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# AI and the Future of Business Strategists: A Review and Research Agenda

#### Full research paper

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# Abstract

Artificial Intelligence has received increased attention from multiple research disciplines, including strategic management and information systems. Despite such heightened interest, there is a noticeable absence of a comprehensive framework to explain how business strategists work with AI to develop business strategies. This paper develops such a framework to illustrate the process of business strategists working with AI to develop business strategies. We also conducted a systematic literature review of AI in business strategy research and used the developed framework to structure the analysis. From the findings, we reveal which parts of the framework have been studied and which are still in need of further research. In doing so, this study makes important contributions by (1) proposing a comprehensive framework of strategy workers and AI delegation process, (2) identifying the currently reported contributions of AI and business strategy research, and (3) identifying promising venues and critical research questions for future research.

**Keywords**: Artificial Intelligence, Business Strategy Workers, Decision-Making, Systematic Literature Review, Research Agenda

# 1 Introduction

Organisations exist as a result of and are shaped by decisions that constitute and are constituted by their strategy (Mintzberg 1973). The concepts of strategy have been formerly used in the context of military. given its root meaning from the Greek word "strategos" - planning of destroying enemies by effectively using the resources (Payne 2018). The moving from a stable business environment to a more dynamic and competitive business environment after World War II brought the strategy concept to the business world, while the original meaning remains as the benchmark. Von Neumann and Morgenstern (1947) first introduced such a concept in business as the series of actions which is decided by the firm according to the situation. For Ansoff (1969), strategy is a guideline for decision-making based on the determinants namely market scope, growth rate, competitive advantage, and synergy. Porter and others (1996) introduced the well-known concept of generic strategies - cost leadership, differentiation, and focus to represent the alternative strategic positions in an industry. At the same time, Ward et al. (1996) defined strategy as a plan that determines and brings together primary objectives, set rules, and sequential processes. A long-term strategy, therefore, focuses on the future, including plotting and maintaining profitable objectives as well as making decisions on how to allocate resources to meet such objectives that will help the organisation to withstand market variations and cope with unexpected situations (Kotler and Murphy 1981).

While business strategy shapes decision-making, the process of determining a business strategy is also a decision-making process itself, which is traditionally considered as an exclusive domain reserved for humans (Raisch and Krakowski 2021). Drucker (2013) defined strategic planning as a sequential process of establishing risky decisions and analyzing possible future outcomes. It involves multi-year projections which are not very specific, like operational planning, and requires the company to properly organise their capabilities to facilitate it.

Since the first appearance in 1955 by McCarthy as "the science and engineering of making intelligent machines" that could "solve kinds of problems now reserved for humans, and improve themselves" (McCarthy et al. 2006), the definition of AI still varies across research domains with terminological confusion (Csaszar and Steinberger 2021). Brynjolfsson and McAfee (2017) defined AI as a cognitive technology that employs capabilities — including knowledge, perception, judgment, and the wherewithal to accomplish specific tasks — that were once the exclusive domain of humans. AI has been described to have the capability "to keep improving its performance without humans having to explain exactly how to accomplish all the tasks it's given". Benbya et al. (2020) claimed that AI can include automation of physical processes such as manipulating and moving objects, sensing, perceiving, problem-solving, decision-making and innovation. In an effort to unify AI concepts, Russell and Norvig (2020) arranged the multiple existing definitions along two axes — (a) "thinking" versus "acting" and (b) "humanly" versus "rationally" — which categorizes AI as devising algorithms that think humanly, think rationally, act humanly and act rationally. In keeping with past literature, we followed this broad definition.

AI had begun to be introduced as a strategic tool to improve organisational differentiation at a competitive scenario (Holloway 1983). Recently, with major improvement in computational power, the exponential increase in data, and new machine-learning techniques, many companies are motivated to adopt AI to achieve higher performance in managerial tasks, responding to the request of shortening the time for decision-making and focusing on the competitive landscapes (Weill and Woerner 2018).

While the use of technology by organisations as a strategic tool is not a recent practice (Bharadwaj et al. 2013; Venkatraman 2017), the connection of the AI technologies usage with business strategy becomes significantly more complex in relation to other technologies, due to its capabilities in cognition and problem solving that allows it to perform tasks formerly associated with humans (Bean 2019; Brynjolfsson and McAfee 2017; Lichtenthaler 2019; Wilson and Daugherty 2018). To date, researchers have investigated specific questions in relation to how AI creates business value (e.g., Borges et al, 2012; Ayoub and Payne, 2016; Stone et al., 2020), yet no comprehensive framework has been developed to understand how strategy workers work with AI to develop business strategy.

Therefore, this study aims to learn from prior research about the process of business strategists working with AI to develop business strategy, reveal which parts of the process attracted researchers' attention, and identify key research questions for future work.

The remainder of the article is organised as follows. First, we explain the process of selecting the paper, the proposed framework, and the coding process following Trieu's (2017) approach. We then continue with data analysis to explore insights into what we know about AI in business strategy based on each area of the framework proposed. Finally, we expose gaps and reveal unexplained or partially unexplained

areas. Consequently, we propose an agenda for future research. These areas address implications for theory building, methodology and management.

# 2 Paper Selection, Framework, and Coding Process

#### 2.1 Paper selection

Drawing on the process for identifying journals, articles, and content to include in a literature review study by Aguinis et al. (2018) as well as the guideline for conducting a systematic literature review in IS by Okoli and Schabram (2010) and in management by Tranfield et al. (2003), this systematic literature review (SLR) followed a three-step process (i.e., planning, conducting and reporting) to systematically identify and synthesise the fragmented knowledge on AI in business strategy, thus, to enable transparency and reproducibility (Okoli and Schabram, 2010; Aguinis et al., 2018).

After several pilot searches and exploratory readings, the most relevant keywords were identified and used to determine a systematic search strategy. We, therefore, conducted a literature review surrounding AI and Business strategy within the 1984-2022 period to cover the full range of literature. We identified the initial set of papers using the keywords "Artificial intelligence" or "Machine learning" or "Automation technologies" or "Automation technology", each, in turn, joined with one of the following keywords "Business strategy", "Business strategies", "Organisation strategy", "Organisation strategies", "Strategy work", "Strategic decision", and "Strategic decision making". The selection of these keywords was intended to ensure data consistency and to focus our search and analysis on publications of direct relevance to our interest. Only papers containing these keywords within their title, abstract, keyword, or subject indexing (where applicable) have been chosen. We only selected journal articles and conference papers for the review, given that these will give us the best quality output (Wade and Hulland 2004).

Since business strategy is a broad research domain while its conjunction with AI is relatively young, we aimed to capture as many as possible papers spanning the disciplines of business, management, accounting, strategy, information systems, and decision sciences. We searched articles from multiple databases, including Scopus, Web of Science, ProQuest (Computer Science Database and Science Database), Ebsco-Business Source Complete, and ABI/INFORM. Table 1 summarizes the selection criteria, and Figure 1 shows our paper selection process

As shown in Figure 1, from our search, we found 424 papers. We then excluded duplicated papers and those having irrelevant abstracts and content. Papers without available full text, non-English and editorial papers were also removed. This resulted in 56 studies in 50 journals, two working paper series and four conference proceedings as our final literature review underpinning the AI and Business strategy topic. Among those 50 journals, 21 (42 percent) were published in economics, while 26 percent of the sample were published in the Engineering research field. Management field ranked third with ten papers. Only three articles were published in Information Systems, followed by two studies in Medicine and Statistics stayed last with only one research. Figure 2 shows the papers distributed by research area and year of publication.

Year of publication	1984 - 2021		
Keyword	("Artificial intelligence" OR "Machine learning" OR"Automation technologies" OR "Automation technology") AND ("Business strategy" OR "Business strategies" OR"Organisation strategy" OR "Organisation strategies" OR "Strategy work" OR "Strategic decision" OR "Strategic decision making").		
Research area	Business, management, accounting, strategy, information systems and decision sciences.		
Type of publication	Journal article, Conference paper.		
Search engines and databases	Scopus, Web of Science, ProQuest (Computer Science Database and Science Database), Ebsco-Business Source Complete, and ABI/INFORM.		



Figure 1: Paper selection process



Figure 2: Paper distribution by year and by research area

#### 2.2 Strategy Worker and AI Delegation Framework

To provide a comprehensive end-to-end view of how AI and strategy workers coordinate in developing business strategy, a framework is required to structure the analysis. Building upon IS delegation theoretical framework proposed by Baird and Maruping (2021), decision-making with AI framework developed by Trunk et al. (2020), and factors affecting strategic decisions proposed by Rousseau (2020), we developed an integrative framework for the analysis (Figure 3).

Since the process of determining a business strategy is also a decision-making process itself, we take the decision-making process under uncertainty as the center of the framework and expand further with three different layers that affect this process, to capture the whole picture of business strategy in AI era. These three layers include Organisational factors, Decision makers & AI delegation, and Decision-making situations. Trunk et al. (2020) divided the basic process for organisational decision-making into six phases, begins with the definition of the decision goal, followed by the collection and interpretation of information, definition of alternatives, assigning utilities and probabilities as well as weighing and deciding, before reaching a specific outcome. We adapted this framework within the AI for business

strategy context and observed how strategy workers use AI to achieve the final goal of determining a business strategy for an organisation.



Figure 3: Strategy worker and AI delegation framework (based on the work of Baird and Maruping 2021; Rousseau 2020; Trunk et al. 2020)

In the new digital era where AI potentially outweighs humans in cognition and performance, we placed the decision-making process for business strategy under Baird and Maruping's (2021) framework that describes the delegation process of human agents and a new generation of information system artifacts. The latter, with the ability to "initiate action and accept rights and responsibilities" (p.315), is assumed to have equal functions as a human agent rather than being a passive tool in previous literature. We adopted the framework within the context of AI, given that AI plays a critical role among components of new-generation IS artifacts. We followed Baird and Maruping's (2021) guidelines suggesting dividing IS artifacts into four different archetypes: Reflexive, Supervisory, Anticipatory, and Prescriptive. The delegation process is impacted by delegation mechanisms, including Appraisal, Distribution, and Coordination. The framework shares the same idea with one produced by Shrestha et al. (2019), which introduces three distinct categories of collaborative decision structures: (a) a full delegation from manager to AI, (b) a hybrid mode - human-to-AI and AI-to-human; and (c) an aggregated human-AI decision-making. We integrated Baird and Maruping's (2021) framework of IS with Trunk et al.'s (2020) framework and Rousseau's (2020) suggested factors affecting strategic decisions aiming to explore how the delegation process between human and AI occur in each step of the decision-making process for business strategy via defined mechanisms.

The process of creating a business strategy is driven by and impacts the situation where business strategy workers must deal with the Uncertainty, Complexity and Politics of the environment. Unlike decisions made under risk, all possible outcomes, including their probabilities of occurrence, are unknown in decisions made under Uncertainty (Knight 1971). Meanwhile, strategic decision-making is a dynamic and challenging process (Mintzberg 1973) since organisation's operations often occur in complex environments and because a strategic decision might have both direct and indirect effects on stakeholders. Such nature, therefore, embraces Uncertainty in the strategic decision-making process. Uncertainty in strategic decision-making is associated with the challenges of accurately predicting the future while it is not possible to analyse all factors of micro and macro environments affecting the organisation (Chernov et al. 2020). Similarly, strategic makers must deal with the degree of Complexity, including analysing a large number of factors affecting a particular situation and pros and cons of each decision-making situation (Chernov et al. 2020; Rousseau 2020). Therefore, Complexity is another critical factor affecting strategic decision-making process. Finally, politics is one of the dominant paradigms of traditional strategic decision-making literature based on the view that organisations are political systems and that people might enhance their power to influence a decision (Eisenhardt and Zbaracki 1992).

Other concerns arising within the delegation process between Human and AI for business strategy are the organisational factors such as Organisational structure, Ethics, and Type of AI used (although the list is not exhaustive) and their impacts on the process. Prior research argued that once AI is actively applied in the decision-making process, it could impact changes in organisational structures, processes, and responsibilities. Similarly, ethical concerns over AI emerge since developments in AI will dramatically affect workers, businesses, nations, economies, and society as a whole, while there is a lack of studies on ethical AI. The selection of what type of AI should be used for the decision-making process is identified as an additional influence on the delegation process between strategy workers and AI. According to Benbya et al. (2020), research streams currently follow three typologies to differentiate AI systems: based on the kind of intelligence they display, based on the type of technology embedded into the AI system, and based on the function performed by the AI. A wide range of AI techniques available can be distinguished by its level of autonomy in decision-making, known as AI archetypes, are also illustrated in Figure 3.

#### 2.3 Coding Process

The coding process involved two coders (authors 2 and 3) to ensure reliability coding. The two authors read the papers and coded them based on the concepts in the framework (Figure 3) to determine if and how each paper investigated each dimension in the framework. One of the key core tasks was to determine if the paper refers to or describes the dimensions in the framework only briefly and at a high abstract level (cursory) or in detail or at a low abstract level (detailed). Each coder first coded 14 papers, they then compared and discussed their codes to ensure coding consistency and reliability. Disagreements in coding results were resolved through meetings and discussions until agreements were reached on all codes and all cursory/detailed distinctions. The remaining 42 papers were then divided equally between the two coders, who thencoded independently.

# 3 What We Know

The Table 2 summarises the level of detail at which the integral elements of the framework (major themes and sub-themes) were discussed in these papers. It should be noted that a number of papers discussed a desirable or futuristic projection (i.e., what it should be like or will be like in the future) rather than a current state.

Themes	Sub-themes	Total #	Detailed	Cursory
		of papers	# (%)	# (%)
Organisational factors	Organisational structure	8	2 (25%)	6 (75%)
	Ethics	9	5 (56%)	4 (44%)
	Type of AI Used	50	38 (76%)	12 (24%)
Strategic decision- making process	Define decision-making goal	36	8 (22%)	28 (78%)
	Collect information	35	24 (69%)	11 (31%)
	Interpret information	40	29 (73%)	11 (28%)
	Define alternatives	27	19 (70%)	8 (30%)
	Assign utilities and probabilities	29	19 (66%)	10 (34%)
	Weigh and decide	47	37 (79%)	10 (21%)
AI archetypes	Reflexive	27	18 (67%)	9 (33%)
	Supervisory	19	13 (68%)	6 (32%)
	Anticipatory	35	28 (80%)	7 (20%)
	Prescriptive	21	14 (67%)	7 (33%)
Decision-making situation/context	Uncertainty	15	4 (27%)	11 (73%)
	Complexity	26	16 (62%)	10 (38%)
	Politicality	16	7 (44%)	9 (56%)

Table 2. The reviewed papers by the level of detail they discussed the framework's elements <sup>1</sup>

 $<sup>^{\</sup>rm 1}$  We listed the sample of 56 reviewed papers (cursory and detailed papers) by percentage and concepts in online appendix 1 (see https://osf.io/k2jmr)

#### 3.1 Organisational factors

Of the three constituent sub-themes under organisational factors, organisational structure and ethics were discussed in only 8 and 9 papers, respectively, suggesting that these factors are probably not considered major concerns in current AI-incorporated businesses. The few exceptions include Ballestar et al. (2021), which discussed in detail the importance of company size, and Piasecki et al. (2021), which treated ethics as a critical matter. The other papers only discussed these factors in general or briefly. By contrast, types of AI technology used were described relatively extensively (detailed discussion in 38 articles and cursory discussion in another 12). This is to be expected, given the focus of the reviewed papers. A wide range of AI types was discussed, but the most common were Machine Learning (ML, including supervised and un-supervised), followed by Artificial Neural Networks and process automation. This reflects the increasing use of ML to create a competitive edge for businesses in this digital era.

#### 3.2 Strategic decision-making process

The vast majority of the papers (48) lacked information about one or more main phases in the strategic decision-making process. The remaining 8 articles discussed all the phases but with varying levels of detail. *Weighing and deciding* was the most extensively discussed phase (detailed discussion in almost four-fifths of the 47 papers mentioning it). This finding aligns with expectations as this phase is ultimately the most important in decision-making regardless of how tasks are delegated. However, in most of these 47 papers, this phase was more heavily driven by humans than AI. *Collecting information* and *Interpreting information* were also discussed in a good number of papers (35 and 40, respectively), and mostly in detail. In these studies, AI tended to be more involved than humans, probably due to its widely recognised superiority to humans in performing tasks of this nature. Compared with other components, *Defining goals* was discussed with the least detail, while *Defining alternatives* and *Assigning utilities and probabilities* were discussed in the smallest numbers of paper (27 and 29, respectively). A possible reason is defining goals is usually assumed to be the human agent's responsibility, as indicated in 32 or the 36 papers discussing this sub-theme. Also, it is likely that defining alternatives and assigning utilities and probabilities are less relevant and/or necessary than other phases in some of the systems/devices reported.

#### 3.3 Decision-making situation/context

Our review revealed that while decision-making situation/context attracted researchers' attention, only a handful of papers discussed its elements in detailed. The results show while *Complexity* was mentioned more frequently and it referred to technical issues in most of the studies addressing it, *Uncertainty* was least discussed and *Politicality* was discussed mostly briefly. Specifically, of the 56 papers, only 4 papers discussed decision-making <u>uncertainty</u>, 16 papers examined decision-making complexity, and 7 papers discussed political aspect of the decision-making context. One of the reasons for the lack of detailed studies on Decision-making situation and context could be because the current applications of AI have yet to extend beyond technical landscape. This review would suggest, therefore, that decision-making situation and context is a promising venue for future work.

#### 3.4 Strategy works and AI delegation mechanisms

We followed Baird and Maruping's (2021) recommendations of categorising IS archetypes on a continuum from very simple tasks to full task completion autonomy and responsibility for an outcome. As a result, our analysis showed that various systems/devices can be categorized under more than one AI archetypes. The findings also revealed that *Anticipatory* was discussed more frequently and in greater detail (detailed discussion in 80% of the 37 papers) than the other archetypes. Most commonly found in these studies is the use of ML to predict market demand, diagnose diseases, or anticipate risks in energy, transport, medical, financial, educational and a range of other settings. The accuracy of AI's anticipatory functions was overwhelmingly considered acceptable in these cases. The second most discussed archetype is *Reflexive*, which in these studies usually involved patterns or characteristics matching. This is understandable given AI's power in executing mechanic, standardised tasks. *Supervisory* and *Prescriptive* (autonomous decision-making) appeared to be less common than the aforementioned archetypes, which probably reflects current thinking and expectations regarding where AI might not be relied on to replace humans yet.

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Regarding collaborating mechanism between strategy works and different types of AI archetype, our findings showed that none of the reviewed papers made a direct reference to delegation mechanisms. The coding results were derived through a process of closely and repeatedly reading the papers and matching each article to one or more delegation mechanisms deemed most relevant. The table below provides a broad overview of the delegation mechanisms relevant to each case and whether humans or agentic IS artifacts were delegated more responsibilities.

Delegation mechanism	Total # of papers	More human # (%)	More AI # (%)	Likely equal # (%)
Appraisal	52	52 (100%)	0 (0%)	0 (0%)
Distribution	51	23 (45%)	24 (47%)	4 (8%)
Coordination	23	19 (83%)	1 (4%)	3 (13%)

Table 3. The reviewed papers by relevant delegation mechanism and by delegated agent <sup>2</sup>

The relevance of the *Appraisal* mechanism to a majority of papers (52) along with the delegation entirely to humans in these cases, can be taken as an indication of current perceptions, expectations and sentiments related to "whether or not tasks are delegated to agent-based software" (Baird and Maruping 2021, p. 327). While appraisals can be based on *emotional* aspects, all the papers reviewed focussed on *cognitive* evaluations of, for example, how beneficial, reliable, efficient, or fit-for-purpose the AI artifacts were for certain tasks, and what hindered or enabled their successful implementation.

The *Distribution* mechanism applied to 51 cases, where it was reasonably clear whether the human agent or the AI agentic artifact was more heavily involved in the decision-making process. By count and percentage, at the time of our review, AI and humans seemed to take almost equal responsibilities in this process. However, in-depth analysis of the papers highlights a general belief among the studies that the two agents should take charge of different types of tasks due to their different strengths. In particular, AI tended to be delegated standardised, technical tasks in limited contexts only and overall was meant to assist rather than replace humans. Humans still played the key role in strategic elements of the process. For example, it was often humans who defined the goals and made the final decision, utilising AI-enabled results or advice. The typical scenario was "The human can [...] make an informed final decision considering the suggestions from the AI without necessarily following them all the time" (Bayrak et al. 2021, p. 11). The few exceptions where AI was described as being delegated some strategic tasks or proactive roles were likely a testing and evaluation process or a specification of an ideal or anticipated situation.

The *Coordination* mechanism is applied to cases where dynamic dependencies between situations, actions, tasks, and outcomes needed managing. As humans remained ultimately responsible for the strategic decision to be made, it followed naturally that humans, rather than AI, acted as the supervisor in such circumstances. Thus, the finding that coordination responsibilities were delegated more to AI in only one of the 23 cases came as no surprise.

### 4 Agenda for Future Research

As noted earlier, the objective of the study is to learn what parts of the strategy workers and AI collaboration framework have attracted attention from researchers and what are the promising venues for future research. The review revealed several areas that could motivate future work. It should be noted that these venues are not the only ones, the results of the systematic literature review revealed that they are significant. Regarding the theme of organisational factors, given that the choice of the type of AI to be used in an organisation are impacted by available resources and the structure of organisation (Trunk et al. 2020), it is important for executives to know which AI should be chosen for which task and which data needed to be provided for AI to work correctly and effectively. Therefore, an important research question for future research to address is: *Which AI should be used to support business strategists make effective decisions?* 

<sup>&</sup>lt;sup>2</sup> We listed the sample of 56 reviewed papers (cursory and detailed papers) by percentage and concepts in online appendix 2 (see https://osf.io/k2jmr)

In addition, ethical concerns are at the centre of AI adoption. The challenge of AI adoption for strategic decision-making is the decision outcome responsibility. By law, an autonomous machine can't be responsible for its decision (Zeng 2015). As a result, decision-makers must be responsible for their decisions. Therefore, it is essential for us to understand (1) *what it takes for strategy workers to use AI effectively and responsibly to make effective decisions*? And (2) *how can a shared ethical model be created to fit strategist-AI team's tasks*? These critical questions have not yet to be addressed, particularly in the context of decision-making responsibility.

In terms of Strategy workers and AI delegation theme, we found no evidence of the automation of effective strategic decisions, and none of the reviewed papers explicitly and deeply described delegation mechanisms between strategy workers and AI. This is not a surprising result given the majority of IS use literature (e.g.,Burton-Jones and Grange 2013; Sundaram et al. 2007; Trieu 2022; Trieu et al. 2022; Venkatesh et al. 2003) has focused on human agency and given priority to users rather than IS agency.

Task delegation to AI is an emerging research topic, given that decision-makers want to be involved in the decision-making tasks. They also tend to avoid full outsourcing, given that AI is incapable of taking into account multiple social contexts, such as historical, cultural, and interpersonal factors (Chernov et al. 2020). Therefore, the promising avenue for future research is to examine the following research questions: (1) *How do the distributions of strategists and AI (more humans or more AI) add value to effective decision-making*? (2) *How does the complexity of decision-making tasks influence task delegations to AI*? (3) *Which AI archetypes are more effective in supporting strategic decision-making*?

Regarding the theme of the decision-making process, at the strategic decision-making level, while AI will be able to assist business strategists in avoiding human flaws of information overload and the effects of stress and fatigue, the technology is limited in its ability to detect bias inherent from the used datasets and to capture subjective human meaning. It is important for organisations to have insights into *which strategic-decision making tasks should be more or less AI-based?* 

For the Decision-making situation and context theme, it has been acknowledged that AI has limited ability to realise human goals and take into account the decision-specific characteristics such as ambiguities, uncertainties, complexities, and politicality of those goals. Therefore, it is essential for future research to address the following questions: (1) *How does AI consider decision-specific characteristics (e.g., Uncertainty, complexity, and prolaticity) in making strategic goals?* (2) *How do strategy workers work with AI to make effective decisions while their strategic goals shift and/or are revealed only in the process of action?* 

### 5 Conclusion

In this paper, a literature review of 56 papers in Artificial Intelligence and Business Strategy was systematically conducted to examine the process of business strategists working with AI to develop a business strategy. Through the review, the study reveals which parts of the process attracted researchers' attention, based on which it identifies critical gaps in the literature and proposes opportunities for future research.

Overall, the literature was found to be lacking a comprehensive framework to (1) illustrate a comprehensive end-to-end view of how strategy workers and AI coordinate in developing a business strategy, (2) integrate literature findings, and (3) guide future research. Our proposed framework in Figure 3 can potentially provide an overarching theoretical model for understanding how business strategists work with AI to develop business strategies.

Our literature review results show that prior research has paid much attention to types of AI used in organisations and how the technology can support decision-making. However, the review also reveals that researchers have not paid sufficient attention to and have not sufficiently discussed the delegation mechanisms between strategy workers and AI, and factors affecting this process such as organisational factors (i.e., ethical aspects and organisational structure), decision-making situation/context (i.e., Uncertainty, complexity, and politicality). With more detail on these themes, we will be able to provide a more complete picture of how business strategists work with AI to effectively develop a business strategy.

This study makes important contributions to research by (1) proposing a comprehensive framework of strategy workers and AI collaboration process; (2) identifying the currently reported contributions of AI and business strategy research, and (3) identifying promising venues and critical research questions for future research.

# 6 References

- Aguinis, H., Ramani, R. S., and Alabduljader, N. 2018. "What You See Is What You Get? Enhancing Methodological Transparency in Management Research," *Academy of Management Annals* (12:1), pp. 83-110.
- Ansoff, H. I. 1969. Business Strategy: Selected Readings. Penguin (Non-Classics).
- Baird, A., and Maruping, L. M. 2021. "The Next Generation of Research on Is Use: A Theoretical Framework of Delegation to and from Agentic Is Artifacts," *MIS quarterly* (45:1).
- Bayrak, A. E., McComb, C., Cagan, J., and Kotovsky, K. 2021. "A Strategic Decision-Making Architecture toward Hybrid Teams for Dynamic Competitive Problems," *Decision Support Systems* (144).
- Bean, R. 2019. "Why Fear of Disruption Is Driving Investment in Ai," *MIT Sloan Management Review*).
- Benbya, H., Davenport, T. H., and Pachidi, S. 2020. "Artificial Intelligence in Organizations: Current State and Future Opportunities," *MIS Quarterly Executive* (19:4).
- Bharadwaj, A., El Sawy, O. A., Pavlou, P. A., and Venkatraman, N. v. 2013. "Digital Business Strategy: Toward a Next Generation of Insights," *MIS quarterly*), pp. 471-482.
- Brynjolfsson, E., and McAfee, A. 2017. "Artificial Intelligence, for Real," *Harvard business* review (1), pp. 1-31.
- Burton-Jones, A., and Grange, C. 2013. "From Use to Effective Use: A Representation Theory Perspective," *Information Systems Research* (24:3), pp. 632-658.
- Chernov, A., V., Chernova, V., A., and Komarova, T., V. 2020. "The Usage of Artificial Intelligence in Strategic Decision Making in Terms of Fourth Industrial Revolution," *Proceedings of the 1st International Conference on Emerging Trends and Challenges in the Management Theory and Practice (ETCMTP 2019)*: Atlantis Press, pp. 22-25.
- Csaszar, F., and Steinberger, T. 2021. "Organizations as Artificial Intelligences: The Use of Artificial Intelligence Analogies in Organization Theory," *Academy of Management Annals*:ja).
- Drucker, P. 2013. Managing for the Future. Routledge.
- Eisenhardt, K. M., and Zbaracki, M. J. 1992. "Strategic Decision Making," *Strategic management journal* (13:S2), pp. 17-37.
- Holloway, C. 1983. "Strategic Management and Artificial Intelligence," *Long Range Planning* (16:5), pp. 89-93.
- Knight, F. 1971. "Risk, Uncertainty and Profit. Chicago. University of Chicago Press." Boston Houghton Mifflin.
- Kotler, P., and Murphy, P. E. 1981. "Strategic Planning for Higher Education," *The journal of higher education* (52:5), pp. 470-489.
- Lichtenthaler, U. 2019. "Extremes of Acceptance: Employee Attitudes toward Artificial Intelligence," *Journal of Business Strategy*).
- McCarthy, J., Minsky, M. L., Rochester, N., and Shannon, C. E. 2006. "A Proposal for the Dartmouth Summer Research Project on Artificial Intelligence, August 31, 1955," *AI magazine* (27:4), pp. 12-12.
- Mintzberg, H. 1973. "Strategy-Making in Three Modes," *California management review* (16:2), pp. 44-53.
- Okoli, C., and Schabram, K. 2010. "A Guide to Conducting a Systematic Literature Review of Information Systems Research,").
- Payne, K. 2018. "Artificial Intelligence: A Revolution in Strategic Affairs?," *Survival* (60:5), pp. 7-32.
- Porter, M. E., and others. 1996. "What Is Strategy?,").

- Raisch, S., and Krakowski, S. 2021. "Artificial Intelligence and Management: The Automation–Augmentation Paradox," *Academy of Management Review* (46:1), pp. 192-210.
- Rousseau, D. M. 2020. "Making Evidence-Based Organizational Decisions in an Uncertain World," *Organizational Dynamics*).
- Russell, S., and Norvig, P. 2020. "Artificial Intelligence: A Modern Approach, Hoboken." USA: Pearson.
- Shrestha, Y. R., Ben-Menahem, S. M., and Von Krogh, G. 2019. "Organizational Decision-Making Structures in the Age of Artificial Intelligence," *California Management Review* (61:4), pp. 66-83.
- Sundaram, S., Schwarz, A., Jones, E., and Chin, W. W. 2007. "Technology Use on the Front Line: How Information Technology Enhances Individual Performance," *Journal of the Academy of Marketing Science* (35:1), pp. 101-112.
- Tranfield, D., Denyer, D., and Smart, P. 2003. "Towards a Methodology for Developing Evidence-Informed Management Knowledge by Means of Systematic Review," *British journal of management* (14:3), pp. 207-222.
- Trieu, V.-H. 2017. "Getting Value from Business Intelligence Systems: A Review and Research Agenda," *Decision Support Systems* (93:January 2017), pp. 111-124.
- Trieu, V.-H. 2022. "Towards an Understanding of Actual Business Intelligence Technology Use: An Individual User Perspective," *Information Technology & People*).
- Trieu, V. H., Burton-Jones, A., Green, P., and Cockcroft, S. 2022. "Applying and Extending the Theory of Effective Use in a Business Intelligence Context," *MIS Quarterly* (46:1), pp. 645-678.
- Trunk, A., Birkel, H., and Hartmann, E. 2020. "On the Current State of Combining Human and Artificial Intelligence for Strategic Organizational Decision Making," *Business Research* (13:3), pp. 875-919.
- Venkatesh, V., Morris, M. G., Davis, G. B., and Davis, F. D. 2003. "User Acceptance of Information Technology: Toward a Unified View," *MIS Quarterly* (27:3), pp. 425-478.
- Venkatraman, V. 2017. The Digital Matrix: New Rules for Business Transformation through Technology. LifeTree Media.
- Von Neumann, J., and Morgenstern, O. 1947. "Theory of Games and Economic Behavior, 2nd Rev,").
- Wade, M., and Hulland, J. 2004. "Review: The Resource-Based View and Information Systems Research: Review, Extension, and Suggestions for Future Research," *MIS Quarterly* (28:1), pp. 107-142.
- Ward, P. T., Bickford, D. J., and Leong, G. K. 1996. "Configurations of Manufacturing Strategy, Business Strategy, Environment and Structure," *Journal of management* (22:4), pp. 597-626.
- Weill, P., and Woerner, S. 2018. "Surviving in an Increasingly Digital Ecosystem," *MIT Sloan Management Review* (59:2), pp. 26-28A.
- Wilson, H. J., and Daugherty, P. R. 2018. "Collaborative Intelligence: Humans and Ai Are Joining Forces," *Harvard Business Review* (96:4), pp. 114-123.
- Zeng, D. 2015. "Ai Ethics: Science Fiction Meets Technological Reality," *IEEE Intelligent Systems* (30:3), pp. 2-5.

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