Factors Inhibiting the Adoption of Artificial Intelligence at organizational-level: A Preliminary Investigation

Completed Research

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Abstract

Artificial intelligence has emerged as a research field. Recently, there has been a remarkable increase in the adoption of AI technology in organizations as new forms of work have increased substantially. Despite the envisaged benefits of AI adoption, many organizations still struggle to drive their AI adoption forward. This study leads to the closing of this gap by conducting a thorough analysis of the current state of AI adoption and the main barriers to AI adoption among Australian organizations. To do so, we draw on The Technology-Organizations-Environment (TOE) framework to categorize the factors inhibiting AI adoption at organization-level. This paper reports on the results of an online questionnaire involving 207 small, medium and large-sized organizations about their level of AI adoption and barriers. The study offers insights and a research agenda to help executives and top-level managers prepare for AI adoption, and to make informed decisions to speed up the adoption process.

Keywords: Artificial Intelligence, AI barries, TOE Framework, IS adoption

Introduction

The rise of digital transformation powered by artificial intelligence (AI) has become an important driver for change in multiple industries (Agrawal et al., 2019). Investment in AI around the world has grown at a staggering rate over the last four years. In 2016, a report by Gartner found that only 9% of organizations have actually deployed AI technology. By 2019, AI deployments has increased to 25%, and Enterprise Digital Research expects this will almost double within the next five years (Rettas et al., 2019).

Today, AI stands in first place as a strategic technology for organizations (Gartner, 2018; 2019). Due to the advancement of networking and increased data processing, AI has become a key component in terms of digital transformation (Rettas et al., 2019). AI is viewed as an essential business solution and foundation capability for organizations of all sizes (Chui and Francisco, 2017). AI plays a significant role in the economic growth of countries such as the US (Makridakis, 2017), China (Li, 2017), India (Vempati, 2016), and Australia (Alphabeta, 2018). The growing use of AI offers a substantial opportunity for Australian businesses (Alphabeta, 2018). A recent PwC report estimates that the Australian economy has the potential to increase by 2.2 trillion USD by 2030 as a result of the introduction of AI and automation (Rea, 2017). A number of industry reports (e.g. Gartner, 2018) have shown that AI application can provide benefits to organizations by enabling improvement in terms of organizational performance and creating a competitive advantage (Nadimpalli, 2017). This can be seen in the remarkable increase in the adoption of AI technology

in organizations, resulting in increased revenue, reduced costs and improved business efficiency (Gartner, 2019).

Even though bringing AI into an organization provides numerous benefits due to the increased generation of computational data power, it has not yet achieved conventional adoption (Ramaswamy, 2019). Evidence shows that a large group of organizations are still at the gathering information (pre-adoption) stage with regard to adopting AI (Gartner, 2018). A recent industry report has shown that AI and its adoption in the Australian context is still low (ACS, 2017; Infosys, 2018; Seo, 2019). Many organizations appear to still be at the stage of deciding how to create a business case for AI implementation, and the necessary organizational skills needed to evaluate, build and deploy AI solutions, and are unclear what AI can be used for in a business context (Bundy, 2017; Bughin et al., 2017; Fleming et al., 2017; Ransbotham et al., 2018). Furthermore, a study of business leaders by Alphabeta has indicated that only 9% of Australian organizations are making sustained investment in AI and automation, compared with more than 25% in the US (Alphabeta, 2018). This provides ample support for the utilization of Australian organizations in our study of barriers to AI adoption. Therefore, it essential to develop a holistic view of the nature of AI barriers that lead project participants to avoid AI adoption.

Although many organizations around the world are adopting AI, little empirical research on AI adoption has been conducted (Alsheibani et al., 2018). Furthermore, a study of barriers to AI adoption at the organization level have remained underrepresented in the literature. Therefore, this is one of the first studies in the information systems (IS) literature exploring the organizational barriers of AI that might complicate a comprehensive change. To fill the gap, this study investigates the barriers to the development and implementation of AI on the part of Australian organizations. Moreover, this research provides empirical evidence that the overcoming of barriers to AI leads to increased AI adoption, which in turn leads to a higher degree of practicing AI. This research aims to determine the barriers that prevent the mainstream adoption of AI technology. Accordingly, this study also reviews the literature related to the emerging AI concept, and the barriers relating to the adoption of AI technology. For this purpose, we have defined two research questions: *RQ 1: What stage are Australian organizations at in the adoption of AI technology? RQ 2: Which barriers need be overcome for the successful adoption of AI in the Australian context?* To answer these research questions, we offer an examination of three broad topical themes with regard to AI adoption over a set of organizations, to identify the factors which impact AI adoption. The findings also suggest strategies for organizations intending to overcome such barriers. From the results obtained, we offer a number of recommendations for overcoming some of the AI barriers identified, and identifying future lines of research. Given that this research is one of the early attempts to develop organizational level AI adoption, we believe that the results will provide organizations with insight into the successful adoption, evaluation and leveraging of AI.

Theoretical Background

Artificial Intelligence

AI has become one of the key technologies being considered by organizations worldwide (Gartner, 2018). Initially, the notion of AI is in itself was nothing new. It was developed in the 1950s as a computer science discipline in the United States. It has remained a persistent theme in science fiction ever since its introduction by Professor John McCarthy at a conference held at Dartmouth in 1956, where he described AI as the '…science and engineering of making intelligent machines, especially intelligent computer programs'(McCarthy, 1955. p. 423). During the 1980s, AI research in the United States declined (Charniak, 1985) and, in fact, the whole period from the 1960s to the 1980s was one when confidence in the prospects of AI subsided. It was presumed that AI would not work and this period became one of the so-called "AI winters" (Thompson, 2008). Although Lightill (1983) addressed the concept of automation and the use of robots as the fundamental core of AI research, logic programming was introduced in Europe to offer the perceived advantages of programming using Horn clauses (Charniak, 1985). Today, the focus of AI is very different from that of the past 60 years (Yunhe, 2016). It is starting to become an essential feature of almost all industries (Bollier, 2017). The concept of AI consists of a comprehensive set of training computers that aim to do tasks involving human intelligence. AI encompasses many different aspects, including machine learning, deep learning, expert systems, and robotics (Purdy and Daugherty, 2016). However, as noted previously, no common understanding of AI currently exists. Therefore, this study refers to AI as a set of

tools and technologies that has the ability to augment and enhance organizational performance. This is achieved by creating "artificial" systems to solve complex environmental problems, with "intelligence" being the simulation of human-level intelligence.

Technology Innovation and Barriers to AI adoption

This study aims to use the literature of IS adoption along with that of prior AI research to study the barriers to new AI approaches. In the discipline of IS/IT, the terms 'barriers' or 'inhibitors' are usually used to state the factors that negatively affect an organization's ability and decisions to implement (Othman, 2016; Sadhya and Sadhya, 2018). To date, a considerable amount of empirical IS research has focused on understating the barriers to technology adoption innovation such as that of Cabanillas et al. (2018); Meske et al. (2018); Sadhya et al. (2018); Caguiat et al. (2017) and Ngah et al. (2015). These studies highlight the barriers that can be used by policy-makers to show how political and economic decisions impact on a country's development. Furthermore, numerous domains have been studied in terms of adoption 'barriers' or 'inhibitors' to allow organizations to benefit from adopting innovation. For example, business intelligence (Audzeyeva et al., 2016), cloud computing (Doherty et al., 2015), EDI (Cox and Ghoneim, 1996), and knowledge management (Hawk et al., 2009). Findings from a review of the literature on adoption innovation have identified different barriers that need to be considered when viewing the situation from organization level. These include lack of top management support (Cox and Ghoneim, 1996; Mergel, 2018), lack of knowledge and awareness (Ebu et al., 2015), lack of government regulation (Cox and Ghoneim, 1996; Kruse et al., 2016; Mergel, 2018), lack of skills (Ransbotham et al., 2017), resistance to change (Kruse et al., 2016; Mergel, 2018), incompatibility and interoperability problems, initial cost, and security and privacy risks (Cox and Ghoneim, 1996; Mergel, 2018; Ransbotham et al., 2017).

There is currently a need, however, for further exploration of the main barriers that are important in organization with regard to AI adoption in Australia. Therefore, the purpose of this study is to reveal which of the main barriers that are commonly encountered, are most relevant in terms of AI integration at the organizational level at the present time. We argue that recognizing such barriers can lead to increased AI adoption, which, in turn, leads to a higher degree of practising AI. To address these challenge to AI adoption, we propose to examine the barriers to AI adoption at the organizational level. AI offers a new strategic approach towards business decision-making, resulting in new ways to create value, which is not well understood (Chui and Francisco, 2017; Ransbotham et al., 2018). Given the unique nature of AI regarding its values, resources, and technical knowledge, a theoretical structure for AI barriers needs to take into account the necessary capabilities to manage and adopt such innovation. Moreover, as with AI adoption (Alsheibani et al., 2018), the barriers to AI adoption are not limited to the technical context, but also relate to the skills, data, processes, structures, and strategies of an organization (Alsheibani et al., 2018; Li and Du, 2017). Therefore, drawing upon the Technology-Organization-Environment (TOE) framework (Tornatzky and Fleischer,1990) the main barriers to AI adoption can be encapsulated in three main groups. The TOE framework has been widely used in IS research to analyse how IT provides both added value and a competitive advantage for organizations. Furthermore, the research is in line with calls made by Cabanillas et al., (201), Dremel (2017) and Sadhya (2018) to conduct research into the barriers of technology adoption using the TOE framework.

The first is environmental barriers. The environmental barrier categories include consumer trust, and regulatory acceptance (Grosz et al., 2016; Ransbotham et al., 2017). Contrary to the benefits of AI technology (Ransbotham et al., 2018) followers of the technology have express similar to other digital innovation that depends on both customer data and customers' trust. The AI characteristic like mimic human intelligence creates new management issue for legal activities. Furthermore, government regulatory issues have not yet cove with AI technology. AI offers a new strategic approach towards business decision-making resulting in new ways to create value, which are not well understood (Chui and Francisco, 2017; Ransbotham et al. 2018). According to Mckinsey Global report (2018), the implementation of AI at organizations poses crucial challenges that cut across developers, government, and employees (Chui et al., 2018). Therefore, we suggest that government regulation is essential to building trust in AI.

Second, there are organizational barriers. The organizational barrier categories are related to a lack of top management support, a lack of AI skills and employee fear of change (Bughin et al., 201; Ransbotham et al., 2017; Sikka, 2017). There is also lack of top management support, which is interpreted as a lack of

managerial skills associated with managing organizational adaptations to AI. Strong top management support goes hand-in-hand with AI adoption (Chui and Francisco, 2017). Previous research has suggested that top management has a positive influence on the adoption of new technology. AI skills refer to the skills needed to create artificial intelligence technologies including data, tools and developers (Chui and Francisco, 2017). We argue, when organizations come up against barriers in terms of making organizational change, that there is a need to develop a business case for AI implementation.

The final type of barrier is technical. The technical or technological barriers include all the relevant internal and external technologies available within the organization. The technological barrier category includes security, and limited technology capabilities (Bughin et al., 2017; Ransbotham et al., 2017). Technology capabilities refer the availability of the essential organizational resources for AI adoption. Regardless of how advanced organizations are in terms of technology deployment AI implementation dependence on a digital foundation develops as each new generation of innovation builds on the previous one (Ransbotham et al. 2018). Furthermore, the global development of AI adoption has aroused concern about its security (Brynjolfsson and Mcafee, 2018). Recent studies have argued that AI may surpass human intelligence (Shah, 2018), and the need to study the security concern related to AI. Thus, the barriers we have chosen are an assumption based on practice from related research domains and experience (Webster & Watson, 2002).

Methodology

Due to the novelty of AI adoption, we first conducted a comprehensive review of the literature, followed by a quantitative approach using a survey to collect data. Investigating the barriers to AI adoption at an early stage is challenging, as multiple aspects may need to be taken into consideration. First, we conducted a rigorous literature review to ground the main topics of interest including the barriers and drivers of AI adoption for the creation of a structured survey. Literature reviews target the construction of an intellectual structure of identifying fields which need to be mapped, consolidated and evaluated (Creswell, 2014). Next, the quantitative method was used to identify barriers that impact upon an organization's for AI adoption. Therefore, the survey instrument is applicable for understanding a phenomenon still in the early stages of development (Creswell, 2014; Edmondson and McManus, 2007). The questionnaire for the present study was designed based on the development guidelines in the literature (Cabanillas et al., 2018; Ghazilla et al., 2015; Doherty et al., 2013) to provide a good starting point for an in-depth exploration. Previous research from the literature (Bughin et al., 2017; Ransbotham et al., 2017) had considerable influence with regard to the use of validated measures wherever possible to relate to the adoption of AI technology. The preliminary questionnaire was presented to experienced academic researchers and IT experts in order to validate it (Cabanillas et al., 2018). The unit of analysis in this research were senior managers, especially those who were in immediate charge of information systems in both private and public organizations in Australia. To access the relevant population, an online questionnaire was distributed by sending the survey link to potential respondents via the www.LinkedIn.com website. The online questionnaire was distributed between 28 August 2018 and 28 September 2018. In total 950 organizations were randomly selected from the Australian LinkedIn business directory, comprising Australian industry from various levels and sectors. All organizations were approached by sending the survey link to potential respondents via the www.LinkedIn.com network using the snowball sampling technique. This technique helped gain representation from various levels, backgrounds, gender and age groups, and from a wide geographical area (Harrigan et al., 2008). In total, 207 participants from all Australian industries participated in the research, giving a response rate of 37.75%. The data was analysed using SPSS 23.0. The descriptive Analysis of the respondents are shown in Table 1.

Demographic Variables		Percentage	Demographic Variables		Percentage
Industry category	Agriculture, Forestry and Fishing	1.0%	Job title	AI specialist	48.8%
	Manufacturing	5.8%		Academic	2.9%
				Executive	20.3%
	Transport and Warehousing	4.4%		Self-employed	6.3%
				IT specialist	1.4%
	Information Media and Telecommunications	36.9%		Manager	15.5%
				other	4.8%
	Financial and Insurance services	8.7%	Adoption level	Not adopt AI	17%
	Public Administration and Safety	1.9%		Plan to do so	29%
	Education and Training	8.3%		One or more AI project	43%
	Health Care and Social Assistance	8.3%		Fully deploy AI	11%
	Other	24.7%	Years of Service	< 5 years	61.4%
Organization size	< 200	37%		5- 10 years	18.4%
	200-499	8.7%		>10 years	20.3%
	500-1000	6.8%			
	> 1000	48.8%			

Table 1. Descriptive Analysis Matrix

Results

The findings showed that respondents worked primarily in large organizations, and (47%) worked in an organization with over 1000 employee, while 37.8% worked for companies with fewer than 200 employees. Among the respondents, the largest group held a position of mid-level AI specialists and IT managers (50%), 35.6% were IT executives (CIO, CEO), and the remainder were IT technical staff. The organizations in the sample had different AI adoption status. The descriptive statistics of the current state of AI adoption within Australian organizations is illustrated in Table 1. In total, 43% of Australian organization indicate that they have migrated one or more AI projects in place into some processes. Around 17% of organizations had no plan with AI in delivering their businesses (non-adopters). However, a significant minority, 11% indicate that they have fully deployed AI. A lack of skills to evaluate, build and deploy AI solutions were identified as the most common barrier (33.8%), followed by the lack of a well defined or clear business case (16.9%), and the third one being the lack of top management support (14.4%).

Barriers to the adoption of AI	factors	No of Organizations	%
	Unclear business case	35	16.9
	Lack of top management support	30	14.4
	Unclear which aspects of AI can be used for in Australian organizations	20	9.6
	Limited technology capabilities	15	7.2
	Security concerns relating to AI adoption	10	4.8
	Consumer trust and regulatory acceptance	5	2.4
	Organizations lack the skills to evaluate, build and deploy AI solutions	70	33.8
	Employee fear of change	12	5.8
	Lack of funding	10	4.8

Table 2. Barriers of AI Adoption

Table 3 provides a breakdown of the respondents' intentions to adopt AI against their estimation of the main barriers to AI adoption. Although 17% of respondents reported that they have not migrated AI projects into some processes, 41.6% identified that they lack the skills as the main barrier to adoption of AI. Lack of AI skills to implement and manage AI were identified as the most common barriers (33.8%) followed by unclear business cases (16%) and lack of leadership support (14.4%).

Barriers	Level of AI adoption							
	Not adopt AI (level 0)		Plan to do so (level 1)		One or more AI project (level 2)		Fully deploy AI (level3)	
	No	%	No	%	No	%	No	%
Unclear business case for AI implementation	10	27.7	12	20.6	1	1.2	4	17.3
Lack of leadership support	3	8.3	7	12.0	14	15.5	4	17.3
Unclear which aspects of AI can be used for in Australian organizations	2	5.5	7	12.0	13	14.4	6	26
Limited technology capabilities	2	5.5	2	3	5	5.5	0	0
Security concerns relating to AI adoption	1	2.7	2	3	3	3.3	1	4.3
Consumer trust and regulatory acceptance	1	2.7	0	0	3	3.3	1	4.3
Organizations lack the skills to evaluate, build and deploy AI solutions	15	41.6	24	41	36	40	7	30.4
Employee fear of change	3	8.3	2	3	7	7.7	0	0
Lack of funding	4	11.1	2	3	8	8.8	0	0
Total	36	100	58	100	90	100	23	100

Table 3. Respondents' level of AI adoption and perceived barriers of adoption

Discussion

This study discovered the barriers that encourage and inhibit the adoption of AI for both private and public organizations in Australia. We constructed a standardized survey to measure the barriers that exist with regard to the adoption of AI in Australia based on the literature. The results can be divided into three broad themes; the adoption level of AI, AI drivers and barriers, and recommendations. The classification for these broad themes was based on the guidelines suggested by Butler et al. (2002).

Themes 1 Adoption level of AI:

Adoption of IT innovation within organizations generally occurs into a variety of stages. These broad themes are grouped into three main stages: initiation, adoption and implementation or adoption (Rogers, 1995; Pierce and Delbecq, 1977). According to Pierce and Delbecq (1997), initiation starts with a 'pressure to change' which makes the organization aware of the technology and the problem and initiates resources attainment (Kamal, 2006). The adoption stage consists of evaluating the innovation to accept an idea (Damanpour and Schneider, 2006). The implementation or post-adoption stage is when the organization decides to implement the innovation and includes the post-adoption process. Our preliminary findings reveal that Australian organizations are cognizant of the value of AI adoption technology and appreciate the significant benefits that can result from such an implementation. This study found that 62% of the Australian organizations included in the study have adopted one or more AI projects for their business.

This is inconsistent with the results of a previous study by Infosys (2017) which pointed out that Australian organizations were lagging behind organizations in other countries, or have no plans to deploy AI. The results of the present study show that around 62% of Australian organizations are engaged in AI, whereas the study by Infosys (2017) estimated an overall engagement of 25% within Australian industry, which is much lower than the figures exposed here. This could be explained by how adoption of AI is fast moving within the Australian industry and reveals the successful attempts of Australian organizations to keep up with the AI trend. Remarkably, this research found that the influence of organization size on AI adoption has not been supported at a statistically significant level. These results are inconsistent with those of Chui and Francisco (2017) who found that organization size had a positive effect on AI and on the adoption of new innovations. These findings is especially important for small and medium size organization who think organization size limits them in terms of benefitting from AI. However, further research needs to be done to confirm this. This study shows an increase of AI adoption among Australian organizations and reveals the successful attempts of Australian to keep up with AI trend. This could be explained by the increased awareness of AI in Australian organizations.

Themes 2 AI barriers:

The barriers found in the study fall into three groups based on the level of AI adoption. The influence of barriers within the organizations surveyed were remarkably different, as shown in Table 3. The main barriers identified across the three contexts were lack of in-house skills to implement and manage alongside unclear business case for AI implementations. The first overall interesting result shows that organizations with high levels of AI adoption generally identified the same barriers as organizations with no or low levels of AI adoption. The findings of this preliminary study revealed that organizations lack the skills to evaluate, build and deploy AI solutions. This barrier ranks as the most important in terms of those organizations with no plans to adopt AI and those with one or more fully deployed AI projects. This indicates that AI adoption needs IT foundation including (data, tools and developers) and the fact that it often must be trained on unique data (Chui and Francisco, 2017). The second high-ranking barrier to respondents' adoption is the perceived lack of leadership support. Leadership support refers to the commitment of a top-level leader with regard to AI implementation. This emphasizes the importance of top management commitment to new technology adoption. Organizations in the initiation stage identify barriers related to understanding AI, such as unclear business cases, lack of leadership support, and security concerns (Fleming et al., 2017; Sikka, 2017; Ransbotham et al., 2017). This result indicates a demand for staff with skills to evaluate, build and deploy AI solutions in order to prepare organizations for AI adoption and transformation. In the pilot stage, employees' fear of change, legal issues, limited technology capabilities and uncertain returns on investment, pose the most significant challenges (Bughin et al., 2017; Grosz et al., 2016; Sikka, 2017; Ransbotham et al., 2017). In the implementation stage, organizations must overcome barriers related to modification and acceptance, such as AI talent shortages and employee resistance (Bughin et al., 2017; Fleming et al., 2017). These findings show that AI presents many of the same barriers and challenges as other innovations. However other challenges such as uncertainty of AI capability and business value have distinguished it from other digital technologies. Therefore, future research could involve collecting more data in this respect to provide an even richer understanding of this phenomenon.

Themes 3 Recommendations:

Several researchers have highlighted a number of recommendations with regard to AI barriers. For example, Ransbotham et al. (2017) reported that AI, unlike other digital initiatives, involves the need for assessment skills to train AI algorithms from first development to when they become intelligent. Integrating the component parts of AI such as speech analytics, or machine learning into applications to make specific parts, requires the arrangement of data collection and training specifically for AI tasks (Curran and Purcell, 2017). The significance of organizational readiness suggests that technological capabilities such as technology infrastructure, data structure and human capital, are critical for determining whether or not an organization adopts AI. Moreover, Sikka (2017) highlights that applying AI to drive a business transformation is a strategic decision. The commitment of top management can also have a significant effect on embedding sustainability principles alongside wider AI safety concerns (Curran and Purcell, 2017). Therefore, decision-makers will be willing to adopt AI if the organization's role, responsibilities and accountability are clearly defined within each AI project, and these are compatible with its internal processes and culture. Chui (2017) stated that successful AI transformations require a solid business case and should align with existing strategies. In summary, the support of top management, a solid business

case, sufficient AI skills, the development of AI standards and awareness, are essential for producing unbiased results and providing a better understanding of AI.

Implications for Research and Practice

This research represents an early attempt study to identify barriers to AI adoption in Australian organizations. This study presents novel contributions to a research area that to date lacks empirical data on the AI adoption at organization-level. It offers several contributions to both theory and practice. This contribution starts with providing new motivation to extend the common perspectives of existing IS research as well as broadening its theoretical lenses to include AI adoption. The findings can be deduced from the present study which is that IS theories (such as the TOE framework) underline those barriers components that fit well when it comes to overcoming challenges to AI adoption. By adopting the TOE framework, the strategic adoption category included: organizational, environmental and technological have a significant relationship to the barriers of AI adoption. These fields are all closely related which can also be learned from the barriers to adoption approaches (Meske et al., 2018; Caguiat et al., 2017; Ngah et al., 2015). Furthermore, this study identifies the potential barriers to the adoption of AI. These barriers provide new insights into the adoption of AI at organizational-level. Of particular importance is the concern among organization about skills to evaluate, build and deploy AI solutions. Even though the significant benefits of AI are recognized and acknowledged by the organization, the concerns associated with a lack of top management support and unclear business cases about which aspects of AI can be used have hindered AI adoption on a widespread basis. The proposed theoretical themes can be used as a basis for future research at organization-level to validate the remedial recommendations to the key barriers identified in this research. Finally, the outcome of this research can be used to bridge the theoretical gap associated with AI adoption, which is still very rarely discussed, especially at the organizational-level. Our results provide a number of implications for practice. Findings from this study indicate that Australian organizations are adopting AI technology and are reaping many of the benefits suggested conceptually. Furthermore, the findings provide guidance for organizations about which barriers need to be overcome to leverage the value of AI. Additionally, it can also be used by the decision maker in implementing measures that can support and increase the level of AI adoption. Practitioners also have to collaborate actively to solicit the required skills and resources.

Conclusion and Future Work

This research aimed to obtain an insight into AI adoption from the organization perspective, through a preliminary quantitative study to determine the factors that inhibit organization with particular attention to the barriers of AI adoption. We gained several significant barriers to AI adoption. The identified barriers are grouped into organizational, environmental and technical barriers. Though we carefully conducted this research, there are limitations to our work. Our results are based on Australian organizations, thus, future research should examine the generalizability of our findings given that the current sample is not expected to be distinctive and representative of organizations in general. Additionally, future research could involve a more in-depth investigation of the phenomenon by examining AI barriers with regard to a specific industry (e.g., healthcare, education, etc.). For example, organizations relating to information, media and telecommunications might, in general, possess a higher adoption rate as they have constantly been confronted with, and utilize, large amounts of data and also have access to more IT skills than many other industries such as manufacturing or transportation. We see the domains as a guiding start for more research on barriers to AI. Future research could combine the findings of this study with case study research focusing on the overcoming of barriers and the development of barriers recommendation. In the next phase of this research, we aim to deepen our understanding of influencing factors in this context by conducting using qualitative semi-structured interviews.

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