerial decision-making rather than as evidence that the recommendation has been fully evaluated or uncritically accepted.

From the perspective of Bounded Rationality, an increase in the quantity or quality of information does not automatically produce fully rational decisions. Managers must still determine which information is relevant, how it should be understood, and how it should be incorporated into decisions. This condition becomes increasingly important when information originates from algorithmic systems because managers encounter outputs that have already been processed by a system



but nevertheless require human judgement. Accordingly, Algorithmic Information in this study is not viewed as a final decision but as information that enters the manager's cognitive decision-making process. Managerial Interpretation therefore becomes an important process because managers need to understand, evaluate, assign meaning to, and contextualize algorithmic information within an organizational decision context. This definition is consistent with the conceptual construction of the study, which explicitly defines Managerial Interpretation as the process through which managers interpret algorithmic information.

Thus, Bounded Rationality provides a theoretical explanation of why the relationship between algorithmic information and decision-making cannot be assumed to be automatic. Algorithmic information provides additional informational capacity, but decisions remain dependent on managers' ability to understand and evaluate that information. In this study, this perspective provides the basis for explaining how Algorithmic Information influences managerial responses and subsequent interpretation of algorithmic outputs.

2.2 Behavioral Theory of the Firm

The Behavioral Theory of the Firm, developed by Cyert & March (1963), provides a second perspective for understanding decision-making within an organizational context. The theory views organizations as systems in which decisions are influenced by information limitations, search processes, organizational objectives, and the behavior of actors involved in decision-making. From this perspective, managerial decisions are not understood as the outcome of completely objective and rational calculations but as the result of behavioral processes occurring within an organizational environment. In this study, this perspective is important because the use of algorithmic information remains undertaken by managers as organizational actors who must translate information into decisions.

When algorithms generate predictions, evaluations, or recommendations, these outputs become part of the organization's decision environment. However, algorithmic outputs do not automatically determine decisions because managers continue to play a role in understanding and evaluating such information. Accordingly, Behavioral Theory of the Firm helps explain why Reliance on Algorithmic Recommendation can be conceptualized as a behavioral response through which algorithmic



information may influence subsequent managerial interpretation. Reliance is not merely a form of technology acceptance but represents managers' tendency to use, follow, disregard, or depend on algorithmic recommendations when making organizational decisions. This definition is consistent with the construct developed in the broader research framework. This perspective also distinguishes the present study from approaches that examine AI primarily through the lens of technology adoption. Therefore, Behavioral Theory of the Firm provides a theoretical basis for positioning the use of algorithmic recommendations as part of organizational decision-making behavior.

Algorithmic Information refers to the informational input provided by algorithmic systems, whereas Reliance on Algorithmic Recommendation refers to the extent to which managers use, follow, or depend on such recommendations in their decision-making. Although these constructs are conceptually related, they represent distinct aspects of the managerial decision process. Algorithmic Information describes the availability and nature of algorithm-supported information as an informational condition, while Reliance on Algorithmic Recommendation captures the manager's behavioural response to that information. Importantly, the availability of algorithmic information does not necessarily imply that managers will rely on the recommendations provided. Rather, reliance may depend on how managers interpret, evaluate, and contextualize the information within their decision-making process. This distinction therefore allows the study to examine not only whether algorithmic information is available, but also how managers interpret that information and subsequently decide the extent to which they rely on algorithmic recommendations.

2.3 Synergy between Bounded Rationality and Behavioral Theory of the Firm

Bounded Rationality and Behavioral Theory of the Firm provide complementary explanations of algorithm-based decision-making. Bounded Rationality explains the cognitive limitations that prevent managers from processing all available information perfectly, whereas Behavioral Theory of the Firm explains how these limitations are manifested in organizational decision-making behavior. By integrating these perspectives, this study conceptualizes Algorithmic Information as part of the information environment faced by managers, Reliance on Algorithmic Recommendation as a behavioural response that reflects the extent to which managers incorporate or give weight to algorithmic recommendations, and Managerial Interpretation as the subsequent cognitive process



through which managers understand, evaluate, and contextualize information influenced by such reliance. From this perspective, the availability of algorithmic information may encourage managers to rely on algorithmic recommendations as a means of coping with information-processing limitations, while such reliance subsequently shapes how managers interpret and contextualize algorithmic information within their organizational decision-making processes.

This ordering reflects a distinction between behavioural reliance and subsequent managerial interpretation. Reliance on Algorithmic Recommendation concerns the extent to which managers incorporate, follow, or depend on algorithmic recommendations in their decision-making, whereas Managerial Interpretation concerns how managers subsequently assign meaning to, evaluate, and contextualize algorithmic information within their organizational context. Reliance therefore represents more than mere exposure to algorithmic information; it reflects a behavioural response to the presence and perceived usefulness of algorithmic recommendations in a decision environment characterised by bounded information-processing capacity. Accordingly, the theoretical framework positions Reliance on Algorithmic Recommendation as an important mechanism through which Algorithmic Information may shape subsequent Managerial Interpretation.

This perspective is consistent with literature that conceptualizes AI as contributing to changes in organizational decision structures. Shrestha, Ben-Menahem, and von Krogh (2019) discuss changes in decision-making structures associated with AI, while Raisch and Krakowski (2021) identify a paradox between automation and augmentation in human–AI relationships. Building on this perspective, the present study conceptualizes Reliance on Algorithmic Recommendation as a behavioural response that may emerge when managers encounter and incorporate algorithmic outputs into their decision-making processes, subsequently influencing how those outputs are understood and evaluated. The proposed relationship can therefore be expressed as Algorithmic Information → Reliance on Algorithmic Recommendation → Managerial Interpretation. This ordering is consistent with the study's conceptualization of reliance as a behavioural mechanism through which algorithmic information may influence subsequent managerial interpretation. At the same time, Algorithmic Information may directly influence Managerial Interpretation by shaping the information available for understanding and evaluation. The direct relationship between Algorithmic Information and Managerial Interpretation is therefore retained and empirically tested. This framework provides a focused account



of how algorithm-supported information may first influence managerial reliance and subsequently shape managerial interpretation within organizational decision-making.

2.4 Hypothesis Development

2.4.1 Algorithmic Information and Managerial Interpretation

Based on Bounded Rationality, managers process information under cognitive, time, and attention constraints. Algorithmic systems provide predictions, evaluations, and recommendations, but these outputs still require managerial understanding and evaluation. From the perspective of Behavioral Theory of the Firm, such interpretation occurs within an organizational decision-making context. Therefore, algorithmic information is expected to stimulate managerial interpretation. Gaczek et al. (2025) support the importance of attribution and human–AI decision-making processes in shaping how AI outputs are understood.

H1: Algorithmic Information has a positive effect on Managerial Interpretation.

2.4.2 Algorithmic Information and Reliance on Algorithmic Recommendation

Bounded Rationality suggests that managers may use external information sources to overcome limitations in information processing. Algorithmic information provides managers with algorithm-supported informational inputs that can be incorporated into organizational decision-making. Consistent with Behavioral Theory of the Firm, such information may influence decision-making behavior. Bogert et al. (2021) demonstrate the relationship between task characteristics and reliance on algorithm, while Silber et al. (2025) provide evidence on the use of AI advisors in complex financial decisions.

H2: Algorithmic Information has a positive effect on Reliance on Algorithmic Recommendation.

2.4.3 Reliance on Algorithmic Recommendation and Managerial Interpretation

Bounded Rationality suggests that managers interpret information within cognitive and informational constraints. Importantly, reliance is not conceptualized here as the final outcome of a completed evaluation of the recommendation. Rather, reliance reflects the extent to which managers behaviourally incorporate or follow an algorithmic recommendation as part of their decision process.



Such behavioural incorporation can increase the salience and weight of the recommendation in subsequent managerial cognition, thereby shaping how the information is understood, evaluated, and contextualized. When managers rely on algorithmic recommendations, their reliance may shape how they understand, evaluate, and contextualize algorithmic outputs within a specific decision context. From the perspective of Behavioral Theory of the Firm, reliance on external decision inputs can become part of the behavioral process through which organizational actors form managerial judgements. This relationship is consistent with research on human–AI decision-making, which emphasizes that interactions with algorithmic recommendations can influence how individuals evaluate and interpret AI-generated outputs. Steyvers & Kumar (2023) highlight the importance of human evaluation in AI-assisted decision-making, while Sullivan & Weger (2025) indicate that understanding, perceived reliability, and confidence can shape responses to algorithmic systems. Thus, managers who rely more strongly on algorithmic recommendations may be more likely to incorporate and interpret those recommendations as meaningful inputs in their managerial decision-making process.

H3: Reliance on Algorithmic Recommendation has a positive effect on Managerial Interpretation.

2.4.4 The Mediating Role of Reliance on Algorithmic Recommendation

The preceding relationships provide the basis for the proposed mediation mechanism. Algorithmic Information may influence Managerial Interpretation directly because algorithmic outputs provide information that managers must understand and evaluate. However, this relationship may also occur indirectly through managers' Reliance on Algorithmic Recommendation. When managers receive algorithmic information, they may first develop a tendency to use or follow the recommendations generated by the algorithm. This reliance subsequently influences how the recommendations are incorporated into managerial understanding, evaluation, and contextualization. Therefore, Reliance on Algorithmic Recommendation represents a behavioral mechanism through which algorithmic information can be translated into managerial interpretation. This mechanism is consistent with the integration of Bounded Rationality and Behavioral Theory of the Firm. The former explains why managers depend on external information to cope with cognitive and informational limitations, while the latter explains how such reliance becomes part of organizational decision-making



behavior. Empirical evidence from Bogert et al. (2021), Silber et al. (2025), and research on AI-assisted decision-making further supports the importance of reliance and human evaluation in algorithm-supported decisions.

Accordingly, this study examines not only whether Algorithmic Information influences Managerial Interpretation, but also whether this relationship operates through Reliance on Algorithmic Recommendation. The mediation logic therefore rests on two theoretically distinct processes. First, algorithmic information changes the informational conditions faced by managers and can increase the availability of algorithm-supported inputs. Second, managers respond behaviourally to those inputs by using, following, or depending on algorithmic recommendations. This behavioural response gives the recommendation greater relevance within the decision process, which may subsequently shape managerial interpretation.

H4: Reliance on Algorithmic Recommendation mediates the effect of Algorithmic Information on Managerial Interpretation.

Overall, the proposed mediation model is expressed as:

Algorithmic Information → Reliance on Algorithmic Recommendation → Managerial Interpretation
while the direct relationship between Algorithmic Information and Managerial Interpretation is also examined.

III. METHODOLOGY

3.1 Research Location

This study was conducted in Denpasar City, Bali, Indonesia, an urban environment characterised by increasing digitalisation of organisational activities and the use of algorithm-supported information in managerial decision-making. Denpasar was selected as a relevant context for examining how managers interpret and use algorithmic information and recommendations in organisational decisions. Rather than positioning Denpasar as representative of all Indonesian organisations, the city was treated as a contextual setting in which managers increasingly encounter digital information and algorithm-supported decision processes.



3.2 Population and Sample

The target population consisted of managers and organisational decision-makers in Denpasar who had experience using information or recommendations generated or supported by algorithmic systems in managerial decision-making. A purposive sampling technique was employed to ensure that respondents possessed relevant experience. Before completing the questionnaire, respondents were screened to confirm that they currently held, or had recently held, a managerial or decision-making position, had experience using digital systems that generated or supported algorithmic information or recommendations, and had encountered situations in which such information was considered in organisational decisions. Because the precise population of managers with such experience could not be identified, the population was treated as effectively unknown. G*Power indicated a minimum required sample size of 134 respondents. To provide a sufficient margin above the minimum requirement, 150 respondents were recruited for the study.

3.3 Data Collection Technique

Data were collected through a structured online survey. Before completing the questionnaire, respondents received a brief standardised explanation of algorithmic information and algorithmic recommendations to establish a common understanding of the research context. Respondents then completed a questionnaire using a five-point Likert scale (South et al., 2022). The questionnaire measured three constructs: Algorithmic Information, Managerial Interpretation, and Reliance on Algorithmic Recommendation. Algorithmic Information is defined as information generated or supported by algorithmic systems and made available to managers as an informational input for organizational decision-making. Reliance on Algorithmic Recommendation refers to the extent to which managers use, follow, or depend on algorithmic recommendations as part of their decision-making process. Managerial Interpretation refers to the managerial cognitive process through which managers understand, evaluate, assign meaning to, and contextualize algorithmic information within a specific organizational decision context. Before the main survey, a pilot test was conducted to assess item clarity and preliminary measurement quality. Participants received information regarding the research purpose, procedures, voluntary participation, and confidentiality before providing informed



consent. Respondent anonymity and confidentiality were maintained throughout the research process, and all collected data were used exclusively for academic purposes.

3.4 Data Analysis Technique

The data were analysed using Partial Least Squares Structural Equation Modelling (PLS-SEM) with SmartPLS 4.0. PLS-SEM was selected to examine the relationships among the latent constructs and the proposed mediation effect (Hair, 2021). The measurement model was assessed using Cronbach's alpha, rho_A, composite reliability, and Average Variance Extracted (AVE). The structural model was evaluated by examining the path coefficients and significance levels obtained through bootstrapping. Direct effects were examined for the relationships between Algorithmic Information and Managerial Interpretation, Algorithmic Information and Reliance on Algorithmic Recommendation, and Reliance on Algorithmic Recommendation and Managerial Interpretation. The indirect effect was examined to determine whether Reliance on Algorithmic Recommendation mediates the relationship between Algorithmic Information and Managerial Interpretation.

IV. RESULTS AND DISCUSSION

4.1 Descriptive Analysis

Descriptive analysis was conducted to provide an overview of the characteristics of the 150 respondents participating in the study. The respondent profile was assessed based on gender, age, educational background, managerial position, managerial experience, and experience using algorithm-supported information and recommendations. The profile indicates that the respondents represented different managerial backgrounds and levels of experience, providing an appropriate basis for examining managerial interpretation and reliance on algorithmic recommendations.

Characteristics	Category	Frequency (n)	Percentage (%)
Gender	Male	82	54.7
	Female	68	45.3
Age	25–35 years	48	32
	36–45 years	56	37.3
	46–55 years	32	21.3
	>55 years	14	9.4

Education	Diploma	12	8
	Bachelor's degree	86	57.3
	Master's degree	46	30.7
	Doctoral degree	6	4
Managerial Position	Supervisor/Coordinator	42	28
	Middle Manager	73	48.7
	Senior Manager/Executive	35	23.3
Managerial Experience	<5 years	38	25.3
	5–10 years	67	44.7
	>10 years	45	30
Experience Using Algorithmic Information	<1 year	25	16.7
	1–3 years	71	47.3
	>3 years	54	36
Total		150	100

Table 1. Descriptive Profile of the Respondents (N = 150)

The respondent profile shows that the sample was relatively diverse in terms of demographic and professional characteristics. Most respondents were aged 36–45 years (37.3%), followed by those aged 25–35 years (32.0%). In terms of education, the majority held a bachelor's degree (57.3%), while 30.7% held a master's degree. Middle managers represented the largest managerial group (48.7%), and 74.7% of respondents had more than five years of managerial experience. Importantly, 83.3% of respondents reported more than one year of experience using algorithmic information, indicating that most participants had sufficient exposure to algorithm-supported information environments to evaluate the relationships examined in this study.

4.2 Reliability and Validity Test

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
Algorithmic Information	0.917	0.917	0.948	0.858
Managerial Interpretation	0.773	0.773	0.846	0.524
Reliance on Algorithmic Recommendation	0.764	0.775	0.864	0.68

Table 2. Construct Reliability and Validity

proposed model. Overall, the results indicate that the structural model provides meaningful explanatory power for the endogenous constructs.

4.4 Effect Size

Relationship	f^2	Interpretation
Algorithmic Information → Reliance on Algorithmic Recommendation	0.892	Large
Algorithmic Information → Managerial Interpretation	0.455	Large
Reliance on Algorithmic Recommendation → Managerial Interpretation	0.247	Medium

Table 5. Effect Size (f^2)

The effect size (f^2) was assessed to determine the substantive contribution of each predictor to the endogenous constructs. Algorithmic Information demonstrates a large effect on Reliance on Algorithmic Recommendation ($f^2 = 0.892$). This indicates that Algorithmic Information makes a substantial contribution to explaining managers' reliance on algorithmic recommendations. Algorithmic Information also demonstrates a large effect on Managerial Interpretation ($f^2 = 0.455$), indicating a substantial contribution to the explanation of managerial interpretation. Meanwhile, Reliance on Algorithmic Recommendation demonstrates a medium effect on Managerial Interpretation ($f^2 = 0.247$). This indicates that reliance on algorithmic recommendations provides a meaningful contribution to explaining managerial interpretation. Using the commonly applied benchmarks, f^2 values of 0.02, 0.15, and 0.35 indicate small, medium, and large effects, respectively.

4.5 Hypothesis Test

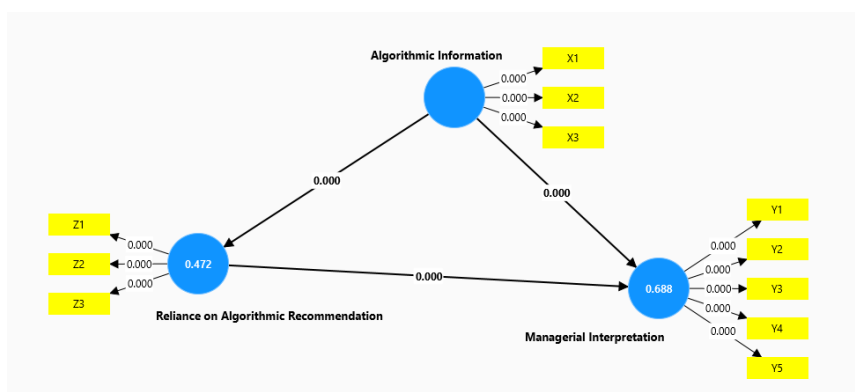


Figure 1. Structural Model and Path Coefficients



	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values
Algorithmic Information -> Managerial Interpretation	0.519	0.521	0.058	9.013	0.000
Algorithmic Information -> Reliance on Algorithmic Recommendation	0.687	0.687	0.047	14.500	0.000
Reliance on Algorithmic Recommendation -> Managerial Interpretation	0.382	0.381	0.062	6.116	0.000
Algorithmic Information -> Reliance on Algorithmic Recommendation -> Managerial Interpretation	0.263	0.261	0.044	5.928	0.000

Table 6. Direct and Indirect Effects

The structural model results indicate that Algorithmic Information has a positive and statistically significant effect on Managerial Interpretation ($\beta = 0.519$, $t = 9.013$, $p < 0.001$). This finding indicates that greater exposure to or availability of algorithmic information is associated with stronger managerial interpretation of such information in the decision-making process. The result provides empirical support for the proposed relationship between Algorithmic Information and Managerial Interpretation. Algorithmic Information also has a positive and statistically significant effect on Reliance on Algorithmic Recommendation ($\beta = 0.687$, $t = 14.500$, $p < 0.001$). The relatively large path coefficient indicates that algorithmic information is strongly associated with managers' tendency to rely on algorithmic recommendations in decision-making. This finding suggests that algorithmic information may directly shape managers' reliance on recommendations generated or supported by algorithmic systems.

Furthermore, Reliance on Algorithmic Recommendation significantly affects Managerial Interpretation ($\beta = 0.382$, $t = 6.116$, $p < 0.001$). This result indicates a positive association between reliance on algorithmic recommendations and managerial interpretation, suggesting that greater reliance on algorithmic recommendations is accompanied by stronger managerial interpretation of algorithmic information. The indirect effect of Algorithmic Information on Managerial Interpretation through Reliance on Algorithmic Recommendation is also positive and statistically significant ($\beta = 0.263$, $t = 5.928$, $p < 0.001$). This result indicates that Reliance on Algorithmic Recommendation



significantly mediates the relationship between Algorithmic Information and Managerial Interpretation. Because the direct relationship between Algorithmic Information and Managerial Interpretation remains significant ($\beta = 0.519$, $p < 0.001$), while the indirect effect is also significant, the findings indicate a partial mediation effect.

4.4 Discussion

The central finding of this study is that Algorithmic Information is associated with Managerial Interpretation through both a direct informational pathway and an indirect behavioural pathway involving Reliance on Algorithmic Recommendation. This finding suggests that the influence of algorithmic systems on managerial decision-making cannot be understood solely from the availability of algorithm-generated information. Rather, the behavioural extent to which managers incorporate algorithmic recommendations into their decision processes also matters. Algorithmic information therefore appears to operate not only as an informational resource but also as a basis for behavioural engagement with algorithmic recommendations. The significant positive relationship between Algorithmic Information and Managerial Interpretation ($\beta = 0.519$, $t = 9.013$, $p < 0.001$) indicates that algorithm-supported information is meaningfully associated with how managers understand, evaluate, and contextualize information in organizational decision-making. This finding is consistent with Gaczek et al. (2025), who emphasize the continuing importance of human judgement in human–AI decision-making, and Steyvers and Kumar (2023), who highlight human evaluation in AI-assisted decision-making. The present finding extends this literature by showing that the informational role of algorithmic systems is directly associated with managerial interpretation rather than being examined only through technology acceptance or system use. Algorithmic outputs can expand the information available to managers, but such information still requires managerial interpretation within the organizational context.

The positive relationship between Algorithmic Information and Reliance on Algorithmic Recommendation ($\beta = 0.687$, $t = 14.500$, $p < 0.001$) further indicates that algorithm-supported information is strongly associated with the extent to which managers give behavioural weight to algorithmic recommendations. This result is consistent with Bogert et al. (2021), who show that decision-task characteristics influence reliance on algorithms, and Silber et al. (2025), who provide



experimental evidence concerning AI advisors in complex decision-making. The finding suggests that reliance should not be viewed solely as an indicator of technology acceptance. Instead, it represents a behavioural dimension of managerial interaction with algorithmic systems, reflecting whether recommendations are incorporated into the decision process. The most theoretically noteworthy finding is the positive relationship between Reliance on Algorithmic Recommendation and Managerial Interpretation ($\beta = 0.382$, $t = 6.116$, $p < 0.001$). This result provides a complementary perspective to literature that commonly examines understanding, trust, perceived reliability, transparency, or confidence as factors preceding responses to algorithmic systems. Sullivan and Weger (2025), for example, emphasize these factors in explaining responses to algorithmic systems. The present finding suggests that reliance can also be associated with the interpretive process itself. When managers give an algorithmic recommendation greater behavioural weight, that recommendation may become a more salient component of the information considered during decision-making. Greater salience can create greater opportunity for managers to engage with the recommendation, evaluate its relevance, and contextualize it within organizational circumstances.

This finding does not imply that reliance represents unquestioning acceptance or that managers cease evaluating algorithmic outputs. Rather, reliance reflects the extent to which an algorithmic recommendation is incorporated into the decision process. The finding therefore suggests a behavioural mechanism in which algorithmic information becomes more consequential when managers assign greater weight to the recommendations generated from it. This interpretation is consistent with Bounded Rationality, which explains why managers may use externally generated information to cope with limitations in information, attention, and cognitive processing, and with Behavioral Theory of the Firm, which emphasizes how decision behaviour becomes embedded within organizational processes. The significant indirect effect of Algorithmic Information on Managerial Interpretation through Reliance on Algorithmic Recommendation ($\beta = 0.263$, $t = 5.928$, $p < 0.001$), together with the significant direct effect, indicates complementary mediation. This demonstrates that the relationship between algorithmic information and managerial interpretation operates through two pathways. The first is a direct informational pathway, whereby algorithmic outputs contribute to the information available for managerial evaluation. The second is a behavioural pathway, whereby managers' reliance gives algorithmic recommendations greater weight within the decision process.



Reliance therefore provides a behavioural link through which algorithmic information becomes associated with managerial interpretation.

These findings provide three theoretical contributions. First, the study moves beyond a technology-acceptance perspective by conceptualizing reliance as a behavioural mechanism within managerial decision-making. Second, it contributes to human–AI decision-making research by showing that reliance is not necessarily only an endpoint of interaction with algorithmic systems but can also be associated with how algorithmic information is incorporated into managerial interpretation. Third, the complementary mediation demonstrates that algorithmic information does not operate through a purely informational pathway; its association with managerial interpretation also depends on behavioural incorporation. The findings also have practical implications. Organizations should manage not only the availability and technical performance of AI systems but also the degree and quality of managerial reliance. High reliance should not automatically be interpreted as effective AI use because excessive reliance may result in inappropriate weight being given to algorithmic recommendations. Managers therefore need AI literacy that develops the ability to determine when to rely, when to question, and when to override algorithmic recommendations. Organizations should also establish appropriate human review procedures, clarify the limitations and uncertainty of algorithmic outputs, and preserve managerial responsibility for evaluating and contextualizing recommendations. Such practices can support calibrated reliance, allowing algorithmic systems to augment managerial decision-making without displacing human judgement.

V. CONCLUSION

This study concludes that Algorithmic Information is significantly associated with Managerial Interpretation through both a direct informational pathway and an indirect behavioural pathway involving Reliance on Algorithmic Recommendation. Algorithmic Information has a significant positive relationship with Managerial Interpretation, indicating that algorithm-supported information contributes to how managers understand, evaluate, and contextualize information within organizational decision-making. At the same time, Algorithmic Information is significantly associated with Reliance on Algorithmic Recommendation, while Reliance is positively associated with Managerial Interpretation. The significant indirect effect confirms that Reliance functions as a



behavioural mechanism through which algorithmic information becomes associated with managerial interpretation. The findings therefore provide a more nuanced explanation of managerial interaction with algorithmic systems. Algorithmic information does not operate only through direct informational exposure, nor does managerial reliance represent merely an endpoint of technology use. Instead, reliance gives behavioural weight to algorithmic recommendations and can make those recommendations more salient within the managerial decision process. The complementary mediation further indicates that algorithmic information is associated with managerial interpretation through both informational and behavioural pathways. This contributes to human–AI decision-making research by moving beyond perspectives centred primarily on technology acceptance, trust, algorithm aversion, or algorithm appreciation toward a mechanism-oriented understanding of how algorithmic recommendations become incorporated into managerial decision-making.

The findings also have practical implications for organizations implementing algorithmic decision-support systems. Effective AI implementation should not be assessed solely in terms of adoption or frequency of use. Organizations should also pay attention to how much behavioural weight managers assign to algorithmic recommendations. Excessive reliance may result in inappropriate acceptance of algorithmic outputs, whereas insufficient reliance may prevent organizations from realizing the informational benefits of AI. Managers therefore need the capability to determine when to rely on, question, contextualize, or override algorithmic recommendations. Organizational guidelines, human review procedures, and AI literacy programs can support calibrated reliance while maintaining managerial responsibility for evaluating algorithmic outputs. This study has several limitations. First, its cross-sectional design limits the ability to establish temporal and causal relationships among Algorithmic Information, Reliance on Algorithmic Recommendation, and Managerial Interpretation. Second, the use of self-reported data may introduce subjective response bias and common method bias. Third, the model focuses on three core constructs and does not incorporate other factors that may shape reliance and interpretation, including task complexity, algorithmic transparency, perceived accuracy, trust, and managerial experience. Finally, the findings are derived from a specific respondent and organizational context, which may limit their generalizability.

Future research could address these limitations by employing longitudinal or experimental designs to examine the temporal development of reliance and managerial interpretation. Future studies



could also incorporate contextual variables such as task complexity, transparency, perceived accuracy, trust, and managerial experience to identify conditions under which reliance strengthens or weakens the relationship between algorithmic information and managerial interpretation. Comparative research across industries, organizational levels, and cultural contexts would further establish whether the behavioural mechanism identified in this study is consistent across different managerial decision environments.

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