

Please cite the Published Version

Keegan, Brendan James, Iredale, Sophie and Naudé, Peter (2023) Examining the dark force consequences of AI as a new actor in B2B relationships. *Industrial Marketing Management*, 115. pp. 228-239. ISSN 0019-8501

DOI: <https://doi.org/10.1016/j.indmarman.2023.10.001>

Publisher: Elsevier

Version: Published Version

Downloaded from: <https://e-space.mmu.ac.uk/633005/>

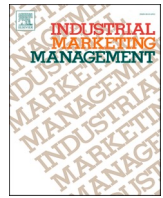
Usage rights:  [Creative Commons: Attribution 4.0](https://creativecommons.org/licenses/by/4.0/)

Additional Information: This is an open access article which originally appeared in *Industrial Marketing Management*, published by Elsevier

Data Access Statement: The data that has been used is confidential.

Enquiries:

If you have questions about this document, contact rsl@mmu.ac.uk. Please include the URL of the record in e-space. If you believe that your, or a third party's rights have been compromised through this document please see our Take Down policy (available from <https://www.mmu.ac.uk/library/using-the-library/policies-and-guidelines>)



Examining the dark force consequences of AI as a new actor in B2B relationships

Brendan James Keegan^{a,*}, Sophie Iredale^b, Peter Naudé^b

^a School of Business, Maynooth University, Ireland

^b Department of Marketing, International Business and Tourism, Manchester Metropolitan University, United Kingdom

ARTICLE INFO

Keywords:

Artificial intelligence
B2B relationships
Dark forces
Tensions
Dehumanization

ABSTRACT

Artificial intelligence (AI) in industrial marketing has seen significant research attention through various theoretical lenses with an emerging thread examining the dark side effects of AI. Thirty-four semi-structured interviews were conducted with buyers and suppliers of AI marketing solutions to investigate the consequences of AI 'dark forces' on B2B relationships. We posit AI as a new actor that has blurred the lines of the actors-resources-activities model. Findings show AI is now considered a new actor within B2B networks wielding dark force consequences such as algorithmic gatekeeping, which initiates dehumanization effects. In addition, AI is reliant on access to datasets which drives up resource costs. A lack of accountability of AI marketing solutions leads to opportunistic behaviours compromising actor relationships. Our conceptual model maps our understanding of the dark force consequences underpinning theoretical and managerial implications and recommendations for increased awareness and mitigation of dark forces.

1. Introduction

March 2023 saw the launch of a new generative artificial intelligence (AI) marketing solution service called 'EinsteinGPT' – declared as a transformational technological shift in marketing. Its value proposition is a combination of customer relationship management (CRM) capabilities with ChatGPT generative AI software producing a service that could:

“Generate personalized emails for salespeople to send to customers, generate specific responses for customer service professionals to more quickly answer customer questions, generate targeted content for marketers to increase campaign response rates, and auto-generate code for developers.” (Salesforce, 2023).

One can imagine the potential reception that such a service would have for CEOs around the globe. The idea of a well-established global brand with decades of experience in managing CRM with precise digital infrastructure behind it, would certainly be a compelling offer. The notion of an automated AI-based service enhancing all aspects of a firm's marketing, presents an enticing offer for the managers or agency individuals involved. However, beyond the hype of the capabilities of ChatGPT-4, there has been a call by high profile leaders of tech giants for a pause and further reflection on implications of generative AI (Hern,

2023). Moreover, the majority of AI applications consist of smaller scale applications, which (human) individuals create, develop and implement to enhance business processes. Understandably, with the recency of this development, empirical studies have not had the opportunity to fully examine the consequences of ChatGPT (Dwivedi et al., 2023), however we can learn from existing AI applications. In some cases, the perspectives of those individuals involved in business problems that AI solutions are designed to solve are overlooked (e.g., Gligor, Pillai, & Golgeci, 2021), which is the first gap our study intends to address.

It is clear that we find ourselves in a time where we are surrounded by ubiquitous artificial intelligence AI applications (Dwivedi et al., 2021) with many studies of AI capabilities in marketing (e.g., Canhoto & Clear, 2020), usually through a deterministic lens of technology adoption (Davenport, Guha, Grewal, & Bressgott, 2020; Paschen, Kietzmann, & Kietzmann, 2019). This focus on the capabilities of the technology tends to overlook the negative consequences on human end-users of such applications (Rana, Chatterjee, Dwivedi, & Akter, 2022). Stresses, pressures and tensions emerging from firms' adoption of digital technology are widely reported (Canhoto & Clear, 2020), with an emerging thread examining AI adoption in industrial marketing (e.g., Moradi & Dass, 2022). This thread has identified important negative consequences, which arise from AI, such as: the opacity of AI (Rana et al.,

* Corresponding author.

E-mail address: brendan.keegan@mu.ie (B.J. Keegan).

<https://doi.org/10.1016/j.indmarman.2023.10.001>

Received 11 November 2022; Received in revised form 24 July 2023; Accepted 2 October 2023

Available online 9 October 2023

0019-8501/© 2023 The Author(s). Published by Elsevier Inc. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

2022); power asymmetries (Grewal, Guha, Saturnino, & Schweiger, 2021); destruction of interpersonal connections (Gligor et al., 2021); disgruntlement with AI performance (Cao, Duan, Edwards, & Dwivedi, 2021); and a lack of accountability of AI marketing solutions (Mikalef, Conboy, & Krogstie, 2021). Amidst the modern day ‘dark forces’ produced by AI, a second knowledge gap is clear in terms of how B2B relationships between human actors are being impacted, negatively or otherwise.

From the limited knowledge on the consequences of AI on B2B relationships we must reconsider the role of AI itself. In adopting the long-standing actor-resource-activities (ARA) model some argue AI should be viewed as a combined ‘act-source’ (Pardo, Wei, & Ivens, 2022) or autonomous interlocutor (Kot & Leszczyński, 2020). However, considering the recent developments of generative AI, we posit that AI should be considered an entrant to the ARA model as a new type of actor. Hence, considering the ramifications of AI as an actor represents a third knowledge gap that this study will address. Considering the knowledge gaps identified, this study aims to investigate the dark force consequences of AI as a new actor on B2B relationships. The paper will next turn its attention to the literature, before outlining the methodological choices, presenting and discussing the key findings, and then concluding the article with an overview of the managerial implications and further research agenda emerging from the study.

2. Literature review

2.1. Integration of AI into industrial marketing

There is little dispute as to the desire for organisations to harness the power of AI within the marketing industry (e.g., Moradi & Dass, 2022). Exceptional computational capabilities through cutting edge technology are not only promised to improve efficiencies, but also to deliver services to customers with ease, while simultaneously reducing costs (Paschen et al., 2019). Modern industrial marketing is witnessing a significant influx of AI applications and services that are adept at plugging into traditional marketing processes and delivering impressive efficiencies (Hossain, Agnihotri, Rushan, Rahman, & Sumi, 2022). Chen, Jiang, Jia, and Liu (2022) identify seven outcomes including improvements in marketing efficiencies; improvements in accuracy, particularly marketing decision-making; improvements in understanding relationships between businesses and their consumers; and routes to increasing sales whilst reducing risks and costs associated with marketing. Similar findings are proposed by Saura, Ribeiro-Soriano, and Palacios-Marqués (2021) through their study of AI-based CRM systems. They suggest that there are significant positives for businesses through enhanced customer knowledge management, automation, and marketing performance evaluation. Enhanced understanding of consumer journey planning, mapping and management within B2B customer journeys is a dominant theme within the AI and B2B marketing literature (Rusthollkarhu, Toukola, Aarikka-Stenroos, & Mahlamäki, 2022). Through integration of AI with a businesses’ marketing analytics platform, Baabdullah, Alalwan, Slade, Raman, and Khatatneh (2021) and Hossain et al. (2022), also find that the marketers’ ability to attain competitive advantage is improved. Hossain et al. (2022 p.245) suggest that AI plays a vital role in “sensing, seizing, and reconfiguring the market.” They build upon the resource-based view, noting the need for a marketer to have appropriate marketing analytics resource and expertise, as well as capabilities in adopting AI, in order to successfully sense and seize the market. Through a combination of AI systems and machine learning algorithms, Bag, Gupta, Kumar, and Sivarajah (2021) argue that industrial marketing organisations may better identify any fake news content spread by competitors, thereby reducing the threat of harm to their brand. According to Farrokh, Shirazi, Hajli, and Tajvidi (2020), early detection of events critical to a business, i.e. macro-level events such as natural disasters to micro-level events such as managing a dearth of marketing data, are made simpler through adoption of AI. Finally, motivations for

AI adoption range from cost effective optimisation of processes (Davenport et al., 2020) sometimes at the expense of managerial expertise (Baabdullah et al., 2021), or to display organisational innovation (Akter, Wamba, Mariani, & Hani, 2021). As scholars attempt to keep pace with large scale developments of AI in marketing, such as with ChatGPT (Dwivedi et al., 2023), it is notable that overtly positive conclusions are drawn from their endeavours, overlooking the ‘dark side’.

2.2. AI dark forces

The ‘dark side’ of B2B relationships is a concept that has seen much attention in the industrial marketing literature, indicating both tolerable and intolerable negative outcomes such as:

‘problems’, ‘challenges’, ‘difficulties’, and ‘drawbacks’ related to structural issues that exist in business relationships, such as size differences, or the imbalance of power; processes within business relationships, including creativity issues and capability development’ (Abosag, Yen, & Barnes, 2016, p. 5).

Critical threads relating to use of AI in industrial marketing pertain to the notion that with any adoption of new technology to replace or optimise human-led processes or practices, unexpected negative outcomes will arise (Akter et al., 2021; De Bruyn, Viswanathan, Beh, Brock, & von Wangenheim, 2020; Mikalef et al., 2021). However, the predominant issues reported tend to focus on practical and technological aspects of the AI (e.g., when it breaks) (Bag et al., 2021), ethical conundrums (Ashok, Madan, Joha, & Sivarajah, 2022), or poor data input (De Bruyn et al., 2020). Further, we see an emerging thread which examines the negative consequences of AI adoption for marketing managers who are embarking on adopting this technology for the betterment of their organisation (e.g., Canhoto & Clear, 2020; Keegan, Canhoto, & Yen, 2022). This thread of studies has evoked interest in a much under-reported area referred to as AI ‘dark forces’, to which the present study contributes.

AI dark forces, as Rana et al. (2022) argue, are factors that lead to competitive disadvantages by impairing operational efficiencies due to the opacity of AI systems, and can lead to high-risk decision making in business. Similarly, Cao et al. (2021) explore the unpredictability of AI systems, suggesting that humans’ lack of knowledge of AI and its unpredictable outcomes may threaten their own judgment, calling for more training and better AI adoption standards. As a result, a common thread found in the literature is the preference of human judgment over AI decision-making. For example, Grewal et al. (2021) introduce the concept of uniqueness neglect, where humans trust the recommendations of each other more than AI. Gligor et al. (2021) suggest that this is because AI has the possibility of upending the interpersonal relationship between business partners, resulting in reduced collaborative creativity and less intuitive decision making. This often results in asymmetric conditions where more dominant or powerful partners may act opportunistically when AI creates imbalance between businesses. Mikalef et al. (2021) argue that this can impact accountability for AI outcomes, particularly where AI opacity can impair transparency and remove human agents from business decision making. Transparency is also impacted by changing AI algorithms, making it difficult to conceive of governance mechanisms for AI, despite them often being called for within the AI dark force literature (Mikalef et al., 2021; Rana et al., 2022). While a growing body of work on the ‘dark side’ of AI exists in the business and information systems research fields, there is a notable gap in understanding these forces through a marketing lens. Additionally, many studies in this area rely solely on literature reviews to make predictions about these forces, neglecting the need for empirical research. Hence there is a need for further inquiry into the consequences of AI dark forces which would allow us to further understand their impact on modern B2B relationships (Abosag et al., 2016). Similar to Huang and Rust (2021), we adopt the long-standing ARA model to analyse the consequences of AI dark forces, which we explore in the next section.

2.3. Adoption of the ARA framework

In 1992, a model of industrial networks was developed with a view to offering clarity to the understanding of B2B networks and relationships. Håkansson and Johanson (1992) proposed a seemingly rudimentary model comprised of three key dimensions:

‘Actors are defined as those who perform activities and/or control over resources. In activities, actors use certain resources to change other resources in various ways. Resources are means used by actors when they perform activities. Through these circular definitions a network of actors, a network of activities and a network of resources are related to each other’ (Håkansson & Johanson, 1992; p 28).

Upon reflection, the framework has had a significant bearing on understanding the unique circumstances of modern industrial marketing, particularly how actors are defined by their ability to exercise control over resources and activities (Håkansson & Johanson, 1992). This in itself establishes the notion that parties involved in B2B interactions have agency and are in control over resources and activities and these have a bearing upon their respective relationships. In the case of AI marketing solutions, control must be ceded to algorithms (Gligor et al., 2021) and third-party suppliers (Mikalef et al., 2021) who demand large quantities of buyer data (Dwivedi et al., 2021; Paschen et al., 2019) to become effective. As witnessed with recent iterations of generative AI products, such as ChatGPT, the latest generation of AI marketing solutions indicate a scenario whereby AI is be considered to have a high degree of agency and support decision-making (Dwivedi et al., 2023; Grewal et al., 2021; Rana et al., 2022). Activities have an apparent causal dimension, implying that one activity will have a clear and tangible effect on resources. In the case of AI, activities have become veiled in secrecy (Cao et al., 2021), and in some cases with little to no scrutiny of the tangible outcome from an algorithm (Keegan et al., 2022; Rana et al., 2022). Finally, resources represent the manner in which the other two variables come into operation. Recently, a significant transformation of this view of resources has occurred, whereby AI systems are being adopted at the expense of human agency (Bag et al., 2021; Gligor et al., 2021).

Understanding the AI landscape requires the recognition of the role of a new genre of actors, such as cloud computing platform providers, AI algorithm developers, data scientists and analysts, etc. However, it is becoming increasingly apparent that these new genre of actors are not as experienced as industrial marketers with the establishment and management of B2B relationships, leading to issues amongst buyers and suppliers of AI marketing solutions (Keegan et al., 2022; Mikalef et al., 2021). To understand these issues further, Hedvall, Jagstedt, and Dubois (2019) used the ARA model to highlight the importance of buyer and supplier firms managing their various roles and relationships in the network in which it participates. What is also clear from the range of studies, which have used ARA in this field (Hedvall et al., 2019; Kot & Leszczyński, 2020; Pardo et al., 2022), is the usefulness of the model in analysing, critiquing and restructuring our understanding of B2B relationships amidst the backdrop of disruption from technology adoption.

2.4. Considering AI as a new actor

A number of ARA studies propose relevant debates for the present study. Firstly, Pagani and Pardo (2017) sought to examine the impact of digital technology on B2B relationships. This work aimed to understand the influence of digitalisation through use of the ARA model, as well as examining the bonds/links between them. Through a case study approach, the limitations of large firms’ use of digital marketing methods was exposed. A key contribution from this work was the capability of using the ARA model to emphasize the transformational role of digitalization in value creation across business networks. They argue that as digital technologies dramatically change the manner in which actors interact in B2B networks, these networks evolve over time in ways which had not yet been understood (Abosag et al., 2016). The

digitalization being described referred to use of commonly adopted marketing techniques (Paschen et al., 2019), which are a far cry from the automated nature of AI marketing solutions services seen today (Bag et al., 2021). However, through Pagani and Pardo (2017), we witness how ARA is useful in terms of understanding the consequences of digital technology such as AI on B2B relationships.

Kot and Leszczyński (2020) considered the role and identity of AI who give it ‘interlocutor status’. Their proposals emerge from an investigation of the role of Business Virtual Assistants (BVAs) who are given responsibility to take part in dialogue between businesses with resources such as calendars, maps and memos. Such resources pertain to activities including the BVA’s ability to make meeting suggestions, respond to invitations and interpret user preferences. Kot and Leszczyński (2020) argue that AI in this context should be considered as an actor over an object controlled by its host, through its ability to interact in the following ways: “acceptance, influence, control and interpretation-making” (Kot & Leszczyński, 2020 p. 1156). More specifically, they posit that AI has the ability to make autonomous judgements and decisions, as well as the ability to negotiate with its host and other actors. However, whilst creating a compelling argument for AI as a new actor, they do not consider the negative implications or challenges of this perspective.

Most recently, Pardo et al. (2022) examined the integration of industrial internet of things (IIoT) applications and the implications these have on the business networks to which they are applied. The study adopts a system of systems perspective to understand the hitherto unexplored value creation potential for innovative technology. Most notably, their work makes a bold call for a revision of the ARA framework to consider that smart IIoT applications constitute an overlap zone between actors and resources (deemed as ‘Act-Source’). This overlap is principally based on IIoT Applications subscription to a goal orientated existence, thus performing a hybrid function within the original framework. Whilst the role of ‘smart objects’ as a product is much understood at this stage (e.g., Dwivedi et al., 2021), there is a clear distinction between smart objects and the more recent ‘hybrid-human’ AI marketing solutions (Kot & Leszczyński, 2020). Hence, through the ARA model, we can understand organisations’ assimilation of AI marketing solution resources, which perform autonomous decision-making roles and functions, as well as initiating key marketing tasks without human intervention.

These debates have laid a solid foundation for the basis of the present study by establishing a path for the examination of AI marketing solutions’ influence within B2B interactions, and by adopting a long-standing model for new and emergent areas, justifying its use and value in modern industrial contexts.

3. Method

An interpretive qualitative approach was utilised to identify any dark force consequences of AI on B2B relationships. The methodological choices were based on three rationales. First, notable studies of AI adoption in B2B marketing (e.g., Davenport et al., 2020; Dwivedi et al., 2021) have been effective in eliciting rich insights into the lived experience of actors within service ecosystems. A qualitative empirical gap exists amongst recent studies of the dark side of AI, many of which are conceptual in nature (e.g., Grewal et al., 2021) or reliant on quantitative surveys (e.g., Rana et al., 2022). Secondly, this approach was deemed suitable to enable participants from managers supplying or procuring AI marketing solutions to discretely describe any negative influence of dark forces on their relationships with individual and organisational actors under the cloak of anonymity. Recent works have had some success in unveiling contentious topics arising from AI from buyer and supplier audiences (e.g., Keegan et al., 2022). Thirdly, as few theoretical works examine the detrimental impact of AI on B2B relationships (e.g., Gligor et al., 2021), the adopted method is deemed to be a useful tool for exploration of themes when there is limited empirical grounding. Semi-

structured interviews were selected as the data collection tool to facilitate exploration of the research topic.

3.1. Sampling

In keeping with a qualitative endeavour to gather rich insights into the lived experience of actors in B2B networks, the goal of the sampling approach was to recruit suitable participants with experience of supplying or buying AI marketing solutions. Hence, a purposive sampling approach was adopted to identify participants who were able to articulate the dark force consequences upon relationships between buyers and suppliers of the AI marketing solutions. The researchers chose this approach as it allowed for a strategic approach to identifying participants in similar occupational roles within a similar geographic region, hence providing a valid representative sample of the wider population which would produce valuable insights into the goal of the study. Participants were contacted based on their experience with AI marketing solutions, in an industrial marketing setting. The primary purposeful stipulation for buyer participants was experience either in the capacity of procurement, or the full-scale adoption, and hence they would be in a position to provide insights on the interface between buyer and supplier. Similarly, supplier participants were targeted based on commercial experience, with a particular preference for senior positions such as Managing Directors and Chief Executives of AI development agencies. In total, 34 participants were recruited. Table 1 lists our participants with pertinent details underpinning their suitability for providing insights in response to the research aim.

3.2. Data collection and analysis

Semi-structured interviews were conducted using video conferencing software or else in-person, where possible. An interview protocol was used to explore the tenets of the research phenomenon, with the goal of eliciting opinions on the role of the consequences of AI on B2B relationships (Appendix A). Interviews lasted between 45 and 60 min. Recordings were transcribed and anonymised to protect the privacy of the firms and the research participants involved.

Upon initial screening of the transcripts, negative consequences of AI on B2B relationships repeatedly arose as a key tenet of participant discussions. As planned, the analysis adopted the ARA framework to guide our interpretation of the data through a sequential abductive approach

(Dubois & Gadde, 2002). In doing so, we systematically combined empirical observations and theory, through an abductive approach which was deemed an appropriate strategy for the focus of the study. The rationale for adopting a sequential approach was in part due to the fact that the study was concerned with the consequences of AI dark forces on B2B relationships, an area experiencing fast change (such as with the introduction of ChatGPT) and considering the lack of theoretical frameworks covering this area (Dwivedi et al., 2023). Drawing upon Dubois and Gadde (2002) we employed an intertwined process that enabled movement back and forth sequentially between the respondents data and theory to produce an appropriate conceptual framework. Echoing the same issues faced by Dubois and Gadde (2002) we faced similar issues in relation to scrutinizing a research phenomenon in a tumultuous business setting, where ongoing developments in AI greatly impacted the everyday experiences of participants. As a result, our abductive approach presents a mixture of deductive and inductive approaches which are fruitful as our objective is to discover new concepts, variables and relationships. In doing so, our main concern with this study is related to the generation of new concepts and further development of the ARA model, rather than confirmation of existing theory. This approach was useful in structuring our approach to addressing the research goal in identifying and understanding the consequences of AI dark forces on B2B relationships in service ecosystems.

Further to initial screening and coding of the data through a reflective thematic analysis approach (Braun & Clarke, 2019), a sequential procedure then moved back and forth between the original components of the ARA model to further structure and refine the conceptualisation of consequences of AI dark forces. A Gioia Methodology approach (Maignani & Gioia, 2023) was adopted to make sense of and align the coded parcels of data. This involved a staged process whereby initial analytic codes and categories were created and assembled into 1st-order participant-led codes and followed by 2nd-order codes which were theoretically-derived. Such codes were organised into themes and aggregate dimensions (Table 2). This led to the development of a theoretical model (Fig. 1), through an abductive sequential comparison of the data. The resulting findings were written up into a data-based narrative, centring around the 2nd-order themes and aggregated dimensions, using the informants' 1st-order quotations as leverage to the discussion. Analysis of transcripts was performed independently by the authors using NVIVO, followed by a roundtable discussion of the concepts and themes to ensure the validity of the themes produced.

Table 1
Participant table.

	CODE	SECTOR	GENDER	EXPERIENCE		CODE	GENDER	EXPERIENCE	CLIENTS
BUYERS	B1	Financial Services	Male	20 Years	SUPPLIERS	S1	Male	5 Years	Pharmaceutical
	B2	Telecoms	Male	10 Years		S2	Male	6 Years	Healthcare
	B3	Information Technology	Male	8 Years		S3	Male	12 Years	Software as a Service
	B4	Telecoms	Male	12 Years		S4	Male	8 Years	Pharmaceutical
	B5	Healthcare	Female	15 Years		S5	Female	6 Years	eCommerce
	B6	Financial Services	Female	8 Years		S6	Male	8 Years	Various
	B7	Retail	Male	10 Years		S7	Female	5 Years	Events Management
	B8	Pharmaceutical	Male	10 Years		S8	Female	10 Years	Retail
	B9	eCommerce	Female	6 Years		S9	Male	5 Years	Property
	B10	Business Development	Male	14 Years		S10	Male	7 Years	Retail
	B11	Lifestyle	Male	7 Years					
	B12	Procurement	Male	14 Years					
	B13	Property	Female	6 Years					
	B14	Technology	Male	12 Years					
	B15	Pharmaceutical	Male	6 Years					
	B16	Education	Male	6 Years					
	B17	Charity	Female	6 Years					
	B18	Human Resources	Female	4 Years					
	B19	Finance	Male	10 Years					
	B20	Property	Male	12 Years					
	B21	Experiential Products	Male	7 Years					
	B22	Law	Female	8 Years					
	B23	Electronics	Male	10 Years					
	B24	Electronics	Male	15 Years					

Table 2
Abductive sequential data structure.

ARA Framework Guiding Principles	1st Order Concepts Emerging from Data	2nd Order Themes	Aggregations
Actors are defined as those who perform activities and/or control resources	Actors are often invisible through use of third-party contributors to algorithm development This makes it difficult/impossible to control them – the usual ‘self-correcting mechanism’ in relationship management is not present Control over resources is altered dramatically by all actors involved AI is a new actor. Should we consider this a new category, or should we rather think of the AI algorithm as a new type of resource? In either case there is a certain level of depersonalisation and/or loss of interaction/control that was not there before Buyers actors have less control over resources in the era of AI Suppliers demand control over resources to implement AI solutions Third-party cloud computing actors have significant influence over buyer and suppliers resources Data becomes a precious resource, essential for AI to operate Control is exerted by certain parties, but AI is also a new actor	<i>Actors must relinquish control over resources and activities in the adoption of AI</i>	
Individuals, groups of individuals, parts of firms, firms and groups of firms can be actors		<i>Traditional ARA dimensions of are challenged by AI</i>	<i>AI as a new actor permeates through networks impacting B2B relationships</i>
In activities actors use certain resources to change other resources	Suppliers demand control over resources to implement AI solutions Third-party cloud computing actors have significant influence over buyer and suppliers resources Data becomes a precious resource, essential for AI to operate Control is exerted by certain parties, but AI is also a new actor	<i>Absence of control over resources, cedes capability to unknown parties and creates uncertainty</i>	
Actors characteristics	AI solutions are unique in that they are applications that have a degree of control over activities, in contrast to the traditional SaaS model which demands human intervention It is arguably difficult to establish a relationship with an intangible, impersonal actor	<i>Partial control over activities is retained</i>	
• (i) they perform and control activities.			
• (ii) through exchange processes actors develop		<i>Human-computer interfaces prove difficult to establish relationships</i>	

Table 2 (continued)

ARA Framework Guiding Principles	1st Order Concepts Emerging from Data	2nd Order Themes	Aggregations
relationships with each other	such as an AI solution		
• (iii) actors base their activities on control over resources	Given the recent advances of AI, it may be possible for buyers and suppliers to establish relationships with an AI system in time to come	Control over resources seems to be fluid in the AI era.	
Buyers cede direct control over their data to algorithms, and control of marketing processes.	Suppliers of solutions gain indirect control over data and processes, yet are still keen to retain their intellectual property over the solution.	<i>Actors struggle to control fluid and multi-faceted resources</i>	
• (iv) actors are goal oriented	If the algorithm is an actor, whose goals it is trying to fulfil? If it is a resource, who controls it, as seen with the case of SaaS? Buyers have little to no knowledge of other actors in the network	<i>Algorithmic goals are determined by creators and not fairly distributed across the network</i>	
• (v) actors have differential knowledge about activities, resources and other actors in the network	Third-party actors have little knowledge of buyers or their requirements Suppliers play an intermediary role, yet struggle with managing relationships AI marketing solutions are labelled as providing ‘transformation activities’ and ‘transfer activities’ Part of this transformation involves the dehumanization of actors in the network Lack of accountability of activities clouded by secrecy of algorithm and intellectual property rights Data is now a precious resource AI solutions cannot function without buyer data,	<i>Knowledge across the network is unfairly distributed, masked by IP and algorithmic secrecy in a gatekeeper scenario</i>	
An activity occurs when one or several actors combine, develop, exchange, or create resources by utilising other resources		<i>Focus of AI solution activities is transformational at the expense of human actors</i>	<i>Activities performed by AI are not fully understood, lacking accountability for its actions and can at times lead to opportunistic behaviours on other actors in the network</i>
Performing transformation and transfer activities		<i>Activities and Resources are inextricably linked through reliance on</i>	

(continued on next page)

Table 2 (continued)

ARA Framework Guiding Principles	1st Order Concepts Emerging from Data	2nd Order Themes	Aggregations
requires resources	suppliers rely on this as a fallback position in case of poor performance AI solution suppliers exhibit opportunistic behaviours towards buyer firms offering poor levels of customer support for AI solutions	<i>data for AI solution to function</i>	
Resources are means used by actors when the perform activities	AI solutions have commandeered resources to the extent that actors are removed from their operation Lack of personalisation and dehumanization of resources is evident Buyers resources have to be surrendered to suppliers and third-party cloud platforms for AI solutions to be effective. Resources are now characterised by their ability to perform the task they have been given	<i>Human actors are increasingly removed from resources which perform activities</i>	<i>AI Resources are strongly characterised by their ability to perform tasks, but are highly reliant on datasets which incur significant costs.</i>
All resources are controlled by actors	Is the supplier truly in control of the AI solution or is the third-party cloud provider? Cloud platform providers offer standardised plug-in AI solutions which are looked upon negatively Bespoke AI solutions built in tandem with buyers needs is the optimal model	<i>AI adoption requires ceding control across the entire network</i>	
Resources can be characterised, first, by the actors controlling the resource		<i>Resources are now determined by tasks they perform</i>	
How many dimensions of the resource are used and how standardised is the utilisation in each of the dimensions?		<i>Standardization is difficult to achieve with AI solutions dictated by algorithm</i>	

Subsequent roundtables meetings were held to enable to abductive sequential analysis procedures.

4. Findings

The abductive system of analysis was applied to identify the AI dark forces at play and their impact on relational constructs. Sequential engagement between the data and ARA unveiled AI dark forces’ consequences on B2B relationships. Such dark forces create a dehumanization effect on actors in service networks, removing their ability to impact process and take part in strategic decision-making. Accountability of activities are also compromised leading to opportunistic behaviours. Lastly, resources are subject to intense pressure where data becomes a battleground and actors have to contest over access to data, leading to costly outcomes for both parties. In doing so, the findings add valuable extensions to recent debates on the debilitating effects on AI dark forces on B2B relationship (Pagani & Pardo, 2017; Pardo et al.,

2022).

4.1. Actors

Participants highlighted the significant role that big tech companies play as gatekeepers in the AI industry, as actors exercising a great deal of control over AI solutions. By referring to big tech companies as gatekeepers, participants implied that they have the power to decide what aspects of their AI solutions are made available to suppliers and buyers. However, this may not be immediately apparent to clients who adopt supplier AI services, indicating a lack of transparency along the supply chain.

“I think the big tech companies are gatekeepers, they have the bigger control of AI solutions, which is less obvious to clients” (S5).

“There is no such thing as the truth behind when it goes wrong. There are truths, but we’ll never know it because they [Cloud Services] will never tell us. Which is a big pain point. The answers are there but they’re held back because the big entity in the ecosystem doesn’t want you to know” (S7).

Participants would frequently discuss other characteristics of AI solutions such as their opacity, continually changing nature and the deluge of fragmented AI solutions. Therefore, a key dark force consequence discussed by participants was the perceived complexity of AI, resulting in power asymmetries between buyers-suppliers and AI providers. Such asymmetry would favour AI and tech companies who had visibility of their algorithms.

“the catch is that it’s [AI marketing solutions] a disparate and fragmented landscape and therefore the governing [AI] monopoly can call the shots completely.” (S3).

“If an algorithm said you had to make your website pink so it would perform better, we would wake up tomorrow and find millions of websites will be painted pink.” (S4).

“Ultimately, the only people that have visibility are the guys that are working behind the algorithm. They’re the only guys that have the power” (B5).

The language used by participants to describe AI (“the algorithm”) and the tech companies behind AI (the “gatekeepers”) was used interchangeably, representing a dichotomy between AI possessing human and non-human agency. As such, both the tech companies and their internal stakeholders i.e. developers, programmers etc. as well as the AI algorithm itself may both be viewed as an actor. In line with the ARA framework, the key actor proposition is that actors are defined as those who perform activities and/or control resources. Through our analysis it became more apparent that AI systems have control of resources and make decisions based upon data that influence other actors, resources and activities. For instance, many participants viewed the adoption of AI as having the intended goal of improving efficiencies, yet in doing so, many were concerned about the lack of their control over such activities.

“Every result that we get is determined by a third-party.” (S10).

Buyers frequently referred to the ‘black box’ effect of AI, whereby the decision making underpinning the AI algorithms is being performed behind closed doors. The problem is that AI applications, and their output, are a largely invisible actor to even the organisation who has purchased the service as it is typically outsourced to a third-party, thus increasing invisibility of AI solutions, as well as their motives.

“Despite the black box side of Google Cloud, one thing that is certain is that no one has a say over what it does. No one can definitively say it [AI algorithm] does X, Y and Z” (S6).

“That’s the challenge of using [AI] with third-party providers, because they don’t explain, because of the [ir] commercial interest and so on, they don’t review the algorithm, so you can’t question them.” (B3).

As AI algorithms are programmed by human beings and in some cases are designed to generate profits by big tech companies, this leads to a much bigger ethical issue around self-serving AI and its use in a buyer-supplier relationship.

“And then of course, you know, following the money, as the quote goes, then you know that there is potentially a conflict of interest, because if

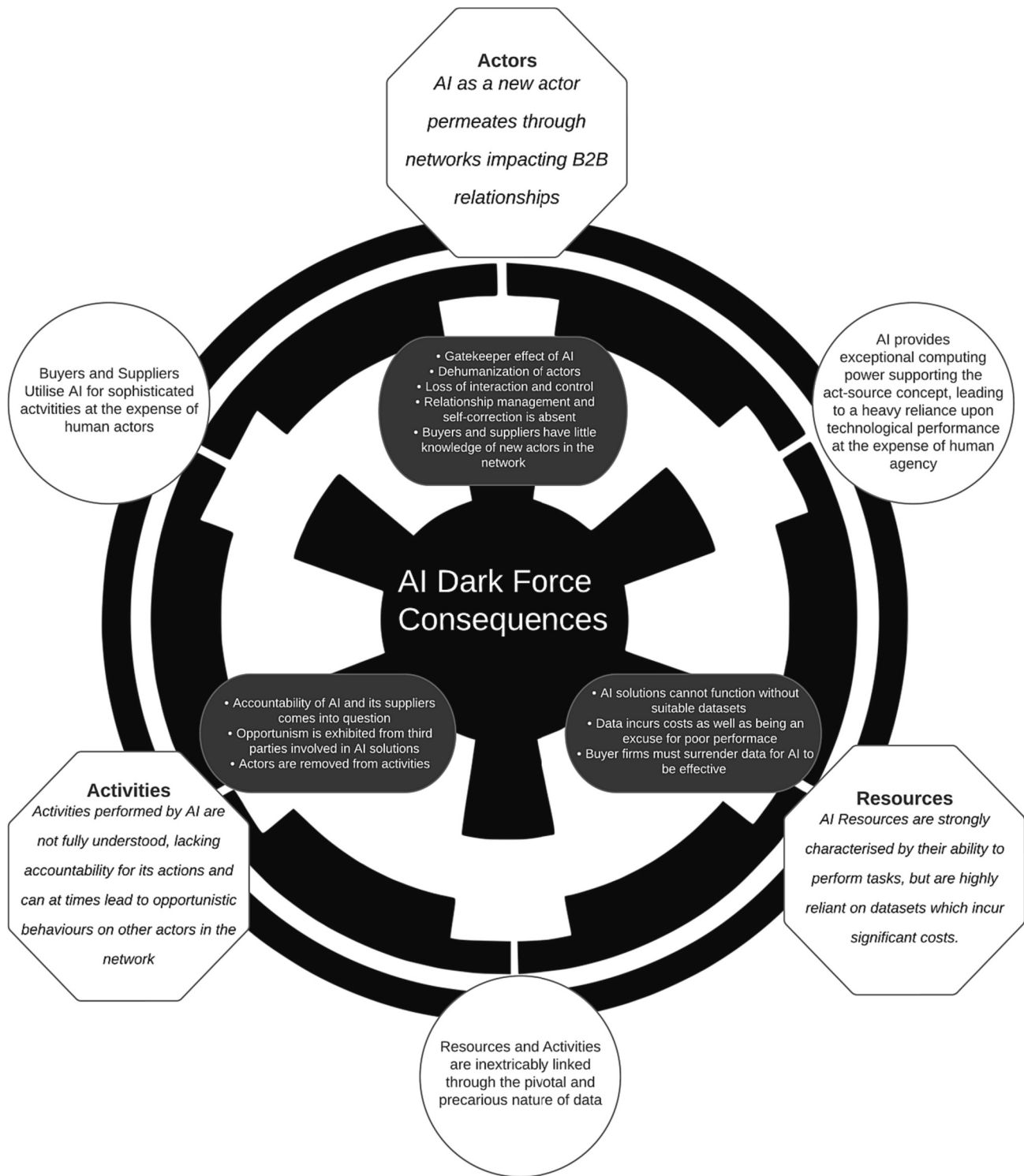


Fig. 1. The AI dark forces ARA model.

someone controls an algorithm, can make money off of it, then that is its primary function. Not serving the client or the customer, or making our lives easier” (B6).

Positioning AI as an actor also leads to a unique scenario whereby marketing processes were viewed as being devoid of human agency. Except for the initial creation of the algorithm, actors expressed the view of being relegated to the point of invisibility, in lieu of algorithms and technological applications. Concern was expressed around dehumanization of actors in the service exchanges. By focusing our analysis on the

ARA model, we expose further the impact of dehumanization – i.e. taking the humans out of the processes, devaluing human contributions and diminishing the interpersonal aspect of business relationships.

“There are a lot of ethical issues in relation to AI. I like to think of it as an oligopoly. Essentially, employee’s jobs are being taken away in various different aspects of organisations by robotic automation, by big wealthy tech firms and their clients and both are getting richer off the whole thing” (B11).

Indeed, in its current state, AI lacks true consciousness, self-awareness, and intentionality thereby the notion of AI as an actor

within the B2B relationship may be controversial. It often operates within the boundaries of its programming and data inputs, without possessing personal motives, beliefs, or desires suggesting that the human behind the AI algorithm should be the actor of focus (Alabed, Javornik, & Gregory-Smith, 2022). However, from our analysis of the “Actor” theme, human users’ of AI had a tendency to anthropomorphise AI, attributing agency to AI entities and systems they interact with. Therefore, whether AI is determined to be an actor or not (under accepted definitions of an actor), we found that B2B actors often perceived AI as a new type of actor. In doing so, this created scenarios where dark force consequences could emerge.

4.2. Resources

As well as being positioned as an actor, participants would often refer to AI as a “model”, in other words a software program that utilises data sets in order to make decisions from patterns that it is trained to recognise and learn from. Therefore, this also positions AI as a resource. The apparent efficacy of AI models is heavily dependent upon the data inputted into the system. For example, suppliers were keen to refer to how algorithms created for buyers are highly efficient in principle, however, if the dataset they are applied to is flawed, the entire solution suffers. They would bemoan the lack of useful data to enable their solutions to work effectively due to challenges around accessing the “right data”.

I think the biggest challenge that we’ve seen as a company when it comes to AI solutions is inconsistency of the data you get from clients, and the availability of getting access to the data. You need the right data to build a good model. And I don’t think we’re alone in that in terms of our industry, I think getting access to the right, clean data is consistently the challenge. (S4).

Under the ARA framework, the resource proposition suggests that resources are used or created by actors when they perform activities. However, resources are scrutinised based upon how many dimensions of the resource are used and how standardised the utilisation in each of the resource dimensions is. Standardization of AI would be a challenge due to the suppliers’ perceived inability to create repeatable mechanisms for cleaning data required by the AI model.

“What we’re trying to do is bring AI and machine learning to the mainstream, where it’s repeatable and predictable. I think the biggest challenge that we’ve seen is that it takes a lot of time to get a clean set of data. So we’re working to try and put structures in place in terms of providing mechanisms to clean the data coming in, so that we can build more repeatable models that are applicable across thousands and thousands of customers. The team spent four years working with one of our large clients and because of the complexity and the inconsistency of the data they were getting we couldn’t build a good working algorithm. And that’s been a massive challenge for us. I don’t think we’re alone in that in terms of our industry. I think getting access to the right, clean data is consistently the challenge to build the right AI model.” (S6).

Likewise, the lack of transparency of AI also meant that users of AI were never quite sure if they were getting the most from their AI solution, even after inputting data. Moreover, with the creation of AI marketing solutions being the primary role of the suppliers, they expressed concerns about the validity of the models they were producing.

“You’ve got the likes of Amazon Web Services taking away the complexities of building AI models to embed AI into their existing application architecture without really having to get into a lot of the detail of developing the models themselves. But to create a model, you must train the model, and that is reliant on whether you have a lot of data to feed into it. Because we don’t need to know all about what’s happening underneath the hood, we just need to be given a set of tools that allow us to really leverage an AI solution in a way that makes an impact for the client” (B3).

In the AI context, resources have undergone a significant overhaul as manipulation of data takes centre stage, although only for the privileged who can afford sophisticated AI applications. Therefore, a prevalent theme within participant conversation was the cost of AI marketing solutions where the buyer firm (client) would devote significant

amounts of funding and resources into securing the marketing solution.

“I think that that the ‘cost to practically use’ point is the biggest barrier, actually.” (B4).

“The effort, the intellectual effort that goes into it to curate the algorithms is incredible. People don’t realize just how expensive it is.” (S4).

Almost all buyers expressed concern over the cost versus value of the solutions, including a variety of anecdotes as to whether the value of the AI resource matched expectations or not. Whereas suppliers were keenly aware, and equally as cautious of the costs of the production and development of an AI solution. Suggesting the AI solution had not been successful, perceptions of value related to cost of the solution declined.

“The main reason the business was a bit reluctant is the actual cost that was needed to move the project along. And then I’d say there was a bit of an issue is finding the right specialists. When we did find one and it all went ahead, we saw a massive degradation in performance and we had to roll back on the solution. And then we had to start again, back to baby steps.” (B12).

“In terms of a scenario that runs along the lines of you want to create your own algorithm in some way. If you’re trying to work with clients, to create a whole class of functions or processes, using AI, it is quite possible that you will invest a huge amount of money in it and fail to get a result that’s better than many, much cheaper and easier alternatives. That is my experience” (S2).

From our analysis we found that whilst AI is a key marketing resource, aiding in decision making, standardization of AI and its use is difficult due to a lack of understanding of AI, the often unrealistic price for AI versus its perceived value, and also the complexities surrounding appropriate data.

4.3. Activities

Under the ARA framework, buyers and suppliers of AI marketing solutions undertake transformative activities, working towards a shared network perception via cooperation and sharing of resources (i.e. various actors combine, develop, exchange or create resources and therefore activities directed to fulfil a specific function). In the AI context, our analysis found that actors (i.e. buyer, supplier, and/or the AI algorithm itself), share resources (i.e. AI models, data) in order to create resources and therefore activities (i.e. AI marketing solutions, decision making). Therefore, AI is an Activity as well as an Actor and Resource, representing a merging of viewpoints that is observed through the kaleidoscope of the ARA model. However, through our analysis we argue that the opacity and gatekeeping tendencies of AI as an Actor, and its impact upon the inability to standardise AI as a resource, means that transformative transfer activity between actors are sometimes not a reality. More specifically, dark force consequences of accountability and opportunism emerge as barriers to transformative activity and cooperation between buyers and suppliers. For example, suggesting AI had not delivered as expected, questions over who should be accountable for adverse activity outcomes were raised by participants.

“I’m really not sure we should be selling this [AI Solution] to clients as a service because we don’t own it so that is that significant risk. Who should carry that risk? Clients don’t know what it can do and it’s the responsibility of the agencies to manage the expectations of what it can and can’t do and I think a realistic expectation and the hardest bit. You have got to have results and sometimes that’s not within your control as a digital agency” (S6).

In some instances, this frustration led to a cynical reflection that the AI could be blamed for poor performance, as it would not be within the control of the supplier. However, others would contend that this was a form of opportunism on behalf of the supplier.

“Liability is the major consideration for the impact of AI on decision making process leading to who is responsible. People will blame the tech and not be accountable.” (B3).

“It is easy to fake it, and to say oh yeah [AI’s] just done an update and that’s why it [AI Solution] isn’t performing as well as it should” (S9).

With this in mind, participants discussed the possibility of compensation should buyers not have received the results they were anticipating from their suppliers, particularly where they had paid a considerable

amount of money for AI marketing services and solutions.

“Cloud services that provide AI solution algorithms need to be a bit more... I wouldn't say they need to be more transparent because obviously it's their algorithm, their IP, but giving us more information when something bad happens. The compensation element for that is the company could lose millions in that space of time and if you're not in a financial position you could just end up going under.” (S3).

However, the buyer would often be the one challenged with the burden of proof to provide sufficient evidence or justification that adverse results and outcomes were due to AI. Doing so affirmatively would be challenged due to the continually changing, black box, nature of AI algorithms, meaning participants would suggest that AI would often be too complex to understand. They also note a paradox that many would not know how AI functions enough to determine if it had acted in a way that led to undesirable outcomes.

“If one of our [AI] solutions wasn't successful, it's because [The AI Supplier] decided to change their algorithm, which they won't admit to, so I can't prove to my client why it wasn't successful” (S5).

“The thing about it is you know, a server does a certain job, if it falls over, you know, the backup is to plug in another cable to another server, and it works. Whereas with AI, if it breaks, you don't know if it is broken, or how to fix it, so you're adding all these layers of complication on top of something that was already complicated.” (B1).

With the above in mind, our analysis indicates that that working with AI systems is inherently more complex and requires additional layers of knowledge and expertise of AI as an Actor, Resource and Activity as well as the dark force consequences AI creates for buyers and suppliers under the ARA lens.

5. Discussion

In addressing the aim of investigating the consequences of AI dark forces on B2B relationships, our study provides three key contributions. First, an overview (Table 2) and subsequent conceptualisation (Fig. 1) of the consequences of AI dark forces identified, addresses the knowledge gap relating to understanding the impact of AI on B2B relationships (Keegan et al., 2022; Mikalef et al., 2021). Secondly, our study argues that AI is both an activity and a resource, but should be considered a new actor in B2B relationships extending earlier threads in this conversation (e.g., Pardo et al., 2022). Thirdly, our findings reveal the extent to which AI has permeated the long-standing ARA model positing a reconsideration of the model's components.

5.1. Dark force consequences of AI as a new actor

Table 2 offers an overview of our sequential abductive analysis (Dubois & Gadde, 2002), in accordance with the Gioia Methodology (Magnani & Gioia, 2023). The system of analysis offered the opportunity to establish a bridge between the data and the ARA model. The analysis revealed the extent to which the original determinants of the model have been altered, changed, or in some cases, has been compromised by the adoption of AI. Hence, the sequential approach offered a platform for further understanding the consequences of dark forces on the model components. The aggregations on the model have produced the following propositions (P1–P3), which will be presented and discussed.

P1. AI as a new actor permeates through networks impacting B2B relationships.

Buyer and supplier participants accepted how AI has fully immersed itself within their respective networks. However, analysis reveals how the role of AI is now permeating across the lines of the ARA framework, in that AI is already established as a highly valued resource, which can perform transformational activities. To this end, we argue that AI is also adopting the role of a new technological actor, performing actions traditionally viewed as being within the domain of human actors. Hence, we propose that AI should be considered as a new type of actor

(Alabed et al., 2022), in keeping with the traditionally recognised determinants of actor agency (Håkansson & Johanson, 1992). This conclusion is made in light of current thinking and debates around AI in industrial networks as having interlocutor status (e.g., Kot & Leszczyński, 2020; Pardo et al., 2022). Furthermore, as AI technology continues to advance, it is conceivable that future AI systems might possess greater degrees of autonomy.

However, as Table 2 illustrates, there are key deviations when AI is introduced into the model, leading to important implications for B2B relationships. Our findings overwhelmingly indicated that individual and collective firm actors are required to relinquish control to AI marketing solutions which acts as a gatekeeper to resources and activities. As Håkansson and Johanson (1992) originally suggested, the determinant of an actor in the network is control, and hence if this is ceded to a third-party, or algorithm, understandable tensions will emerge as reported by Mikalef et al. (2021). Uncertainty was rife amongst the participants when discussing their lack of control over what was their job role and function for many years (Cao et al., 2021). Hence, the technological disruption created a situation where multi-faceted resources, such as the algorithms involved, led to a struggle for power and control, supporting Keegan et al. (2022).

In another unexpected development, findings indicated how human-computer interfaces prove extremely difficult to establish and maintain relationships, leading to dehumanization effects. In concurrence with Bag et al. (2021), participants' cynical reflections on the 'black boxes' indicated vitriol for these new AI actors.

P2. AI Resources are strongly characterised by their ability to perform tasks, but are highly reliant on datasets which incur significant costs.

AI marketing solutions as a resource are determined by their role and function of AI, e.g., lead generation, customer segmentation profiling (e.g., Moradi & Dass, 2022). However, in contrast to prior understanding of resources, our findings indicate a significant reliance on the role of data and datasets for such resources to operate. Participants expressed frustration with cynical descriptions of inanimate objects such as black boxes, or algorithms that belong to tech giants.

In the era of AI, resources are not evenly distributed across the network and are increasingly under the control of suppliers and tech giants who provide the infrastructure for AI marketing solutions to operate (Hossain et al., 2022). Hence standardization is difficult to achieve with AI solutions dictated by unknown non-human third parties such as algorithm hosting platforms (Cao et al., 2021). As one participant noted, if AI systems suggested a specific direction in website design, a myriad of firms would be obliged to follow suit. Such secrecy, coupled with the aforementioned ceding of control by human actors, was identified as key dark forces in our findings leading to challenge our conventional understanding of resources in modern industrial networks.

P3. Activities performed by AI are not fully understood, lacking accountability for its actions and can at times lead to opportunistic behaviours on other actors in the network.

As noted by participants, the accountability of AI emerged as a significant dark force consequence with direct effects on our understanding of activities. Hence, we argue that in the era of AI, understanding of activities is generally misunderstood, shrouded by a cloak of algorithmic secrecy bolstered by supplier intellectual property rights (Keegan et al., 2022). In contrast to the SAAS model whereby services such as database management systems are open and easily understood by all users of the system, the machinations of AI marketing solution algorithms are opaque, if not fully behind closed doors. This leads to a dark force scenario where accountability of AI is called into question. In some cases, the activities performed by AI marketing solutions proved to be ineffective. Participants expressed dissatisfaction with not having access to any form of customer support for when solutions are underperforming, or fail to achieve their intended function.

Furthermore, the lack of awareness of goals across B2B networks was

another concerning factor of AI solution integration, which appears to be a concern in similar studies (e.g., Ashok et al., 2022; Moradi & Dass, 2022). Echoing De Bruyn et al. (2020), many buyer participants expressed frustration with the black box nature of AI. Conversely, AI suppliers were also quick to point out that datasets and algorithmic updates were used for suitable excuses for poor performance of the AI marketing solution.

In summary, AI dark forces identified from the data have been identified and abductively mapped onto all three elements of the ARA model. In considering these, and the impact these have on the model's dimension, this study has provided the opportunity to holistically and critically examine the implications of AI dark forces upon B2B relationships.

5.2. Conceptualizing the dark forces of AI through the ARA framework

Based on the dark forces identified, we propose Fig. 1 as a culmination of the analysis of findings. In linking the respective areas of the ARA framework, it proved to be useful to identify the distinctions in the findings, while also mapping out the areas where AI has hitherto unexplored dark force effects on relationships. Fig. 1 is based upon the symbol from the most famous instance of the dark side, the emblem of the Galactic Empire from Star Wars. The dark side emblem is annotated with a series of hexagons, which represent how actors and associated resources and activities have been impacted by the AI dark forces, as well as the respective links between them in circles. The inner links of the model provide further insight into the respective AI dark forces that impact relationships in the buyer-supplier network.

Our analysis has shone a light on the views of both buyers and suppliers, identifying the fact that there is more work to be done to understand the wider consequences of AI's dark forces. First, it asserts how AI adoption represents a significant departure from the simple adoption of standard digital marketing services (Davenport et al., 2020; Paschen et al., 2019), which offers a compelling platform for debate (Dwivedi et al., 2021). Our findings cement further the notion that the implementation of AI marketing solutions involves a significant level of sacrifice on the part of the buyer (De Bruyn et al., 2020). They are required to forgo their role, function, knowledge and skills to an uncertain number of unknown third-party suppliers, who are often using cloud computing platforms belonging to yet another party. This degree of complexity represents what we refer to as the dehumanization of the actors involved and it amounts to a concerning development in the traditional understanding of the network effects involved. Moreover, resources traditionally viewed as being under the control of the actors involved, have become skewed towards costly black box algorithmic models that are in some cases implemented without sufficient scrutiny. Lastly, the traditional understanding of activities has witnessed a dramatic shift towards automated processes, devoid of human agency (Canhoto & Clear, 2020). In contrast to the widespread view that AI will positively change the future of B2B marketing practices to provide lower cost efficiency (Davenport et al., 2020), the ARA model has allowed us to offer a more insightful scrutiny of its impact on B2B relationships through its constituent dimensions.

5.3. AI blurring the lines of ARA

A significant contribution of our research is its ability to apply a long-standing model to understand a new and complicated business context. Through our abductive sequential approach, the ARA lens allows us to generate our propositions and answer questions relating to AI dark forces on B2B relationships. In deploying the ARA model in our analysis we have extended notable works (Pagani & Pardo, 2017; Pardo et al., 2022) by replicating their investigation with more clarity as to the dark side of the AI landscape. The study has continued in the same vein of works that use ARA as a model for scrutiny of industrial marketing relationships (Baraldi & Ratajczak-Mrozek, 2019; Hedvall et al., 2019),

offering insights into the respective viewpoints of the buyers and supplier participants (e.g., De Bruyn et al., 2020; Keegan et al., 2022).

We posit that AI now encroaches upon the three traditional dimensions of the ARA model. AI is considered a highly prized and valuable resource for a variety of business functions (Dwivedi et al., 2021), as well as a technological asset that affords the ability to perform activities as indicated in the original model (Kot & Leszczyński, 2020). Recent works have begun a trail of discussion relating to how AI may play a crossover role between activities and resources (e.g., Pardo et al., 2022). In contrast, our study proposes that AI is both an activity and a resource, but should also be considered a new actor in B2B networks. Hence, we argue that the traditional lines of the ARA model are blurred in the era of AI. As our study identifies, the extent to which AI can have a negative impact upon B2B relationships indicates the level and extent to which it permeates the components of the model. As a result of this proposal, we suggest a revised approach to considering how AI is deployed in organisations, specifically recognising its role as an actor (Alabed et al., 2022). Moreover our study suggests that from the earliest point of consideration for the onboarding of an AI solution, conversations must be held to assess the impact and effect such decisions will have on relationships in existing networks.

6. Conclusion

6.1. Theoretical and managerial implications

The intention of the study was to unveil whether AI had any dark force consequences that affected B2B relationships. We identified significant implications which are fresh additions to existing studies of AI (e.g. AI dehumanization of actors, AI data and algorithm secrecy). Using the ARA framework, it has been possible to examine unreported stresses, tensions and pressures exerted from the incorporation of AI marketing solutions. Our study produces three propositions that have important theoretical implications. Our first proposition suggests that AI is as a new actor that has significant consequences for B2B relationships, which offers an advance to the notion of an anthropomorphization of AI in industrial settings from a consumer perspective (e.g., Alabed et al., 2022). In doing so, we challenge the original concept of a technological resource as an actor in B2B relationships, which has implications for future interactions and engagement with AI services, such as ChatGPT and other generative AI applications. Future theoretical approaches may interrogate AI in alternative manner to previous conceptualizations as a result of our proposition. The second proposition underlines the complexities of the relationship between data as a resource and AI marketing solutions as a new network actor. Data has always been a useful tool for marketing, but in the case of AI, our findings indicate that it is now an imperative resource that is also clouded in perilous ethical legal implications. Furthermore, we are witnessing a scenario whereby the role of datasets is seen as being more precious than human relationships. This is notable through the dehumanization of actors reported in our findings and offers a new dimension to B2B relationship management. Lastly, our study exposes the knowledge gaps relating to AI accountability as witnessed from a range of network actors. In revealing a vicious cycle of ignorance between buyers and suppliers of AI solutions, we expose the opportunistic behaviours amongst actors in the network. Such nefarious behaviours between actors is not a new phenomenon (Chowdhury, Gruber, & Zolkiewski, 2016), but in this instance, the desire to adopt AI may over-ride a carefully considered approach to adopting new technology. We present this notion as an extension to prior theoretical understanding of the dark side of B2B relationships when AI technology is involved.

A number of managerial implications emerge from the findings, namely a need for raised awareness and adherence to the dark forces presented by marketing managers and suppliers of solutions. If a firm intends to adopt AI, it may be prudent to view it as a pseudo-actor with black box peculiarities, with it being a technical application having

potentially negative implications for managers. Ground rules for what AI can and cannot do must be agreed upon, such as establishing a clear policy on ethical and appropriate use of AI (Ashok et al., 2022) or establishing mechanisms for accountability of poor AI outcomes. In considering the relationship between the actor-resource dimensions of the model, it is clear from the findings that a dehumanization effect is to be expected and, as such, upskilling in terms of the transformational activities of AI solutions (in spite of the expense to human actors) would be a welcome addition to the supplier’s onboarding process. Managers could benefit from recommendations for easier AI adoption drawing from other long-standing models such as adoption of new technology models. As this study has sought to add to the numerous dark forces faced by managers, a further consideration may be to provide resilience training for staff to support their wellbeing in the midst of AI adoption.

Finally, if we consider the activity-resource links from Fig. 1, it is obvious that for an AI solution to perform effectively, the dataset it works from is pivotal. However, as such data sets are shrouded in secrecy, it is recommended that buyers are more accepting of surrendering data to suppliers and third-party cloud platforms (in line with data privacy and security regulation) for AI solutions to be effective. Tensions emerging from the reluctance to surrender data are a key finding from this study, and hence we propose that a firm’s data should be treated with an equivalent degree of respect by the supplier. Whilst we are not suggesting AI will replace the entirety of the ARA framework, it is becoming apparent that AI will play a significant role in industrial marketing in the future and that adaptability and a leap of faith may be

required.

6.2. Future research agenda

Future studies should continue using ARA as a lens to examine ‘new’ AI integrations, such as ChatGPT, as a means of mitigating the dark side of AI (Dwivedi et al., 2023). Future research directions may also attempt to examine how perceptions of dehumanization grow, as AI’s interlocutor status evolves from pseudo-actor to actor, in the light of continual technological advances in AI. With this in mind, mixed method approaches such as cross-sectional surveys and in-depth case studies could consider how buyers and suppliers must reconcile reduced access to data, as black box AI systems and solutions become ever more omnipotent. Finally, as our study presents another interpretation of AI (as a new type of actor in B2B relationships), adding to a variety of AI definitions that already exist, we argue that understanding of AI is becoming more fragmented. This may well contribute to negative outcomes for those that try to use AI in B2B relationships i.e. lack of knowledge about AI, what it is, what can be achieved etc. As such, future studies should attempt to define a clear and unambiguous understanding of the term AI and its use in B2B contexts.

Data availability

The data that has been used is confidential.

Appendix A. Interview protocol

BUYER		SUPPLIER
ROLE HISTORY AND EXPERIENCE WITH AI	Tell me about your current role? How many years’ industry experience do you have?	Tell me about your current role? How many years’ industry experience in providing AI marketing solutions do you have?
KNOWLEDGE OF AI & APPLICATIONS	How many years have you been working at current organisation? What is your understanding of AI and Machine Learning?	How many years have you been working at current organisation? What is your understanding of AI and Machine Learning?
BENEFITS & DRAWBACKS	How does your organisation use AI? What benefits has your organisation realised from AI marketing solutions?	What AI marketing applications does your organisation provide? What benefits does your AI marketing solutions provide?
ORGANISATION-AL INFLUENCE	What challenges have you encountered when procuring and applying AI marketing solutions? How has AI changed the organisational structure (roles, reporting), processes, and culture in your organisation?	What challenges have you encountered when supplying AI marketing solutions? How has AI changed the organisational structure (roles, reporting), processes, and culture of your client firms?
FUTURE OF AI	How has AI changed the way the organisation operates compared to 5/10 years ago?	How has AI changed the way in which your client firms operate compared to 5/10 years ago?
BUYER-SUPPLIER PERSEPTIVES	How do you see AI playing a role in your organisation in the next 5/10 years?	How do you see AI playing a role in your client firms over the next 5/10 years?
ETHICAL DIMENSION	What is your opinion of AI/ML solutions from suppliers?	What is your opinion of buyers of AI/ML solutions?
	What ethical issues does AI raise for business in general and wider society?	What ethical issues does AI raise for business in general and wider society?

References

Abosag, I., Yen, D. A., & Barnes, B. R. (2016). What is dark about the dark-side of business relationships? *Industrial Marketing Management*, 55, 5–9.

Akter, S., Wamba, S. F., Mariani, M., & Hani, U. (2021). How to build an AI climate-driven service analytics capability for innovation and performance in industrial markets? *Industrial Marketing Management*, 97, 258–273.

Alabed, A., Javornik, A., & Gregory-Smith, D. (2022). AI anthropomorphism and its effect on users’ self-congruence and self-AI integration: A theoretical framework and research agenda. *Technological Forecasting and Social Change*, 182, 121786.

Ashok, M., Madan, R., Joha, A., & Sivarajah, U. (2022). Ethical framework for artificial intelligence and digital technologies. *International Journal of Information Management*, 62, 102433.

Baabdullah, A. M., Alalwan, A. A., Slade, E. L., Raman, R., & Khatatneh, K. F. (2021). SMEs and artificial intelligence (AI): Antecedents and consequences of AI-based B2B practices. *Industrial Marketing Management*, 98, 255–270.

Bag, S., Gupta, S., Kumar, A., & Sivarajah, U. (2021). An integrated artificial intelligence framework for knowledge creation and B2B marketing rational decision making for improving firm performance. *Industrial Marketing Management*, 92, 178–189.

Baraldi, E., & Ratajczak-Mrozek, M. (2019). From supplier to center of excellence and beyond: The network position development of a business unit within “IKEA Industry”. *Journal of Business Research*, 1–15. Elsevier.

Braun, V., & Clarke, V. (2019). Reflecting on reflexive thematic analysis. *Qualitative Research in Sport, Exercise and Health*, 11(4), 589–597.

Canhoto, A. I., & Clear, F. (2020). Artificial intelligence and machine learning as business tools: A framework for diagnosing value destruction potential. *Business Horizons*, 63(2), 183–193.

Cao, G., Duan, Y., Edwards, J. S., & Dwivedi, Y. K. (2021). Understanding managers’ attitudes and behavioral intentions towards using artificial intelligence for organizational decision-making. *Technovation*, 106, 102312.

Chen, L., Jiang, M., Jia, F., & Liu, G. (2022). Artificial intelligence adoption in business-to-business marketing: Toward a conceptual framework. *Journal of Business & Industrial Marketing*, 37(5), 1025–1044.

- Chowdhury, I. N., Gruber, T., & Zolkiewski, J. (2016). Every cloud has a silver lining - exploring the dark side of value co-creation in B2B service networks. *Industrial Marketing Management*, 55, 97–109.
- Davenport, T., Guha, A., Grewal, D., & Bressgott, T. (2020). How artificial intelligence will change the future of marketing. *Journal of the Academy of Marketing Science*, 48(1), 24–42.
- De Bruyn, A., Viswanathan, V., Beh, Y. S., Brock, J. K. U., & von Wangenheim, F. (2020). Artificial intelligence and marketing: Pitfalls and opportunities. *Journal of Interactive Marketing*, 51, 91–105.
- Dubois, A., & Gadde, L. E. (2002). Systematic combining: An abductive approach to case research. *Journal of Business Research*, 55(7), 553–560.
- Dwivedi, Y. K., Ismagilova, E., Hughes, D. L., Carlson, J., Filieri, R., Jacobson, J., ... Wang, Y. (2021). Setting the future of digital and social media marketing research: Perspectives and research propositions. *International Journal of Information Management*, 59, 102168.
- Dwivedi, Y. K., Kshetri, N., Hughes, L., Slade, E. L., Jeyaraj, A., Kar, A. K., ... Wright, R. (2023). “So what if ChatGPT wrote it?” multidisciplinary perspectives on opportunities, challenges and implications of generative conversational AI for research, practice and policy. *International Journal of Information Management*, 71, 102642.
- Farrokhi, A., Shirazi, F., Hajli, N., & Tajvidi, M. (2020). Using artificial intelligence to detect crisis related to events: Decision making in B2B by artificial intelligence. *Industrial Marketing Management*, 91, 257–273.
- Gligor, D. M., Pillai, K. G., & Golgeci, I. (2021). Theorizing the dark side of business-to-business relationships in the era of AI, big data, and blockchain. *Journal of Business Research*, 133, 79–88.
- Grewal, D., Guha, A., Satornino, C. B., & Schweiger, E. B. (2021). Artificial intelligence: The light and the darkness. *Journal of Business Research*, 136, 229–236.
- Håkansson, H., & Johanson, J. (1992). In B. Axelsson, & G. Easton (Eds.), *A model of industrial networks in Industrial networks: A new view of reality* (pp. 28–34). London: Routledge.
- Hedvall, K., Jagstedt, S., & Dubois, A. (2019). Solutions in business networks: Implications of an interorganizational perspective. *Journal of Business Research*, (February), 411–421.
- Hern, A. (2023). Elon Musk joins call for pause in creation of giant AI ‘digital minds’. *Guardian UK*. [Online] available at <https://www.theguardian.com/technology/2023/mar/29/elon-musk-joins-call-for-pause-in-creation-of-giant-ai-digital-minds>.
- Hossain, M. A., Agnihotri, R., Rushan, M. R. I., Rahman, M. S., & Sumi, S. F. (2022). Marketing analytics capability, artificial intelligence adoption, and firms’ competitive advantage: Evidence from the manufacturing industry. *Industrial Marketing Management*, 106, 240–255.
- Huang, M. H., & Rust, R. T. (2021). Engaged to a robot? The role of AI in service. *Journal of Service Research*, 24, 30–41.
- Keegan, B. J., Canhoto, A. I., & Yen, D. A. (2022). Power negotiation on the tango dancefloor: The adoption of AI in B2B marketing. *Industrial Marketing Management*, 100, 36–48.
- Kot, M. T., & Leszczynski, G. (2020). The concept of intelligent agent in business interactions: Is virtual assistant an actor or a boundary object? *Journal of Business & Industrial Marketing*, 35(7), 1155–1164.
- Magnani, G., & Gioia, D. (2023). Using the Gioia methodology in international business and entrepreneurship research. *International Business Review*, 32(2), 102097.
- Mikalef, P., Conboy, K., & Krogstie, J. (2021). Artificial intelligence as an enabler of B2B marketing: A dynamic capabilities micro-foundations approach. *Industrial Marketing Management*, 98, 80–92.
- Moradi, M., & Dass, M. (2022). Applications of artificial intelligence in B2B marketing: Challenges and future directions. *Industrial Marketing Management*, 107, 300–314.
- Pagani, M., & Pardo, C. (2017). The impact of digital technology on relationships in a business network. *Industrial Marketing Management*, 67, 185–192.
- Pardo, C., Wei, R., & Ivens, B. S. (2022). Integrating the business networks and internet of things perspectives: A system of systems (SoS) approach for industrial markets. *Industrial Marketing Management*, 104, 258–275.
- Paschen, J., Kietzmann, J., & Kietzmann, T. C. (2019). Artificial intelligence (AI) and its implications for market knowledge in B2B marketing. *The Journal of Business and Industrial Marketing*, 34(7), 1410–1419.
- Rana, N. P., Chatterjee, S., Dwivedi, Y. K., & Akter, S. (2022). Understanding dark side of artificial intelligence (AI) integrated business analytics: Assessing firm’s operational inefficiency and competitiveness. *European Journal of Information Systems*, 31(3), 364–387.
- Rustholkarhu, S., Toukola, S., Aarikka-Stenroos, L., & Mahlamäki, T. (2022). Managing B2B customer journeys in digital era: Four management activities with artificial intelligence-empowered tools. *Industrial Marketing Management*, 104, 241–257.
- Salesforce. (2023). Salesforce announces Einstein GPT, the world’s first generative AI for CRM. [Online] available at <https://www.salesforce.com/news/press-releases/2023/03/07/einstein-generative-ai/>.
- Saura, J. R., Ribeiro-Soriano, D., & Palacios-Marqués, D. (2021). Setting B2B digital marketing in artificial intelligence-based CRMs: A review and directions for future research. *Industrial Marketing Management*, 98, 161–178.