

理解数字中国：数据驱动技术的中国视角

丹尼斯·阮¹，王 蓓²

摘要 本研究以中国语境下的技术相关讨论为研究对象，结合自动内容分析、问卷调查和深度访谈等多种研究方法，探索了中国新闻媒体和社交媒体在报道数据驱动技术时采用的主要叙事框架，并探讨了中国的技术用户如何感知和评价当前的技术趋势。初步研究发现，中国主流新闻媒体的技术叙事在总体上是积极的，这与西方以负面评价为主的技术话语存在显著差异；但在公众层面，虽然大多数公众对技术持积极评价，但同时也表露出对潜在技术风险的担忧。研究认为，不同的政治文化和技术使用语境是导致中西方技术感知差异的主要原因。

关键词 中国数字文化；多重方法；公共话语；技术叙事

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一、引言

本文是一篇从中国视角出发、以中国数字文化为考察对象的多重研究(multi-step study)。具体而言，本文的研究对象是中国语境下作为数字技术“用户”的公共话语和公民，并将对他们的观察结果与全球西方(特别是欧洲和北美)关于“数字中国”的主流观点进行对比。作为世界上十分重要且深具影响力的技术大国和数字市场之一，中国将数字技术成功使用在商业、行政、社会文化的方方面面，因此，中国市场的发展经常被构建为一个迅速建立起深入且广泛的数字化社会的成功故事(Hua & Shaw, 2022)。此外，在过去十年中，中国的科技行业诞生了中国版本的“硅谷”，中国的科技公司在巨大的国内市场之外建立了自己的地位。例如，华为和抖音已然成为在全球范围内享有广泛认可度的品牌(Zhang et al., 2020; Jia & Liang, 2021)。中国政府将大数据和人工智能领域的科技发展视为提升国家重要性的关键之一，实施一系列政策和经济计

1. 丹尼斯·阮，荷兰乌特勒支大学媒体与文化研究系助理教授。

2. 王蓓，荷兰乌特勒支大学“数字中国”辅修课程讲师。

划,其目的不仅在于加强中国科技行业的实力,也旨在加强对它的管理。其中一些发展举措引起了与地缘战略竞争对手(尤其是美国)的摩擦,美国始终紧密关注中国在全球经济和安全层面的对外数字政策(Sun, 2019; Nguyen & Hekman, 2022)。就这一意义而言,中国在科技产业上的发展雄心或许是引起过去几年里全球两个最大经济体解耦和地缘政治两极分化的原因之一。

中国将技术作为经济增长的关键组成部分,并试图通过科技发展增加政治影响力,这是西方公众讨论的焦点之一。然而这些讨论似乎并未涉及中国的公共话语本身是什么样子的,以及中国用户又如何看待当前的技术趋势。换言之,目前还缺乏对于中国数字文化如何赋予数字技术以意义和价值的讨论。本研究旨在对此进行拓展,并通过实证数据为日益增长的中国数字文化研究赋以洞见。本研究的潜在假设是,文化实践、规范和价值观在技术接纳的表现过程中是必不可少的。

本研究的主要目的是通过两种紧密交织的分析方法来探索和描述中国的数字文化:1)研究中国公共话语如何通过特定的框架实践来构建和传播关于技术角色的叙事;2)探究中国用户如何感知、评估和接纳数字技术。由于此研究项目刚进行不久,且预计会持续两到三年时间,所以本文的重点放在研究问题、研究动机、研究目标、研究方法和数据收集过程中的一些初步发现上。我们对文章的后续工作,特别是实证部分面临的主要挑战进行了展望。

二、研究动机与背景

本研究有两个主要动机:首先,本研究旨在帮助我们理解在特定的社会文化和政治背景下,文化因素在数字技术的感知、接纳和评价过程中的关键作用。数字化转型是一种全球趋势,但其具体实现和影响往往取决于不同的区域和地方因素。理解并定义数字技术的目的和价值的过程,发生在一个动态、部分模糊但仍可区分的本土语境下。换言之,对数字技术的理解并不发生在隔绝或孤立的语境下,而是在本国、跨国和全球传播网络之间紧张关系的复杂情境中形成的。因此,我们受贝克提出的“方法论世界主义”(Beck, 2006)的启发,在对不同数字文化的批判性调查中采用了一种方法论的手段(methodological approach)。简而言之,这一研究框架允许学者分析那些集中在本土、区域或国家层面的社会互动中的独特表现形式,同时也不忽视那些影响这些社会互动的、来自跨国领域和全球范围中的内在力量。我们认为,从地方到全球、从国家到跨国的不同层面是一个不可分离的连续统一体(Nguyen, 2017),而中国恰好

是可以回答这些问题的重要研究案例之一。通过研究中国,我们不仅可以回答“全球科技趋势如何成为区域和本地导向话语的焦点”这一问题,还可以探知文化如何赋予科技意义,以及科技如何塑造文化(Nguyen & Hekman, 2022)。

其次,本研究的目标还在于消除一些西方政治、文化和商业观察者对中国数字文化的误解。尽管对中国数字文化的不同维度和多种形式的研究越来越多,但西方话语中普遍存在着刻板印象和一些毫无根据的假设。例如,对中国用户的描述过于简单化,认为他们不关心个人隐私,对所谓的社交评分系统(social scoring system)的渗透范围和程度存在误解(Business Insider, 2018; Wired, 2019)。还有一些文章以反乌托邦的笔触描绘中国数字文化,将中国数字文化描绘为与西方社会价值观和自由民主传统截然相反的极端(Sparkes, 2021)。

在中国语境下,互联网和数字技术嵌入人们日常生活的过程肯定与西方不同。但如果认为中国数字领域只是单纯的与西方“不同”,那就是天真幼稚的观点(Wong & Dobson, 2019)。目前学者对中国数字文化的表述都十分单一,并未考虑到它的多样性。此外,中国存在一个跨越不同社交媒体网络的数字公共领域,人们可以在其中形成团体、讨论时事。通过了解中国数字文化形成的复杂政治和社会语境,我们尝试将视角转移,探讨中国人如何看待技术在他们生活中的作用,以及他们如何评价技术在全球舞台上所扮演的角色。通过这种方式,我们希望增进对中国数字文化的认识,以分辨出过去的假设里哪些是正确的,哪些是错误的。这可以让我们鉴别并排除浅薄的刻板印象,接纳合理的批评,还可以通过更好地理解不同的观点来找寻对话的潜力。至少,通过实证研究来更深入地观察中国的数字文化是应对当前影响全球数字转型过程中的问题和风险的当务之急。

三、文献回顾

(一) 技术与数字文化

技术(technology)、数字化转型(digital transformation)和数字文化(digital culture)是贯穿全文始终的概念,清晰地定义三者十分重要。

首先是技术。在这里,技术并不是一种中性的、不具备任何价值的,或者与社会政治文化因素相分离的事物。相反,我们认为技术是不同非技术因素相互作用的结果,正是这些因素塑造了技术的概念,也影响了技术自身被引入社会的过程及其影响。从技术角度看,经济和政治环境、现存的社会和文化规范同

进步和创新一样,对技术发展而言至关重要。此外,技术没有好坏之分,但它也绝不可能是中性的,因为技术旨在改变人们与周遭社会和物质世界的关系(Verbeek, 2006)。在此背景下,我们聚焦于以下几类不同形式的数字化、自动化和网络交互的特定数字技术:人工智能(AI)、大数据、区块链和物联网。之所以选择这几项数字技术,不仅是因为他们驱动了全球数字转型、具有相当的转变潜力,还因为它们在科技相关的公共讨论中非常受欢迎,具有代表性。

其次,数字化转型可以被理解为一个全球性的,但分布不均的媒介化和数据化的双重过程,这刺激了越来越多的自动化。换言之,越来越多的数字界面中介了跨越不同社会领域的人类和非人类实体之间的社会互动(Bunz & Meikle, 2017)。这些数字媒体往往依赖数据来实现其预期的目的,例如购买产品、寻找和分享信息等。通过将越来越多的数字媒体纳入到日常生活中,绝大多数社会生活日趋“数据化”(datafied)(Mejias & Couldry, 2019)。数据化程度的增长显示了智能算法的发展,带来了更多的效率和便利,但同时也会给个人和社会群体带来风险,如隐私侵犯、算法歧视、暗箱操纵(如“暗黑设计”模式)、网络安全漏洞和信息混乱(如“假新闻”)等。如前文所述,人们对数据驱动技术带来的价值、好处、风险和危害的感知取决于所在的社会语境,文化因素在人们的技术接纳过程中发挥着重要作用。

将技术趋势嵌入文化话语中展开分析,可以揭示社会语境本身与创新技术的相关性。因此,我们将技术接纳视为一种具备特定价值和规范的文化过程。这就涉及到了数字文化的概念。根据 Bollmer 的观点,我们将数字文化定义为三个元素的组合,“关于技术的叙事(narratives)、塑造传播的物质基础设施(material infrastructures),以及人体或其他身体(bodies)的物理能力,即那些可移动和可执行特定行为的能力”(Bollmer, 2018, p. 20)。数字文化的这一定义,允许我们使用不同的定量和定性研究方法展开实证研究。简单来说,为了对这些相互关联的维度展开实证研究,我们通过分析新闻媒体和社交媒体中与中国科技相关的话语来探究什么样的科技叙事在中国语境下占据主导地位;同时,我们还对中国科技用户进行问卷调查和访谈以分析他们在何种基础设施中利用了什么样的技术可能性。我们分别从集体和个体两个维度出发来接近数字文化的定义——这是因为数字文化的概念不仅包含使用技术的个体,它同时也是一种集体表现。这种集体性的表现中会涌现出特定的规范和价值,制约着人们对技术的接纳。

此外,在本土到全球的不同尺度中,不存在单一的数字文化,而是有着许多

不同的数字文化(Bollmer, 2018)。如前所述,我们对文化和民族国家的“集装箱观点”(container-view)持批判态度,我们更加关注某些文化表现的集群(clusters)是如何嵌入跨国影响网络(networks of transnational influences)的。在本研究中,许多个体对现实的感受可能是本土性的,但这并不意味着他们所处的文化构成在某种程度上与国际脱钩,或者与他人分离。在一定的社会空间内有着占据主导地位的主流文化,也存在各种各样的地方和区域亚文化以及超越国界的交互式流动。这一前提在不同程度上也适用于中国语境。

(二) 中国数字文化研究

无论是出于个人目的还是职业所需,科技在中国人的日常生活中都扮演着中心角色。在过去十年间,中国成立了一批在世界范围内领先的科技公司,并在社会层面迅速普及了由数据驱动的自动化技术,全球性疫情进一步加速了中国日常生活的数字化(Lee et al., 2021)。近年来,学界关于中国数字转型的研究不断增多,尤其是在商业研究、经济学和国际关系的交叉领域。而数字技术对中国社会文化的影响,是其中一个十分重要却相对较新的研究主题。

虽然较少有研究对此着墨,但最近的几项研究强调了社会、文化实践与技术三者之间的关系。这些研究表明了数字媒体如何成为创造和协商社会和文化含义的场所(例如性别角色)(Peng et al., 2021; Xie & Chao, 2022)、环保语境下的草根行动主义(Sun & Yan, 2020),以及在社交媒体中通过新颖的多文本表达实现的文化展演(Xia & Wang, 2022; Zhu & Ren, 2022)。其他人则批判性地研究了中国社交媒体的文化独特性(Fitzgerald et al., 2022),以及数字媒体如何强化主流文化和民族认同(Wang, 2022)。

也有一些研究从更广泛的角度探索中国用户在强调隐私和数据驱动型治理上的观点。这些研究表明,中国用户的态度通常比西方话语中暗示的更加微妙,文化因素也塑造着人们对不同数据实践的预期和可接受性的感知(Kostka, 2019)。进一步的实证发现指出,中国社会同样存在对个人数据安全的信任危机,这与中国缺乏隐私问题敏感性的说法直接矛盾(Wang & Yu, 2015)。

总之,不同的研究显示了中国数字文化的复杂性。由于文化和社会层面因素的作用,相同的技术可能会在不同语境下呈现出十分不同的实践形式,产生不同的效果。然而,据我们所知,较少有研究探讨如何通过关于技术的叙事以及个人观点和实践来揭示文化发展进程。在这些文化发展进程中,人们得以加深对这些技术趋势的理解、赋予技术以意义,并将技术与价值观相联系。

我们的目标是在之前的研究成果的基础上,首先综览中国用户如何感知、接纳和评估技术在他们生活中的作用。数字文化的三重定义是本文开展实证研究的指南针:为了研究关于技术的叙事,我们分析了主流媒体和社交媒体上的相关公共话语,还采用调查和访谈的研究方法来探索人们对技术的认知和对数字文化的体验(即基础设施和技术可能性)。基于以上考虑,我们主要想回答以下两个研究问题:

1. 中国的新闻媒体和社交媒体在报道数据驱动技术时采用什么样的框架?
2. 中国用户如何感知和评估技术趋势(特别是在收益和风险层面)?

为回答以上问题,我们认为,多重方法不仅是合适的,而且是绝对必要的。

四、研究方法

本文的实证部分结合了多种定性和定量研究方法。为了探讨与科技相关的公共讨论,我们结合了自动内容分析和网络分析技术。本文的主要研究对象为数据驱动技术相关的中文新闻报道(如《南华早报》《中国日报》《人民日报》的相关报道)和中文社交媒体(如微博)上的相关讨论。为了了解用户的观点,我们在社交媒体上开展了一项问卷调查。此外,我们还将对一小部分中国用户进行访谈,以补充定量调查结果。我们同步开展了定量和定性维度的数据收集和分析。

(一) 自动内容分析

对中国新闻报道的内容分析旨在探索在中国公共话语中在谈论技术时所使用的框架,特别是与目的、价值和风险相关的内容。新闻媒体仍然是有关当前问题的重要信息来源,这些问题至少在一定程度上可以对个人的观点和意见产生影响。为理解数字文化,有必要批判性和系统性地研究可能在公共话语中流传的关于技术的主导叙事,这些叙事在很大程度上仍然是由传统媒体塑造的(Nguyen, 2017)。本研究选取的样本包括三家最受欢迎的中英文新闻媒体:《南华早报》《中国日报》和《人民日报》。之所以选择这三家媒体,是因为它们在受众覆盖范围和对技术的报道层面都具有足够代表性。样本的时间跨度为2010年至2021年,在检索新闻报道时,我们使用的关键词包括:人工智能(AI)、大数据(big data)、区块链(blockchain)和物联网(Internet of things)。我们直接从选定媒体的新闻网站中使用以上关键词进行检索,然后对爬取出的新闻报道展开自动化内容分析(利用TF-IDF、命名实体识别和主题建模等技术),以识别新闻

报道所使用的框架(van Atteveldt et al., 2022)。简而言之,在聚类高频词汇之前,我们会使用计算方法对新闻文本进行预处理。然后,我们会对聚类出的词语结果进行人工解读,并为每个词语聚类(word clusters)标记上对应的框架,最后通过为每个词语聚类组合手动编码验证自动化内容分析结果的有效性。尽管人工验证是分析过程中不可或缺的一部分(例如,我们会使用 Krippendorff's alpha 系数来评估和改进机器与人工在识别报道框架上的一致性),但使用自动化内容分析方法仍能帮助我们节省大量时间和资源。

传统媒体和社交媒体是当代公共话语的基础,任何详尽的分析都需要考虑这两者。社交媒体为各类社群提供了深入讨论当前技术趋势的空间,因此,社交媒体上的公共话语也具有同样重要的地位。作为中国十分重要的社交媒体平台之一,微博在社交媒体公共话语上具有代表性,因此我们选择在微博上探讨与科技相关的公共话语。本研究计划通过微博的 API 收集相同关键词和同一时间段的帖子,然后使用自动内容分析的方法处理文本数据。如果技术方面存在的阻碍使我们无法收集数据进行定量分析,我们将选择性地选取有代表性的社区网络作为个案,对中国社交媒体上的科技相关话语展开定性调查(Kozinets, 2019)。

(二) 问卷与访谈

研究的第二部分建立在问卷调查和访谈的基础上。问卷一共包含 45 个中文问题,使用了李克特量表、语义差异量表、多项选择题和开放式问题。问卷由五个部分组成:1)对技术趋势的感知;2)对技术趋势的兴趣;3)对技术收益的看法;4)对技术风险的看法;5)人口统计学特征。一方面,我们希望通过这些问题探究受访者对大数据、人工智能、区块链和物联网的看法;另一方面,我们也希望从问卷中了解人们如何从整体上感知数字技术在他们生活中的作用。

这项问卷调查是完全匿名的,问卷的主要发放对象为 18~45 岁的中国科技用户。在前测阶段,我们通过一个中国社交媒体平台“问卷网”(Wenjuan)创建并发布了调查问卷。由于新冠肺炎疫情,我们的研究计划有所推迟。2022 年 9 月,我们开始与中国一家市场研究机构合作,正在开展后期的全面数据收集工作。这些数据将有助于描述当前人们对不同技术趋势的态度。由于有几个问题也会询问用户如何、何时以及在哪里了解新技术,我们也可以从这份问卷中探知用户技术态度的形成原因。另外,我们还计划在这份问卷中验证几个假设,以探究人口学特征、技术使用和技术感知之间的关系。

我们同样希望通过定性访谈的方法来补充定量分析的结果,这有助于进一步回答价值观如何塑造技术在日常生活中的使用,反之亦然。

五、初步发现

(一) 人工智能在中文新闻报道中的应用

为了阐释本文所使用的混合研究方法,我们以《南华早报》(*South China Morning Post*, SCMP)对人工智能技术的报道为例,解释中国新闻媒体如何在公共话语中描述当前的技术趋势。值得注意的是,《南华早报》是一家设于香港的英文媒体,隶属于阿里巴巴,后者是中国乃至全球最大的科技公司之一。这使得《南华早报》有别于本文选取的其他两家与政府相关的中文媒体(即《人民日报》与《中国日报》)。

如图1所示,从2010年到2020年,《南华早报》共计发表了1032篇明确关注人工智能的文章。仅在几年时间里,该媒体对人工智能技术的报道显著增加,在2016年达到338篇。

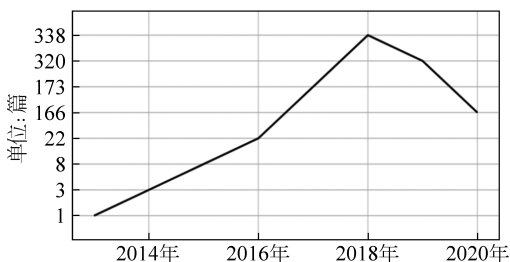


图1 2010至2020年期间,《南华早报》发布的人工智能相关文章数量

值得注意的是,该媒体十分强调人工智能技术的经济价值。几乎80%的文章都报道了技术对于商业部门和经济增长的价值,以及技术发展的重要性。在人工智能技术的报道上,《南华早报》的总体基调是积极的,很少提及数据化和自动化技术隐含的个人和集体风险。这与同题材的西方报道形成鲜明对比,因为后者通常在报道中强调人工智能可能会带来的监视、歧视、失业和其他伦理问题(Nguyen & Hekman, 2022)。

《南华早报》对人工智能技术的报道基调与政府对该技术定下的官方框架是一致的,即主要关注技术在创造物质财富上的作用,而且可以借助技术提升国家在全球范围内的影响力。当然,或许在加入对其他两家媒体的分析后,研究结果会发生变化。但《南华早报》的AI技术相关报道表明,有关中国数据驱动技术的叙事以务实和创新为导向,主要关注技术在创造物质价值上的能力。虽然这并不表明有关技术使用的道德问题和批判观点完全不存在,但与持积极态度的人工智能相关报道相比,前者出现的频率要低得多。

(二) 中国用户对预测技术的看法

在前测阶段中,一共有 86 名中国公民完成了调查问卷。我们通过不同的社交媒体网站(如领英和微信)招募了这些技术用户。这些结果并不能代表我们在下半年收集到的全面数据结果,但可以让我们对目标调查对象建立初步的了解。受篇幅所限,本节只报告一些特定的描述性分析结果。

在前测样本中,女性技术用户(60.5%)多于男性技术用户(37.2%),只有两名受访者没有明确报告自己的性别(选择“其他”)。问卷回答者的平均年龄为 39.2 岁($SD=14.14$),最年轻的受访者 14 岁,最年长的 75 岁。由于前测阶段的问卷参与者主要来自研究人员的职业或私人社交网络,因此绝大多数受访者至少拥有学士学位或更高的学历(94.2%)。

如图 2 和图 3 所示,大多数问卷参与者都表示他们熟悉“人工智能”等流行词汇,但对类似“区块链”的新技术名词观感较为模糊,这可能是因为后者近来才出现,且在具体使用语境中含义相对不明确。

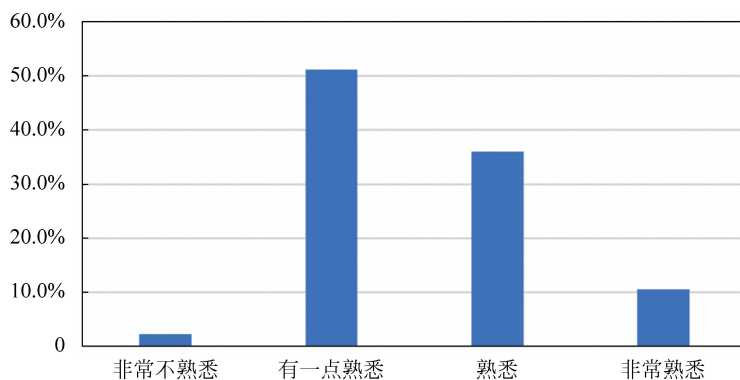


图 2 你对“人工智能”一词的熟悉程度为? (N=86)

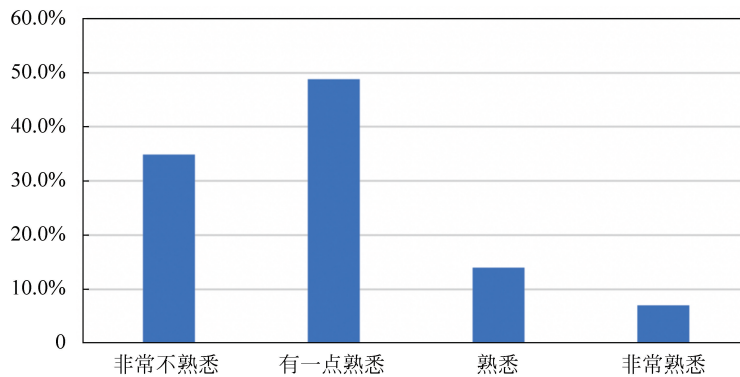


图 3 你对“区块链”一词的熟悉程度为? (N=86)

对不同名词的感知差异也同样反映在受访者对不同技术趋势的感兴趣程度上。大多数人表示,他们对 AI 有很高的兴趣(满分为 10, $M=8.0$, $SD=2.0$, $N=86$),但对区块链的兴趣明显较低($M=6.5$, $SD=2.6$, $N=86$)。

当被问及主要从什么渠道了解科技趋势时,大多数受访者表示新闻媒体是他们最重要的信息渠道($M=7.2$, $SD=2.2$, $N=86$),其次是社交媒体($M=7.0$, $SD=2.6$, $N=86$),较少有人通过工作中的个人联系($M=6.1$, $SD=2.6$, $N=86$)或家庭关系渠道($M=5.9$, $SD=2.5$, $N=86$)了解技术趋势。绝大多数受访者都对新技术趋势非常感兴趣($M=8.0$, $SD=1.9$, $N=86$)。

大多数受访者都表示非常关注数据隐私($M=8.22$, $SD=1.7$, $N=86$)。同样地,大多数人都非常重视自己的数据隐私($M=8.47$, $SD=1.8$, $N=86$)。

受访者在有关教育、新闻、健康和娱乐等各类私人和专业活动中广泛地使用数字技术。如图 4 和图 5 所示,虽然大多数受访者对技术是否能帮助他们实现个人目标持中立态度,但他们大多倾向于认为数字技术在整体上是发挥积极作用的。

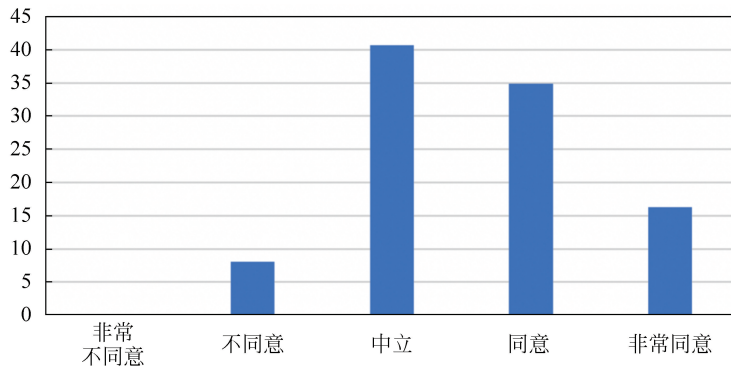


图 4 “数字技术能帮助我实现个人目标”(N=86)

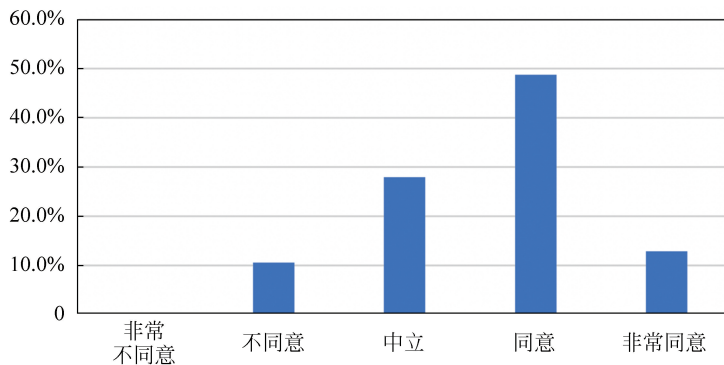


图 5 “数字技术在整体上发挥着积极作用”(N=86)

在评价与个人相关的不同数据风险(如隐私侵犯、算法歧视、黑箱操纵等)时,大多数受访者表示自己意识到了这些风险,但在个人相关性方面,他们的平均评分是6分(满分为10)。

虽然现阶段还不能得出可靠的结论,但正如我们对《南华早报》人工智能报道的初步分析结果所展现的那样,目前对技术用户的观察结果与主流新闻话语中对科技的总体积极描述是较为一致的。

然而,我们也注意到,受访者对技术在他们生活中发挥的作用持谨慎评价。例如,40.7%的受访者表示数字技术让他们浪费了大量时间,43.1%的受访者表示使用数字技术让他们感到更加焦虑。如图6所示,他们还意识到,科技公司对他们生活的影响越来越大,而他们的隐私也越来越容易受到侵害。

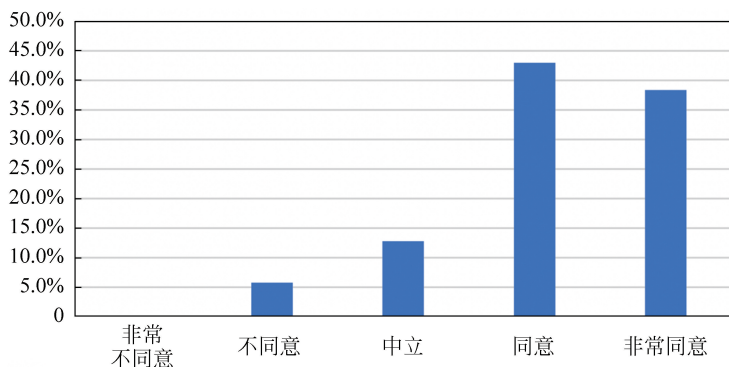


图6 “数字技术让我们的隐私越来越容易受到科技公司的侵害”(N=86)

六、展望

虽然本文目前只完成了一小部分实证分析,但我们得到了一些基本的观察结果:首先,如果《南华早报》对AI技术的相关报道具有代表性,那这可以说明主流新闻媒体的技术叙事在总体上是积极的,这与西方的技术话语存在显著差异。在西方占据主导的技术话语中,与剥削、隐私侵犯和歧视有关的一些技术风险和事件在公共讨论中可见度很高。我们认为,不同的政治、文化和技术使用语境是造成这一差异的原因。其次,我们对前测阶段回收问卷的分析得到了一些有趣的结论。我们发现,人们大多对技术持积极看法,但同时也意识到了自身对科技巨头公司的日渐依赖和个体权益在技术面前的脆弱性,这两者之间形成了一个有趣的对比。然而,我们还需要更大的样本量和更严格的统计推断来验证这一结论的可靠性。

由于对主要数据的收集和分析目前仍在进行中,以上报告的观察结果可能在最后会有所改变。在实证分析层面,我们仍面临以下挑战:首先,在针对技术叙事的内容分析中,由于分析对象是中文文本,我们需要不断调整计算方法;其次,我们仍在尝试通过微博 API 收集大量文本数据,期望在后期能够解决这些技术问题;最后,从中国技术用户中招募到具有足够代表性的样本来完成问卷调查仍然存在协调上的问题,我们希望通过与中国相关市场机构的合作来最终获得足够的样本数据集。

另外,我们还考虑将“元宇宙”这一最新的技术趋势纳入我们的研究中。作为一个热门话题,“元宇宙”在新闻和社交媒体上已经相当程度地主导了当前的科技辩论。中国在元宇宙技术发展中应当扮演的角色,以及这一新技术趋势在中国将何去何从,已经迅速成为中国技术叙事的一部分。

(编译:李雨滢)

Understanding Digital China: Chinese Perspectives on Data-Driven Technology

Dennis Nguyen, Bei Wang

(University of Applied Sciences Utrecht, Netherlands)

Abstract Taking the technology-related discourse in the Chinese context as research object, combining automated content analysis, survey, and in-depth interview, this study explores the main discourse frames that Chinese news outlets and social media incorporated to report data-driven technologies and how Chinese technology users perceive and evaluate the current technological trends. The preliminary study discovered that the technological discourse of the Chinese mainstream media were positive in general, which differed a lot from the negative technological discourses in western countries. Though most of Chinese public held a positive attitude toward technologies, they also showed worries about potential technological risks. We argue that different political cultures and contexts for technology use are likely reasons for these differences between China and western countries.

Key Words Chinese Digital culture; Multi-step Study; Public Discourse; Technological Discourse

Introduction

In this short research note, we introduce our multi-step study on Chinese digital culture as perceived from a Chinese angle. More specifically, we center our research efforts on public discourses and citizens as ‘users’ of digital technology in China and put them in contrast to prevailing views about ‘Digital China’ in the Global West (especially Europe and Northern America). China is considered one of the most important and influential technology powers and digital markets in the world. It has been frequently described as a success story for a rapid, deep, and broad digitalization of its society (Hua & Shaw, 2022), so much so that it has been described as being more advanced in the adoption of digital technology in daily life than many Western societies. This concerns the use of technology for various commercial, administrative, but also cultural and social purposes.

Furthermore, over the past decade, the Chinese technology sector has given birth to its own versions of ‘Silicon Valley’ and Chinese tech companies established themselves beyond their enormous domestic market, with players such as Huawei or TikTok having become recognizable brands worldwide (Zhang et al., 2020; Jia & Liang, 2021). The Chinese government considers tech development, especially in the field of big data and artificial intelligence, as a matter of elevated national importance. Its policies and economic plans aim at strengthening the Chinese tech sector. Some of these developments cause frictions with geostrategic competitors, first and foremost the U.S. A who closely and critically monitors China’s foreign digital policy in respect to global economy and security (Sun, 2019; Nguyen & Hekman, 2022). In this sense, China’s tech ambitions are another factor in the general decoupling and geopolitical polarization between the world’s two largest economies over the past few years.

China’s approach to technology as a key component for its economic growth and attempts to increase influence are hotly debated issues in Western public discourses. Yet, what the Chinese public discourse itself looks like and

what Chinese users think about technology trends seem an unaddressed issue in these discussions. Relatively little thought is given to how Chinese digital culture gives meaning and value to digital technology. The present study aims to expand on this and is intended to add to a growing body of research on Chinese digital culture through empirical investigation. The underlying assumption is that the role of cultural practices, norms, and values is essential for the manifestation of tech adoption.

The study's main objective is to explore and describe Chinese digital culture through two closely interwoven analytical approaches: 1) to investigate how Chinese public discourses build and distribute narratives about the role of tech through specific framing practices; 2) to research how Chinese users perceive, assess, and adopt technology. Since this ongoing research project commenced only recently and has an expected duration of two to three years, in the present paper we will mainly focus on the research problem and motivations, central research objectives, the methodological approach and a few preliminary findings from the ongoing data collection. We conclude with an outlook for the next steps, especially in respect to the main challenges for the empirical component of this research endeavour.

Research Motivation and Background

There are two main motivations behind this study: first, it aims to contribute to our understanding of how cultural factors are essential for shaping the perception, adoption, and evaluation of digital technology in specific socio-cultural and political contexts. The digital transformation is a global trend, but its concrete materialization and effects are configured by diverse regional and local factors. Making sense of digital technology and defining its purposes as well as value are a process that takes place in dynamic, partially fuzzy but still distinguishable local contexts. These are not in any way secluded or isolated from each other but emerge in a complex field of tension between national, transnational, and global networks of communication. We thus take a methodological approach in our critical investigation of different digital cultures, which is inspired by Beck's proposal of 'methodological

cosmopolitanism' (Beck, 2006). In short, this framework allows researchers to analyze distinct, concrete manifestations of social interaction that center on local, regional and/or national horizons of societal organization without ignoring the inherently transnational and global forces that shape them. The different layers from local to global and national to transnational are not separable boxes but exist on a continuum (Nguyen, 2017). China is one important case study for researching how global tech trends become focal points of regionally and locally oriented discourses and how culture gives sense to tech but also how tech shapes culture (Nguyen & Hekman, 2022).

Second, we aim to address what we see as misconceptions among some Western observers in politics, culture, and business about Chinese digital culture. While there is a growing body of research on Chinese digital culture's different dimensions and manifold manifestations, evidently stereotypes and unfounded assumptions seem to prevail in Western discourses. For example, there are oversimplifying portrayals of Chinese users as not caring about personal privacy and misunderstandings about the scope and extent of penetration of the so-called social scoring system (*Business Insider*, 2018; *Wired*, 2019). Some framings paint a dystopian picture of Chinese digital culture as a polar opposite to the values of Western societies and their liberal-democratic traditions (Sparkes, 2021).

How the Internet and digital technology become part of daily life in China is surely different from the West. It would be naïve to argue that the Chinese digital realm is 'just different' and that there were no problematic issues that raise ethical questions such as personal privacy and data ownership (Wong & Dobson, 2019). However, portrayals of Chinese digital culture can appear one-dimensional and do not always consider its diversity. Furthermore, there is a Chinese digital public sphere that spans across Chinese social media networks in which people form communities and discuss current issues. By acknowledging the complex context in which Chinese digital culture comes into being, we aim to shift angle to Chinese views on the role of technology in their lives but also on the global stage. In this way, we hope to expand our understanding of what assumptions about Chinese digital culture are accurate and which ones are false. This, in turn, may allow to identify and reject

shallow stereotypes, support the formulation of legitimate criticism, and locate potential for dialogues through better understanding alternative viewpoints. At the very least, taking a closer look at Chinese digital culture through empirical research seems imperative for engaging with current issues and risks that shape the global digital transformation.

Technology and Digital Culture

It is important to define some key concepts that we work with throughout this research project, namely technology, digital transformation, and digital culture.

Beginning with technology, we find it important to clearly state that we do not see it as just a neutral material ‘thing’ that is somehow value-free and detached from social, political, and cultural considerations. On the contrary, we posit technology as the outcome of the interplay between different non-technical factors that shape its conception, introduction to society, and effects. Economic and political environments as well as prevailing social and cultural norms are as essential for tech development as progress and innovation from a technical point of view. Moreover, technology is neither good nor bad, but it can never be neutral either, as it is intended to introduce changes to our relationships with the social and material worlds that we interact with (Verbeek, 2006). Against this background, we focus on specific digital technologies that implement different forms of datafication, automation, and networked interaction. These drive most of the trends associated with the digital transformation around the globe: artificial intelligence (AI), big data, blockchain, and the Internet of Things. We select these for their transformative potential and popularity in tech discourses.

Next, the digital transformation can be understood as a global yet unevenly distributed dual process of mediatization and datafication, which stimulates increasing automation. Put differently, a growing number of digital interfaces mediate social interactions between human and non-human entities across societal domains (Bunz & Meikle, 2017). These digital media often rely on data to fulfil their intended purposes (e. g., buying products, seeking

and sharing information). By including more and more digital media into various daily routines, eventually most of them become ‘datafied’ (Meijas & Couldry, 2019). This can inform the development of ever smarter algorithms that promise efficiency and convenience but also poses certain risks for individuals and social groups alike. Examples are privacy invasion, algorithmic discrimination, manipulation (e. g., ‘dark patterns’), cybersecurity breaches, and information disorder (e. g., ‘fake news’). The perception of values, benefits, risks, and harms that come with data-driven technology are context-dependent and cultural factors play an important role in how processes of technology adoption are shaped.

Technology trends are embedded in cultural discourses that can reveal how relevance is assigned to new innovations in society. We thus approach technology adoption as a cultural process that is inherently value-loaded and normative. This links to the concept of digital culture. Following Bollmer (2018), we define digital culture as an assemblage of ‘three elements, *narratives* about technology, *material infrastructures* that shape communication, and the physical capacities of *bodies*, human or otherwise, in their ability to move and perform specific acts’ (p. 20, original italics). This definition of digital culture allows for its operationalization to conduct empirical research with different methods along the quantitative-qualitative spectrum. Simply put, to investigate these interconnected dimensions empirically, we explore dominant tech narratives through the analysis of Chinese tech discourses in news media and social media, while we conduct surveys and interviews with Chinese tech users to analyze in what infrastructures they make use of what technological possibilities. We approach digital culture from both a collective and individual dimension. It takes individuals who use technology to have digital culture, but it is at the same time a collective performance in which certain norms and values emerge and govern the acceptable adoption of technology.

Furthermore, there is not one digital culture but many different digital cultures that have different scopes ranging from local to global (Bollmer, 2018). As mentioned earlier, we take a critical view on the ‘container-view’ of culture and nation-states and rather focus on how certain clusters of cultural

performance are embedded in networks of transnational influences. The felt reality by many individuals might be ‘national’, but that does not mean that the cultural formations that they are part of are somehow capped off and detached from others. While there are dominant mainstream cultures, there are various local and regional subcultures and flows of interaction that reach beyond national borders. This also applies to varying extents to China.

Researching Chinese Digital Culture

Technology plays a central role in daily life in China, both for personal and professional purposes. The country hosts some of the world’s leading tech companies and Chinese society has adopted data-driven, automated solutions at a rapid pace over the past decade. The global pandemic only accelerated the digitalization of daily routines in China (Lee et al., 2021). Research on China’s digital transformation is growing, especially in the intersection of business studies, economics, and international relations. However, a relatively new and important research subject is the social-cultural impact of digital technology on Chinese society.

While still comparatively small in numbers, several recent studies place emphases on the relationship between social and cultural practices and technology. These show how digital media are sites for the creation and negotiation of social and cultural meaning (e.g., concerning gender roles) (Peng et al., 2021; Xie & Chao, 2022), grassroots activism (e.g., for the environmental context) (Sun & Yan, 2020), and the performance of culture through novel multi-textual expressions in social media (Xia & Wang, 2022; Zhu & Ren, 2022). Others critically examine the cultural distinctiveness of Chinese social media (Fitzgerald et al., 2022) and the reinforcement of mainstream culture and Han-identity through digital media (Wang, 2022).

There are also a few studies that explore Chinese users’ views from a broader view with an emphasis on privacy and data-driven governance. These show that attitudes are more nuanced than often implied in Western discourses and how cultural factors shape expectations and perceptions of acceptability for different data practices (Kostka, 2019). Further empirical findings point to a

crisis of trust concerning personal data in China, which directly contradicts claims about lacking sensitivity for the issue in Chinese society (Wang & Yu, 2015).

In summary, the different studies show how complex Chinese digital culture is and that the same technologies can take partially very different forms and have different effects due to cultural and social filters. However, to our knowledge, not many studies have yet investigated how narratives about tech as well as individual views and practices can uncover the cultural processes through which technological trends are made sense of, filled with meaning, and connected to values.

We aim to supplement previous research efforts by first taking a bird's eye view of how Chinese users perceive, adopt, and evaluate the role of technology in their lives. The tripartite definition of digital culture serves as a compass for the empirical approach: to investigate narratives about the tech, we analyze public discourses in mainstream and social media; to explore perceptions of tech and the experience of digital culture (i. e., infrastructures and possibilities), we turn to surveys and interviews. Based on these considerations, we intend to find answers to the two main research questions:

- How do Chinese news and social media discourses frame data-driven technology in their reporting?
- How do Chinese users perceive and evaluate technological trends (especially in terms of benefits and risks)?

To approach these, a multi-method approach is deemed not only suitable but absolutely necessary.

Methodology

The empirical part combines several qualitative and quantitative research methods. For charting the public discourse, the study deploys a combination of automated content analysis and possible netnography. The primary research subjects are Chinese news reporting on relevant data-driven technologies (e. g., in *South China Morning Post (SCMP)*, *China Daily*, *People's Daily*) and social media discourses (e. g., on Weibo). To understand

users' views, a survey was distributed among Chinese respondents via social media. Next to this, interviews may be held with a smaller sample of Chinese users to supplement the quantitative findings. Data collection and analysis with the different methods take place in parallel.

Automated Content Analysis

The content analysis of Chinese news reporting aims at exploring the framing of technology in respect to purposes, values, and risks in Chinese public discourses. News media remain important sources of information about current issues that can at least in part have an influence on individual views and opinions. To understand digital culture, it is important to critically and systematically research dominant narratives about technology that are likely to circulate in public discourses, which are still to a large extent shaped by legacy media (Nguyen, 2017). The sample includes three of the most popular China-based news outlets that publish in Mandarin and English: *South China Morning Post*, *China Daily*, and *People's Daily*. These were selected for their reach and coverage of technology. The sampled time period spans from 2010 to 2021 and includes all articles on the keywords artificial intelligence, big data, blockchain, and the Internet of Things. These were directly retrieved from the news sites and articles and then processed for automated content analysis (utilizing TF-IDF, Named Entity Recognition, and topic modeling) to identify frames (van Atteveldt et al., 2022). In short, we use computational methods to pre-process news texts before they are clustered based on the most frequent words of high informative value. The researchers then interpret the word clusters to label frames and validates them by manually coding samples from each cluster. The main reason for using automated content analysis is to save time and resources, though human validation is an integral part of the analytical process (i. e., assessing and improving human-computer agreement in the frame detection and reliability with Krippendorff's alpha).

Social media discourses have become equally important and offer spaces to communities who discuss current tech trends in-depth. Legacy media and social media are foundational for contemporary public discourses, so any

exhaustive analysis needs to consider both. Hence, we chose to also explore tech debates on Weibo, one of China's largest social media platforms. We intend to collect posts on the same keywords and for the same time period via Weibo's API and then process the textual data with a similar method for automated content analysis. In case technical difficulties prevent us from collecting data for quantitative analysis, we will opt for a qualitative investigation of Chinese social media discourses via netnography on selected communities (Kozinets, 2019).

Survey and Interviews

The second part of the study builds on a survey and possible interviews. The survey consists of 45 questions in Mandarin that include Likert scales, semantic differential scales, multiple choice, and open questions. It is structured around five sections: 1) perception of technology trends; 2) interest in technology trends; 3) views on benefits of technology; 4) views on risks of technology; and 5) demographics. On the one hand, the questions aim at probing what respondents think about big data, AI, blockchain and the Internet of Things. On the other, the survey explores how respondents perceive the role of digital technology in their lives in general.

The survey is fully anonymized. The main target population consists of Chinese tech users between the ages of 18 and 45. For the pre-test, the survey was created and shared via Wenjuan, a popular Chinese social media platform. The full data collection will be conducted in collaboration with a Chinese market research agency and is scheduled for September 2022, since the resurgence of COVID-19 in spring caused a delay in the planning. The data will allow to describe current attitudes towards different technological trends and how they form, since several questions also ask how, when, and where users learn about novel technologies. In addition, we aim to test several hypotheses about the relationship between demographic factors, technology use, and technology assessments.

We also keep the possibility open to follow-up on the findings from the quantitative analysis with qualitative investigations in the form of interviews. These could help to further explore how values shape technology in daily

routines and vice versa.

Preliminary Findings I: AI in Chinese News Coverage

To illustrate the methodological approach, for this research note we picked the *South China Morning Post*'s coverage of AI as one example of how China-based news media portray current tech trends in public discourses. It is important to consider that *SCMP* is an English-speaking outlet based in Hong Kong under the ownership of Alibaba, one of the largest tech companies in China and the world. This sets it apart from the mainly Chinese-speaking, government-related outlets in the sample (*China Daily* and *People's Daily*).

In total, *SCMP* published 1032 articles with a clear focus on AI between 2010 and early 2020 (we are still in the process of adding data until the end of 2021). The volume of coverage increased noticeably in only a few years, accelerating as of 2016 (see Figure 1).

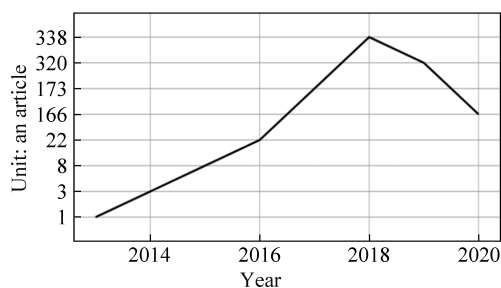


Figure 1 Articles on AI in *SCMP* over time

It is noticeable that the newspaper emphasises the economic value of AI above all else. Almost 80% of all the articles report the technology's value for the commercial sector and economic growth as well as the importance of tech development. The overall tone of reporting is positive and relatively few references are made to the individual and collective risks of datafication and automation. This stands in contrast to Western reporting, where surveillance, discrimination, job losses and other ethical issues are visible themes in the AI discourse (Nguyen & Hekman, 2022).

This is in line with the official framing of the issue, which primarily focuses on the technology's significance as a generator of material wealth and

influence on a global stage. Of course, the findings still might change after including the other outlets, but SCMP's AI reporting indicates that narratives about data-driven tech in China appear to be pragmatic, innovation-focused, and interested in the material value that technology can generate. That is not to say that ethical issues and critical questions are fully absent, yet they are far less frequent in comparison to the positive stories about AI.

Preliminary Findings II: Chinese Users' Views on Tech from The Pre-Test

For the pre-test, 86 Chinese nationals completed the survey. These were recruited through different social media networks (e.g., LinkedIn and WeChat). The findings are not representative of the planned main data collection later this year but offer a glimpse at what type of observations the survey instrument allows for. For reasons of space, only a few selected descriptive analyses are reported in this section.

The pre-test sample has more female (60.5%) than male participants (37.2%). Only 2 respondents identified as 'other'. The main age is 39.2 ($SD=14.14$), with the youngest respondent being 14 and the oldest 75. The vast majority of respondents has at least a BA degree or higher (94.2%), which is unsurprising since the pre-test participants come from the researchers' professional and private networks.

Most of the sampled respondents are familiar with the bigger buzzwords of 'artificial intelligence', while more recent developments such as blockchain seem a bit more obscure (Figures 2 and 3), possibly due to their recent emergence and relatively vague contexts of use.

This is also reflected in how much interest respondents have in the different tech trends, with most indicating high interest in AI (measured on a scale from 1 to 10, $M=8.0$, $SD=2.0$, $N=86$) but noticeably less so for blockchain ($M=6.5$, $SD=2.6$, $N=86$).

When asked what sources are most important for them to learn about tech trends, most respondents assign high scores to news media ($M=7.2$, $SD=2.2$, $N=86$) and social media ($M=7.0$, $SD=2.6$, $N=86$) and the lowest to

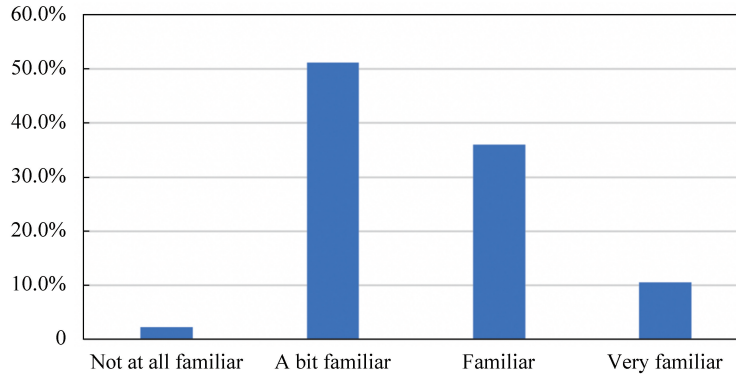


Figure 2 How familiar are you with the term ‘Artificial Intelligence’? ($N=86$)

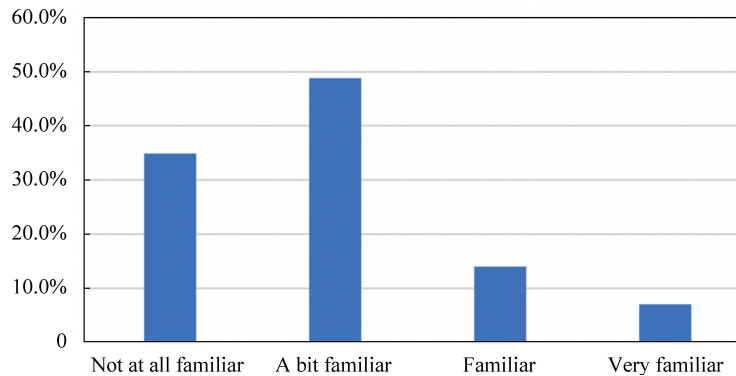


Figure 3 How familiar are you with the term ‘Blockchain’? ($N=86$)

personal contacts at work ($M=6.1$, $SD=2.6$, $N=86$) or at home ($M=5.9$, $SD=2.5$, $N=86$). Most respondents have a great interest in new technological trends ($M=8.0$, $SD=1.9$, $N=86$).

Concerning data privacy, most respondents indicate that they are very concerned about the issue ($M=8.22$, $SD=1.7$, $N=86$). Similarly, most value their data privacy highly ($M=8.47$, $SD=1.8$, $N=86$).

Respondents use digital tech for a wide range of private and professional activities (e.g., education, news, health, entertainment, etc.). While they appear on the fence over whether technology empowers them to achieve their personal goals, they seem mostly inclined to perceive tech as universally good (Figures 4 and 5).

There are further hints in respondents’ assessments of different data risks as relevant for them personally (privacy invasion, discrimination, manipulation,

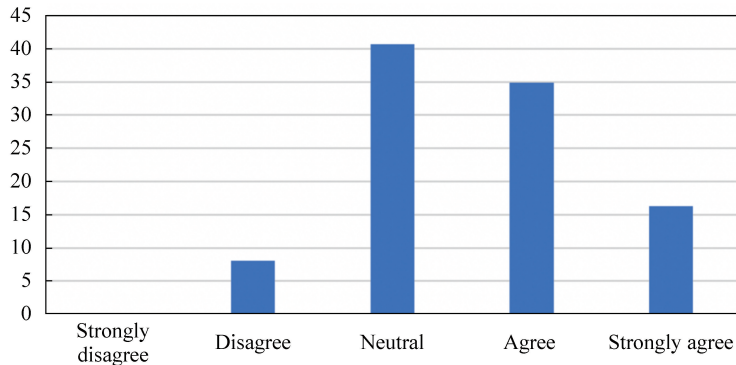


Figure 4 'Digital technology empowers me to achieve my goals' (N=86)

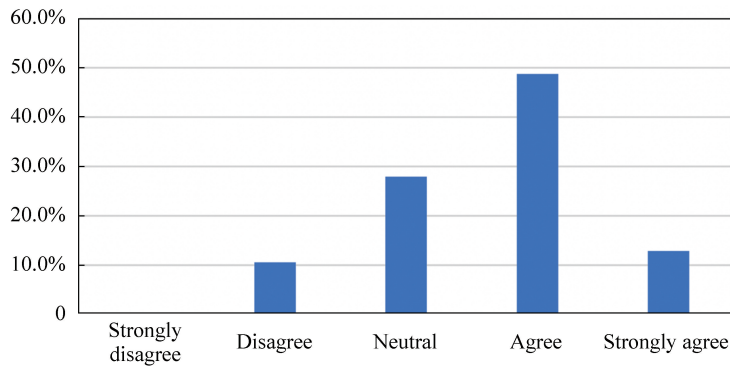


Figure 5 'Digital technology is universally good' (N=86)

etc.). They are aware of such issues but score them on average with a 6 out of 10 for personal relevance.

While nothing can be securely concluded at this stage, these observations would correspond with the overall positive portrayal of tech in mainstream news discourses as emerged in the tentative exploration of *SCMP*'s AI coverage.

However, respondents also seem cautious about the role of tech in their lives. For example, referring to Figure 6, 40.7% indicate that digital technology makes them waste their time and 43.1% report that it makes them feel more anxious. They also display awareness of a growing influence of tech companies on their lives and increased vulnerability for their privacy.

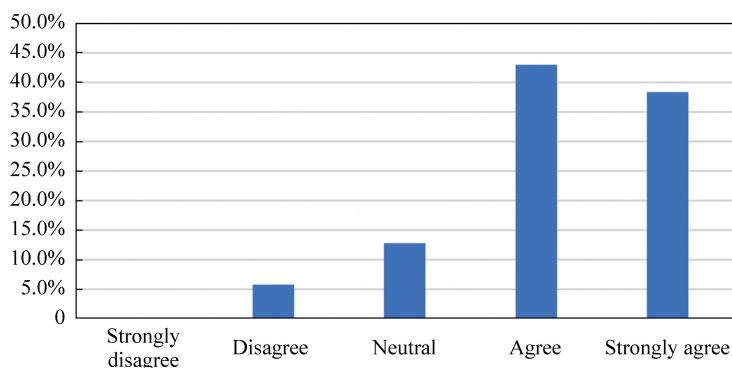


Figure 6 'Digital technology makes it easier for companies to invade my privacy' (N=86)

Outlook

We are only at the beginning of the empirical investigation, but a few observations can already be made: first, if *SCMP*'s coverage of AI is an indicator, then mainstream narratives are overall positive about tech. This is possibly a marked difference from Western discourses, where several risks and incidents related to exploitation, privacy invasion, and discrimination are also visible part of the public discussion. Different political cultures and contexts for technology use are likely reasons for this.

Second, the preliminary findings of the pre-test survey point to a few interesting observations, especially the contrast between mostly positive views on tech versus the awareness of increasing dependence and vulnerability towards tech companies. However, this needs to be confirmed with a much larger sample and more rigorous testing of the reliability of measurements and inferential statistics that go beyond exploring plain frequencies.

All of the reported observations are subject to change, as the main data collections and analysis are still in progress. In this respect, several challenges still need feasible solutions. Concerning the content analysis of tech narratives, a technical problem is to adjust the computational approach to text material in Mandarin. In addition, we are still assessing the feasibility of collecting large volumes of text data from Weibo via its API. These technical issues will eventually be solved but are often more time-consuming than the

actual analysis and interpretation of findings. Similarly, recruiting a representative sample of Chinese users for the survey continues to pose a logistical issue. We hope that collaboration with partner organizations in China will eventually help us to have a sufficiently large dataset.

Furthermore, we consider adding the more recent tech trend of the ‘metaverse’ to our study. It emerges as a hot topic that appears to dominate the current tech debates in the news and on social media. Subsequently, China’s role and/or a Chinese version of this new technology trend have quickly become part of tech narratives in and about the country.

Finally, while we intend to connect the findings from the different analyses in one large study, we still need to decide on how and from which angle to report our various observations. At the moment, we consider several publications that refer to each other rather than one paper that connects it all. However, for the present paper we chose the latter route to explain the overarching goals of the multi-step study on Chinese digital culture.

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