Appendices

MAIN CATEGORY	THEMES	SUBTHEMES	REFERENCES
Theme 1 TECHNOLOGICAL AND INFORMATION-DRIVEN POWER	Advanced technological infrastructure	Digital capabilities, Rapid development of digital infrastructures, architecture and governance, IS capabilities and network competition	Alaimo et al., 2020; Constantinides et al., 2018 ; de Reuver et al., 2018 ; Gar-Or et al., 2018 ; Gleiss et al., 2023 ; Logue et al., 2025 ; Nieborg & Helmond, 2019; Oinas-Kukkonen et al., 2010 ; Pérez et al., 2017 ; Rai et al., 2018; Tan et al., 2015 ; Tilson et al., 2010
	Technological disruptions and business opportunities	Big data, algorithms, analytics, enabled by servers	Agarwal & Dhar, 2014; Yoo, 2015
		Big data business strategy	Woerner and Wixom, 2015
		Big data business models	Wiener et al., 2020; Hu et al., 2019
		Technologically-driven business opportunities, wealth of possibilities, new promises	Brynjolfsson and McAfee, 2014; Constantiou and Kallinikos, 2018; Kokshagina et al., 2023; Lycett, 2013
	Data practices	Differentiated access to data, i.e. practices of data generation and use; "data capture", "data sharing", growing "use of consumer data"	Lyytinen and Grover, 2017; Rai et al., 2018
		Use of data to support and materialize a great deal of services; Advertising as the default model to support online content and services.	Alaimo et al., 2020; Culnan, 2019; Gal-Or et al., 2018; Hachman, 2015; Johnson et al., 2019; Krämer & Shekhar, 2025; Lin & Armstrong, 2019; Lyytinen and Grover, 2017; March, 2019; Safadi & Watson, 2023; Teubner & Flath, 2019; Xu and Belanger, 2013; Yoo, 2015.
	Efficient services, convenience and individual benefits as justifications of data practices	Hedonic benefits (entertainment, enjoyment, amusement, fun)	Galliers et al., 2017 ; Krasnova et al., 2010
		Functional benefits (information, efficiency, convenience, time-savings)	Clarke, 2019
		Social benefits (communication, relationship, involvement, trust)	Xu and Belanger, 2013
		Psychological ones (affiliation, belonging, identification)	Whitley, 2014
	Underlying technological and	Retailing practices in combination with technology (e.g. integration of social media platform)	Heimbach and Hinz, 2018; Li and Wu, 2018

	psychological mechanisms	Strength of online sharing mechanisms	Heimbach and Hinz, 2018; Lee et al., 2015
		Impact on users' minds and motivations IT-based motivations of users (e.g. search for social endorsement) Psychological mechanisms (e.g. positive reinforcement and enjoyment) behind technology uses	Ens et al., 2023 ; Jia et al., 2024 ; Kokshagina et al., 2023 ; Kunst et al., 2022 ; Lee et al., 2015 ; Turel & Qahri-Saremi, 2024; Turel and Serenko, 2012; Whitley et al., 2014
	Technological advances and expected growing power	Next generation of digital platforms Mastery of technology, Big Tech's increasing competences in AI, Opening of new possibilities	Logue et al., 2025 ; Rai et al., 2018
Theme 2 **ECONOMIC AND MARKET POWER**	Economic size and scale	Network effects, winner-take-all dynamics, financial leverage	Gleiss et al., 2023; Kölbel et al., 2023 ; Fast et al., 2023
		Market valuations and brand dominance	Lindman et al. (2023), Duffin, 2022
		Vertical and horizontal integration	Gleiss et al. (2023); Butler et al., 2023
		Economic affordances contributing to monopolistic tendencies	Gleiss et al. (2023) Schnurr et al. (2023
	Revolution of digital platforms: new generative dynamics	New types of interactions	de Reuver et al., 2018 ; Jacobides et al. 2018
		Rupture with existing business models	Agarwal and Dhar, 2014; Constantinides et al., 2018 ; de Reuver et al., 2018 ; Parker et al., 2017
		A vast business ecosystem of diverse services	Alaimo et al., 2020; Brynjolfsson and Saunders 2009; Gar-Or et al., 2018; Tilson et al., 2010
		Expansion of their activities beyond their initial scope, in "rival territories"	Alaimo et al., 2020; Clemons and Madhani, 2010; Tiwana, 2015; Bar-Gill, 2019; Parker et al. 2017
		Rapid growth	Agarwal and Dhar, 2014; Teubner and Flath, 2019;
	Reshaping of the whole ecosystem	New forms of control	de Reuver et al., 2018 ; Leong et al., 2019 ; Tilson et al., 2010
		Operational ecosystems that allow them to match buyers and suppliers Shaping of competitive dynamics, consumption patterns, and even regulatory discourses	Lindman et al., 2023; Hurni et al., 2022; Karhu et al., 2018; Karhu et al., 2020

		Construction and mastery of a whole ecosystem	Lindman et al., 2023
		A new institutional order	Tilson et al. 2010
		Transformation of classic way of organizing-	Tilson et al., 2010; Tiwana, 2015
		Platform thinking	Agarwal and Dhar, 2014; Constantinides et al., 2018
		Economic domination, monopoly, wealth concentration, platform leadership, platform imperialism	Bar-Gill, 2019; Constantinides et al., 2018; Leong et al., 2019; Rai et al., 2018 ; Teubner and Flath, 2019 ; Kölbel et al., 2023
Theme 3 **SOCIAL AND SOCIETAL POWER**	Disruptive social potential	Progress, advances	Gal-Or et al. 2018; Lindman et al., 2023
		Simplification and improvement of life	Benbya et al., 2020; Böttcher et al., 2024; Sanner et al., 2025 ; Gawer & Bonina, 2024 ; Hillebrand et al., 2023
		Changes in the way people work	Deng et al., 2016
		Changes in the way people live	de Reuver et al., 2018; Gleiss et al., 2023
	Changes in socialization patterns	Change in the way people communicate, interact, share experiences	de Reuver et al., 2018 ; James et al., 2017 ; Whitley et al., 2014
		Influence on people's identity and sense of self	Whitley et al., 2014
		Prediction of people's (future) behaviors	Agarwal and Dhar, 2014; Galliers et al., 2015; Galliers et al., 2017; Li and Wu, 2018; Lycett, 2013; Newell and Marabelli, 2015
		Influence of consumers' perceptions, herding behaviors	Clarke, 2019
		Contagion of emotions	Agarwal & Dhar, 2014
		Redefinition of the role of people and users	Benbya et al., 2020; Demetis and Lee, 2018; Faulkner and Runde 2019; Zittrain, 2006
	Constituent of society	Societal embeddedness	Parker et al., 2016; Tiwana, 2015; Loebbecke & Picot, 2015

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		Far-reaching, lasting effects	Tilson et al., 2010; Yoo, 2015; Deng et al., 2016
		Expanding Role in Addressing Major Societal Challenges	Majchrzak et al., 2016; de Reuver et al., 2018; Loebbecke & Picot, 2015; Constantinides et al., 2018
		Paternalistic Power	Lindman et al., 2023; Baskerville et al., 2020
	Institutional influence	Political Actor Status	Gleiss et al., 2023; Lindman et al., 2023
		Democratic Principles Shaping	Lindman et al., 2023
		Public Discourse Mediation	Kitchens et al., 2020
		Advanced lobbying and agency capture	Hawley, 2021; Butler et al., 2023
Theme 4 **THREATS AND RISKS**	Exploitation of personal data and Privacy risks	Implications of data collection for information privacy of practices	Bélanger and Crossler, 2011; Belanger and Xu, 2015; Dinev, 2014; Li, 2011; Newell and Marabelli, 2015; Pavlou, 2011; Safadi & Watson, 2023
		Question of data ownership	Constantinides et al., 2018; Lindman et al., 2023 ; Deng *et al.*, 2016; Jiang *et al.*, 2021
		Data exploitation and expropriation	Cecez-Kecmanovic, 2019; Clarke, 2019; Lindman et al., 2023
		Balance between risks and benefits	Belanger and Xu, 2015
	Surveillance	Surveillance economy, surveillance capitalism, digital surveillance economy network	Zuboff, 2015
		New logic of accumulation Mechanisms of extraction, commodification, and control	Clarke, 2019; Zuboff, 2015
		Change in power structures, new form of power, power and knowledge, new power dynamics	Cecez-Kecmanovic, 2019; Clarke, 2019: Wareham, 2014; Zuboff, 2015, 2019
	Institutionalization of practices of surveillance	A sense of evidence	Clarke, 2019; Zuboff, 2015
		Institutionalized practices of surveillance	
		Normalization of control society	Leclercq-Vandelannoitte and Aroles, 2020
		Constitution of a program of action that establishes itself as inevitable, unstoppable and justified	Cecez-Kecmanovic, 2019
	Risks to citizenship rights and civic society	Functioning as political actors, posing potential threats to civic rights, public life, and the broader mechanisms of democratic accountability	Butler et al., 2023 ; Lindman et al., 2023
		Shaping regulatory discourse	
		Tech lobbying efforts	

Manipulation, Determinism, lack of choice, loss of human agency	Achievement of commercial, social or political ends	Clarke, 2019; March, 2019;
	Imposition (rather than choice)	Clarke, 2019
	Automation of decision-making and quantification	Cecez-Kecmanovic, 2019
	Claim of individual benefit	Galliers et al., 2017
Lack of transparency	Invisible hand	Zuboff, 2015
	Opaque process, black box, clandestine operations	Clarke, 2019; Galliers et al., 2017; March, 2019;
	Complex operations at each stage of the process	Newell and Marabelli, 2015; Lightfoot & Wisniewski, 2014; Safadi & Watson, 2023
	Opacity of analytical tools: unknown algorithms housed on an unknown global network of servers	Yoo, 2015
	Lack of understanding of the impacts and the ways Big Tech affect every realm of society	Newell and Marabelli, 2015; Zuboff, 2015
Extension of digital surveillance to public governance	Use of personal data by public agencies; Revelation of scandals and collusion	Cecez-Kecmanovic, 2019; Flyverbom et al., 2017
	Lack of resistance (due to the lack of transparency on Big Tech's operations and institutionalization of surveillance practices)	Cecez-Kecmanovic, 2019; Clarke, 2019
	Call upon action	Cecez-Kecmanovic, 2019; Clarke, 2019

Appendix 1: Synthesis of Thematic Coding

Examples of Big Tech's three reinforcing pillars

Consider these examples: Google first gained a unique technological power in the web search domain from groundbreaking innovation in search algorithms. This technological power progressively gave way to a broader societal power, as Google became the main entrance point to the World Wide Web and progressively shaped its usage, even in terms of vocabulary ("to google someone or something" has become a popular figure of speech[1]). This societal power was then coupled with economic power, as Google acquired a dominant position in online advertising. This economic power, in turn, enabled the company to foster new innovation cycles (e.g., with the acquisition of Android Inc. in 2005, which in 2007 gave rise to the Android Operating System, thus transpiring into a new cycle of technological power).

Similarly, Amazon first introduced a technological breakthrough in e-commerce, with a fully automated marketplace associated with ranking algorithms. This technological innovation progressively led to an economic power,[2] along with a societal power of transformation of the whole retail market. This economic power further enabled massive internal R&D investments in IT, giving birth, in turn, to a new technological breakthrough with the invention of Cloud Computing (e.g., Amazon Web Services).

The same logic applies to Microsoft, despite a more complex trajectory. While benefiting from strong technological, economic, and societal power due to its Windows Operating System (OS) and associated productivity tools (e.g., Word, Excel, PowerPoint, with major impacts on corporate cultures), in 2010 Microsoft attempted to launch a new innovation cycle to gain a similar dominant position in the smartphone market. From 2010 to 2017, the company invested massively in developing the "Windows Phone" OS for smartphones to compete with Android, promoting increased integration with its PC counterpart. The company even acquired Nokia in 2014 for a global amount of €5.4B to strengthen its position. However, these huge investments never completely led to market success, leading to the end of Windows 10 mobile OS in 2017. Yet, beyond such difficulties, Microsoft's power was so high that it could start racing in other innovation cycles. For example, Microsoft Teams, launched in 2017, is progressively taking a major place in the corporate collaboration tools market. Even more significantly, in 2019 Microsoft invested billions of dollars in the start-up OpenAI (2023), enabling the firm to progressively release a fleet of cutting-edge AI assistants built on top of OpenAI's technology and integrated into Microsoft's core productivity programs, such as Word, Outlook, and PowerPoint; this activity may again lead to a new form of societal power.

The vignette demonstrates that Big Tech innovation cycles systematically intertwine technological, economic, and societal forms of power. Research shows that technological developments are deliberately conceived to foster economic returns and societal influence, rather than serving pure technical advancement alone (Gawer & Cusumano, 2014; van Dijck et al., 2018). Prototypical features such as Facebook's "like" button exemplify this approach, as design decisions are aimed at maximizing user engagement and platform dominance (Heimbach & Hinz, 2018; Li & Wu, 2018).

Appendix 2: Empirical Vignette

[1] The American Dialect Society chose it as the "most useful word of 2002." It was added to the *Oxford English Dictionary* on June 15, 2006, and to the 11th edition of *Merriam-Webster's Collegiate Dictionary* in July 2006. https://en.wikipedia.org/wiki/Google_(verb).

[2] In July 1998, only three years after opening as an online bookseller, Amazon was already valued higher than Barnes & Noble, the bookseller with the largest number of retail outlets in the United States (Mayer, 1998).