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**NAVAL
POSTGRADUATE
SCHOOL**

MONTEREY, CALIFORNIA

THESIS

MISINFORMATION AS A DISRUPTIVE INNOVATION

by

Ryan L. Thomas and Sierra J. Kenfield

June 2023

Thesis Advisor:
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MISINFORMATION AS A DISRUPTIVE INNOVATION

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ABSTRACT

The phenomena of misinformation and disinformation have received no shortage of examination from several academic angles, with a noted gap in how and why these phenomena persist and how information disorder may potentially be addressed. This thesis seeks to do just that, establishing a novel framework for examining mis- and disinformation's booming proliferation throughout the information environment, specifically through digital media channels. The framework's foundation is rooted in Christensen's Disruptive Innovation Theory and Rogers's Diffusion of Innovation Theory, two paradigms appropriated from the business world to explore information as an innovation for sale in the disrupted information marketplace. Through viewing mis- and disinformation through this lens, a better understanding of the nature and prognosis of the phenomena can be reached and potential avenues for mitigation revealed.

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TABLE OF CONTENTS

I.	INTRODUCTION.....	1
A.	DISRUPTION AND DISORDER.....	1
B.	LITERATURE REVIEW	2
1.	Information, Misinformation, and Disinformation	2
2.	Disruptive Innovation Theory	4
3.	Diffusion of Innovation.....	6
C.	RESEARCH QUESTION	7
D.	RESEARCH DESIGN	8
1.	Research Methods.....	8
2.	Critical Assumptions	9
3.	Research Limitations and Intent	10
E.	CHAPTER OUTLINE.....	10
II.	SETTING THE STAGE.....	13
A.	DISRUPTIVE INNOVATION THEORY	13
1.	Theory Overview.....	13
2.	Precedent for Application of Disruptive Innovation Theory	19
B.	DIFFUSION OF INNOVATIONS	21
III.	FACTS AND FALSEHOODS AS PRODUCTS FOR SALE	25
A.	USERS AS CONSUMERS IN AN INFORMATION MARKETPLACE	25
B.	MIS- AND DIS-INFORMATION.	29
1.	Information.....	29
2.	Misinformation.....	30
3.	Disinformation.....	31
4.	The Complicated Relationship between Mis- and Dis- Information.....	32
C.	DISINFORMATION AS A DISRUPTIVE INNOVATION	33
1.	The Information Landscape as a Disrupted Market.....	38
2.	The Role of Performance Oversupply.....	40
3.	Product Improvement and the Shift to Mainstream	43
D.	DIFFUSION LEADS TO DISRUPTION	45

IV. IMPLICATIONS AND CONCLUSION..... 53

A. THE BUSINESS OF ADDRESSING DISRUPTION..... 53

B. INTERVENTIONS FOR DIFFUSION..... 58

**C. DISRUPTIVE DIFFUSION OF DISINFORMATION: THE
THOMAS-KENFIELD COMBINED FRAMEWORK 61**

D. CONCLUSION 64

LIST OF REFERENCES..... 67

INITIAL DISTRIBUTION LIST 73

LIST OF FIGURES

Figure 1.	The diffusion process “S-curve.” Source: Rogers (2003).....	22
Figure 2.	The information hierarchy. Derived from S�e (2021) and Glenski et al. (2020).	30
Figure 3.	The seven categories of information disorder. Source: Wardle (2018).....	33
Figure 4.	Adopter categorization. Source: Rogers (2003).....	49
Figure 5.	Progression of misinformed adoption to disruptive diffusion.	63

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LIST OF TABLES

Table 1.	Summary of disruption in the information environment.	37
Table 2.	Perceived attributes of disinformation that contribute to disruption.	48
Table 3.	The disruptive diffusion of disinformation: A combined framework.....	62

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I. INTRODUCTION

Information is the foundation for nearly everything we do, and more frequently, people are consuming information through digital platforms; in fact, a recent study by the Pew Research Institute found that two-thirds of Americans regularly use social media to get the news (Shao et al., 2018), and many traditional news outlets replicate TV and print news on their websites. Digital media has made information more accessible to consumers, facilitating the rapid creation and dissemination of content by news outlets and governments. Unfortunately, it has also made information easier to generate and distribute by individuals and organizations not held to the same social and legal expectations as traditional sources; this is an evolving reality recognized by consumers of information across the web. Almost all participants from the Shao et al. (2018) study said they do not trust the news they see on social media platforms, and 23% admitted to having passed on false information to other contacts via social media.

While copious research discusses and characterizes disinformation, significantly less analyzes why it has become so prevalent, the reasons for its gaining momentum, and how it might be mitigated. There is also a noted gap in the literature with respect to the reasons for and mechanisms by which misinformation has infiltrated our daily digital media consumption. With these trends in mind, it becomes clear that the information landscape is evolving in a way that has and will continue to transform users' interaction with, consumption of, and trust in the digital information environment.

A. DISRUPTION AND DISORDER

Before digital media, libraries and printed media disseminated by established news outlets held a relative monopoly on generating and distributing information to the public; in a digital information landscape, the creation and dissemination of news and other information is open to the entire range of public and private users (Shu et al., 2020). The deluge of available information facilitated by social media has had a serious impact on user confidence in the information environment (Revez & Corujo, 2022), and the web is inarguably rife with disinformation. Unfortunately, fake news changes the way users

interpret real news, and can impede their ability to distinguish truth from fabrications (Shu et al., 2020). Failure to examine and mitigate the impacts of this phenomenon may result in a sort of “post-truth society,” whereby objective fact loses significance to information consumers.

With the growing relationship between disinformation and extremist and divisive content (“Hearing on Disinformation Nation,” 2021), individuals and organizations from all facets of society could stand to benefit from new literature further expounding upon this phenomenon from a previously unexplored angle. The purpose of this study, therefore, is to establish a novel framework for examining disinformation’s booming proliferation throughout the information environment, specifically through digital media channels. If we can successfully dissect the nature of disinformation’s spread, we may be able to develop a prognosis of the information landscape’s future and—if warranted—explore methods for mitigating it.

B. LITERATURE REVIEW

Literature reviewed for this research spans a multitude of disciplines; the literature surveyed encompasses a comprehensive review of the scholarly work defining and describing the information environment, and specifically, the role of misinformation and disinformation within it. The framework and application of disruptive innovation theory is discussed as a primer to show how information spread fits within it. Previous scholarly works on novel applications of disruptive innovation theory were examined and compared in order to explore ways in which analyzing problems through this lens is useful for identifying new approaches. This section will specifically address the shortfalls in the literature regarding analyzing the growth and spread of digital misinformation in novel ways. Identifying and analyzing these gaps will help to improve our ability to formulate new approaches and strategies to address the growing information crisis.

1. Information, Misinformation, and Disinformation

Literature differs in how it chooses to define the term “information” by itself. Calero Valdez (2020) describes information as something specifically derived from objectively factual data, while a synthesis of research compiled by Sille Søe (2021) finds

that “information” is more commonly used in an alethically [sic] neutral connotation. As information is shared, it can, and often does, suffer from manipulation (whether intentional or not) during the sharing process due to lack of objectivity, lack of completeness, lack of pluralism, or some combination of the three (Floridi, 1996). These changes to the information that occur during communication, by any method, can be thought of as increasing the entropy of the information environment by introducing new variations on a given piece of information, resulting in disorder in the information ecosystem. Dr. Claire Wardle (2017) proposed a spectrum of “information disorder” ranging from satire or parody through outright fabricated content. Further clarification about the types of information can be found in the work of Scarantino and Piccinini (2010), explored also within the research of Sille Søe, defining two subtypes of information: natural and non-natural. As “non-natural information” is that which has been processed, interpreted, and communicated by humans, it is fitting that all types of information disorder fall under the subtype of non-natural information (see Figure 2).

Two types of information disorder, misinformation and disinformation, are of particular relevance to this research. Dr. Claire Wardle (2018) defined misinformation as information which is objectively false, but which the person communicating it believes to be true. Disinformation, by contrast, is both false, and known to be false, by the person sharing it (Wardle & Derakhshan, 2018). Some of the earliest thoughts on disinformation spreading throughout the internet in particular can be found in the article *Brave.Net.World: The Internet as a disinformation superhighway?* (1996) by Dr. Luciano Floridi. Misinformation and disinformation have subtle distinctions between them throughout the reviewed literature, typically being annotated as factually inaccurate information distributed without ill intent (misinformation) and with malicious intent (disinformation). Research and publications by scholars such as Wardle and Derakhshan (2017), Calero Valdez (2020), Søe (2021), Shu et al. (2020), and Fallis (2015) were reviewed in order to gauge the common understanding of the distinctions between these types of information disorder. The one exception to these denotations is found within Søe’s (2021) unified account of information disorder, whereby a piece of information’s objective factual accuracy is not considered as important as the intent—i.e., whether the intent was or was

not to deceive or mislead. For S e, then, misinformation and disinformation are more accurately described as unintentionally misleading and intentionally misleading information, respectively.

Of special note is the fluid relationship between disinformation and misinformation that is less frequently discussed within the available literature. Wardle (2018) takes care to point out this fact—that while something may begin as disinformation (intentionally misleading), it can and often will become misinformation as it proliferates across digital media platforms (i.e., consumers of information across the internet will read disinformation, not understand or realize it is false, and pass it on to additional users as misinformation). The same may occur in reverse, whereby misinformation passed along out of context with the intent to deceive an audience may then be more accurately classified as disinformation (such as parody or satire taken literally). Understanding the basic characteristics of misinformation and disinformation is important—but realizing the fluid relationship between them is even more so.

2. Disruptive Innovation Theory

Much of the literature concerning disinformation campaigns examines the successful propagation of “fake news” through a psychological or sociological lens. These paradigms have no doubt been helpful in explaining user interaction with, and emotional reactions to, disinformation campaigns they encounter in digital media (Zerback et al., 2021). Yet very little has been said about the continued success of disinformation creation and propagation from the perspective of those who create and disseminate it to fulfill a certain agenda. What is it about digital media platforms that appeal so greatly to bad actors hoping to spread a false narrative? How might these behaviors increase over time, if at all? What may we expect in the near future for our information ecosystem? If we examine disinformation campaigns through a new lens—perhaps, from the lens of business theory—we may be able to explore these questions.

Disruptive innovations are, by definition, novel products or ideas which take advantage of “new-market footholds,” whereby innovative models, ideas, or objects create a new market type that previously did not exist (Christensen, 1997). “Disruption” in terms

of innovation describes a phenomenon by which smaller and lesser-known entities are able to successfully challenge established market incumbents (Christensen, 1997). Disruptive innovations typically begin as lower quality products that do not become mainstream among consumers until quality improves (Christensen, 1997). Disruptive innovations do not make improvements upon existing products; rather, they encompass entirely new ones initially considered substandard by consumers and industry incumbents (Christensen, 1997). Christensen and Raynor (2003), further clarified the disruptive phenomena into low-end and new-market disruptions. “Low-end” disruptions take root at the bottom of the established market’s value network, drawing the least attractive customers away from incumbent market leaders (e.g., discount retail stores, imported economy cars) (Christensen & Raynor, 2003). By contrast, “new-market” disruptions emerge in a *non*-consumption environment, creating an entirely new market segment among people who previously did not have the skills, or simply could not afford, to use the product (Christensen & Raynor, 2003).

Schmidt and Druehl (2008) expanded on Christensen and Raynor’s category of new-market disruptive innovations by defining two types of encroachment into the market: fringe-market and detached-market low-end encroachment. Fringe-market low-end encroachment encompasses market entrants which appeal to consumer needs that “are only incrementally different from those of existing low-end customers” (Schmidt & Druehl, 2008). Examples of fringe-market encroachment are discount retailers such as Wal-Mart or Kmart (when it existed) or imported economy class cars from Asian automakers, which operate on low-cost business models to entice the least demanding customers away from established firms. (Christensen & Raynor, 2003). “Detached-market low-end encroachment” refers to an entrant which appeals to a previously unrealized, unidentified, detached market in which customer needs are drastically different from those of the mainstream (Schmidt & Druehl, 2008). Examples of new-market encroachment include the dawn of the cellphone (initially less reliable and harder to use than a landline, but needed for the small group of people who required mobile connectivity) (Schmidt & Druehl, 2008) and Canon’s first generation of desktop photocopiers, allowing people to conveniently make copies at home vice going to a print store (Christensen & Raynor,

2003). In both cases, the entrant established a foothold in these low-end markets prior to diffusing upward to the mainstream and high-end markets.

3. Diffusion of Innovation

Rogers' book "Diffusion of Innovation" (1995) offers some factors which influence how innovations spread and gain momentum in a new market. These factors are the mechanisms by which an innovation earns popularity, leading to success and resulting in disruption of the market. These elements align closely with factors of the Technology Adoption Model originally defined by Davis (1989) in "Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology." Rogers defines four elements in the diffusion system as: the innovation, a communication channel, time, and a social system (Rogers, 1995). In the case of spreading mis- or dis-information, both the communication channel and the social system are digital media platforms. Availability and accessibility of digital media accelerates the time component of diffusion in a way the seminal scholars on diffusion could not have predicted. Rogers (1995) also identifies that an innovation need not be objectively new, only perceived as such by the individual. Clearly, propagating lies is not a new concept, but digital media users are newly seeking out the information and information sources that fit their preferred narrative (Dalkir & Katz, 2020).

Perceived attributes of relative advantage and compatibility with existing systems defined by Rogers align closely with perceived usefulness and perceived ease of use traits described by Davis (1989). Previous research has identified that disinformation propaganda is appealing to extremist organizations and small states because these campaigns are cheaper to execute than traditional intelligence, counterintelligence, or military operations (Abang & Okon, 2018). This fits the ease of use and usefulness attributes of the Technology Acceptance Model from the perspective of disinformation campaign organizers. Likewise, the design of recommender algorithms guarantees that users are surrounding themselves only with the information that fits their desired narrative (Calero Valdez, 2020), reinforcing the perceived usefulness of the information they consume.

Research has also shown that online peers (digital personas similar to ourselves) are considered more trustworthy than other actors or media sources (Lefevre et al., 2012) and the style of displaying information on social media (pictures and short captions vice blocks of text) and other digital news platforms (such as broadcast or newspaper websites) takes advantage of a heuristic where information conveyed by images is seen as more truthful than text alone. This heuristic creates a shortcut, bypassing the critical reasoning process due to the speed our brains perform information processing, especially with images (Wardle & Derakhshan, 2017). All of these factors accelerate the adoption and diffusion rate of using and consuming misinformation as an innovation.

In “Diffusion of Innovations,” Rogers (1995) acknowledges that adoption of all innovations is not necessarily desirable. In this case, acceptance of disinformation *is* desirable for the malicious actors designing an information campaign, but is *not* desirable for the general consumer, who becomes an enthusiastic albeit unwitting participant in propagating these false narratives. Diffusion of innovation theory shows how disinformation continues to be accepted and propagated even as its adoption is widely recognized as a detriment to digital information consumers. As discussed within Christensen’s work on disruptive innovation theory, the fact that these narratives are false (and therefore of lower quality) does very little to discourage the diffusion of disinformation as an innovation. While diffusion of innovation theories help explain why disinformation has so quickly spread throughout the digital information marketplace, Christensen’s disruptive innovation theory explains why such an innovation achieves a foothold in an established marketplace to begin with.

C. RESEARCH QUESTION

How can the proliferation of disinformation be better understood—and potentially mitigated—by viewing the phenomenon as a type of disruptive innovation?

D. RESEARCH DESIGN

1. Research Methods

This project utilized a secondary research qualitative method, whereby existing literature in multiple fields was analyzed and synthesized in order to build a novel theoretical framework. This effort consisted of a comprehensive review and synthesis of existing works in the fields of disruptive innovation theory, diffusion of innovation theory, disinformation, and disinformation's effect on human consumption of information within the digital information environment. The research was organized into three primary phases.

First, a thorough establishment of disinformation through the lens of disruptive innovation theory, demonstrating how disinformation may be logically perceived as a type of disruptive innovation in the information marketplace. This involved distilling concise definitions of the key concepts in disruptive innovation theory and the chief characteristics of disinformation which map to the characteristics of a disruptive innovation. These terms and characteristics included, among others, the following: what an innovation is for the purposes of this study; the measures of performance and price of an innovation in the information environment; who and what a market incumbent is in this context; and, how consumers are accessing and using the information product.

Second, an examination of disruptive innovation theory's resulting prognosis for the future of that marketplace (the digital information environment). Third, an exploration into use cases whereby traditional industry products combat disruptive innovations, and how they may provide insight into proven and effective methods for mitigating whatever negative prognosis may result from phase two. This section will also examine how to interrupt the process of diffusion to prevent an innovation from following a disruptive trajectory.

Primary search terms included: "disruptive innovation theory," "diffusion of innovation," "technology adoption model," "disinformation," and "misinformation." Analysis of behavior modification and the psychology of information acceptance were outside the scope of this work; specifically, the scope of this project was examining how

the spread of misinformation impacts users' interaction with the digital information environment and how or why it may continue to grow in rate of proliferation.

2. Critical Assumptions

This research does not seek to identify what information should or should not be classified as true or false; this work is written with the premise that all mentions of mis- or disinformation is referencing information that is objectively false, and does not seek to make determinations of truthfulness. For the purpose of this work, disinformation will be used to refer to information that is either objectively false, a “spin” on the truth, or a half-truthful narrative intentionally and knowingly propagated with a purpose in mind (likely malicious). Misinformation will be used with an almost identical definition to disinformation, with the critical distinction that the participation in its proliferation is done without malicious intent and the user does not know or realize the information is false. The term “information” itself will be used in a context of athletic neutrality, and will only be used to signify objectively false information when paired with an adjectival qualifier such as “factually inaccurate,” “false,” “objectively incorrect,” etc.

“Innovations” as discussed within this work will refer to novel inventions as well as new applications or niche deviations of existing ones; this may encompass both physical or tangible inventions as well as intangible (e.g., information). This work also assumes that information is of higher “quality” when it is *objectively more factual in content*, rather than judging information quality based on other factors such as timeliness, entertainment value, or ease of access.

“Digital media platforms” is used to generally refer to web-based replications of TV and print news, as well as digitally native media productions. “Social media” and “social media platforms” will be used to generally refer to any online platforms or applications which allow users to communicate with one another, examples including Facebook, Twitter, TikTok, Instagram, etc.

3. Research Limitations and Intent

This study is intended to create a novel framework for understanding the role and impact of disinformation propagation within the digital information environment. This newly established paradigm will add to the growing repertoire of works in the field which seek to do the same through different lenses. Optimally, the established framework will likewise add to general and scholastic awareness of the topic, and how the effects of disinformation may be abated. The execution of this research project will additionally produce a number of recommendations from the examination of disruptive innovation use cases germane to the study.

The study is limited by both the scope of the project itself and the chosen research method being heavily qualitative in nature. The research produced will be a synthesis of existing literature, and thereby unable to draw firm scientific conclusions. Inferences will be based upon secondary research alone, and cannot thereby contribute original raw data to the existing repertoire in the field.

E. CHAPTER OUTLINE

The following chapters will expand upon the discussion and analysis of important literature in the fields of disruptive innovation theory, the diffusion of innovations, how mis- and dis- information fit into the information landscape and explore potential responses to mitigating the proliferation of misinformation in digital media. Chapter II will provide a thorough background in Disruptive Innovation Theory and the process of diffusion of innovations, as well as define the nature of the information environment both before and after the advent of digital media. This will serve as the foundation for showing how mis- and dis- information fit into the proposed analysis frameworks and the impact they have had on the information environment. Chapter III will illustrate how information has become commoditized to the point of looking more like a product for sale than a source for users to keep themselves informed of the world, and how the mis- and dis- information fit into the current digital media landscape. It will then show a comprehensive mapping of how disinformation fits into disruptive innovation theory and how its characteristics enable it to rapidly diffuse through our social system. Chapter IV will explore how this

proliferation of mis- and dis-information have changed the nature of digital media, provide a prognosis for the future state of the information environment based on the disruptive trajectory of mis- and dis- information, and propose mitigation or intervention strategies which may help to thwart the viral overtake of false digital media.

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II. SETTING THE STAGE

A. DISRUPTIVE INNOVATION THEORY

1. Theory Overview

The Innovator's Dilemma (1997) is the first of widely recognized seminal works by Clayton Christensen. The book attempts to explain why companies may still experience failure even though they were (or are) well-managed and led by competent professionals. This is a phenomenon Christensen denotes is consistent across multiple industries, from technology and electronics to chemical and mechanical industries and manufacturing and service fields. Christensen makes the argument that successful, established companies in any industry may still sometimes fail owing to the very nature of managing a successful enterprise; the same practices that keep incumbent businesses afloat make them susceptible to a certain type of innovation that can rapidly overtake the marketplace—*disruptive innovations* (Christensen, 1997). Because of how successful corporations function and depend upon their consumer base for continued success, attempting to match the operating behavior of those who make and succeed with these disruptive innovations is outside the scope of their core competencies and too risky to appeal to them (Christensen, 1997). If any industry can be susceptible to disruptive innovations overturning the market landscape, it stands to reason that the information environment (as supplied with information products by incumbent news organizations, and disruptive producers of disinformation) can as well.

This initial book utilizes the term “disruptive technologies” for these unexpected innovations, which is later refashioned into the more particular phrasing “disruptive innovations.” Disruptive technologies are delineated as technologies which: initially result in comparatively poor product performance (as juxtaposed to its predecessor); introduce some novel value to the market; appeal to a fringe group of consumers; and are typically smaller, more affordable, and often more convenient to use than their established predecessors (Christensen, 1997).

Christensen's (2003) second seminal work, *The Innovator's Solution*, proceeds from *The Innovator's Dilemma* (1997) and further defines the elements of a disruptive

innovation and reasons for incumbent failure, as well as the market conditions which allow a disruptive innovation to take a market foothold and eventually challenge the incumbent. Fittingly, Christensen also offers some solutions for how businesses can identify potential market disruptors and leverage them to grow their own business prior to being overtaken. Christensen et. al (2015) provides further clarification on the meaning and application of disruptive innovation theory, correcting a history of misuse and misappropriation of the term. In this article, published twenty years after the initial conceptualization of the theory, the authors discuss how their thinking about disruptive innovation theory has developed over time (Christensen et al., 2015). The authors share a greater understanding of the types of market footholds in which disruptive innovations may take root, address anomalies in the theory, and examine industries which have proven resistant to the phenomenon (Christensen et al., 2015). Most importantly, this most recent work on the theory points out that designing mitigation strategies to combat the success of disruptive innovations is an inexact science without a single response which is universally effective (Christensen et al., 2015). Each of these writings provides greater fidelity, clarification, and additional context into the framework utilized within this paper, and all were used to help formulate a coherent understanding of the theory.

Christensen (1997) describes “value networks” as a means by which to describe a company’s paradigm and operational context for assessing the economic value of pursuing a particular innovation; value networks apply to entities across all industry types, and help to explain why incumbent news organizations and reputable, peer-reviewed sources may continue to struggle to compete with disinformation. Christensen asserts that corporations are conditioned to gauge the elements of their value network (customer needs, competitor activity, profitability considerations) when making decisions, simply because it makes the most sense economically to do so (Christensen, 1997). This idea of identifying and making decisions within the context of a given value network helps explain incumbents’ reluctance to invest in risk-inherent innovations not previously found to be profitable or compatible within their value network.

In contrast to disruptive innovations, Christensen (1997) provides a term for other innovations in technology which do *not* fit his definition of disruptive; “*sustaining*

technologies” are those most commonly seen being produced for the market and are attempts at improving existing and valued features and functionality of established products. Successful business models are typically driven by data about existing customers, markets, and products. This data helps to inform decisions on what new products to develop and which customers in various market segments to target (Christensen & Raynor, 2003) and therefore companies tend to continually pursue sustaining innovations. Sustaining innovations are those innovations which target existing, high-end customers who demand better performance characteristics of a product; established companies, the market incumbents, typically win the battles of sustaining innovation due to their substantial resources and established value networks (Christensen & Raynor, 2003).

These concepts help clarify why corporations—who *can* produce disruptive technologies—often choose not to, tending to favor the established technologies central to their value network (Christensen, 1997). This is described as being especially true when the pursuit of such a disruptive technology would represent a *downward* mobility (a “hit” to profits or requisite restructuring of established cost structures) into a more niche market (Christensen, 1997). This concept is further demonstrated in what Christensen describes as the fundamental principles of organizational nature. These principles help to provide insight into the paradigm of incumbents, meaning how and why they operate the way they do. Observing these principles helps establish a framework for understanding the reality of why sustaining innovations continue to appeal to incumbents instead of pursuing disruptive innovation (Christensen, 1997).

The first principle introduces the concept of “resource dependence,” in the way that an organization’s resource allocation is largely shaped and dictated by customer demand (Christensen, 1997). Christensen’s (1997) second principle points out that large companies—with their proportionally larger costs of operation—cannot be supported or sustained through small, niche markets (the types of market which normally find value in disruptive technologies). The third principle states that the ultimate use or application of a disruptive technology cannot be predicted, which necessitates room for and acceptance of failure (Christensen, 1997). Christensen’s (1997) last principle underlines the unique property of disruptive technologies in being more valuable to niche, emerging markets than

to established ones; their unusual attributes and objectively lesser performance, quality, or capability make them ill-suited for mainstream acceptance. In the information landscape, established news organizations and reputable, peer-reviewed sources of information are the incumbents. These incumbents are dependent upon a value network that traditionally values truth. However, dependence upon and compatibility with that value structure is precisely what disadvantages reputable traditional sources of information in competing with disinformation.

These principles help shape an understanding of disruptive technologies and why companies—or in our context, traditional media outlets—may choose not to pursue them. Ultimately the risk of the unknown seems too great when compared to the potential reward for larger corporations that depend on stable profitability and appealing to their established customer base (Christensen, 1997). Failure is in fact described as being intrinsic to the process of finding applications and a niche market acceptance for a disruptive technology; this is an operating model many incumbent, successful corporations are unwilling to adopt, instead preferring to service their established markets with sustaining technologies (Christensen, 1997); this is the safest and (seemingly) most logical course of action for already-successful and established entities.

Perhaps the most applicable to this thesis is the final principle, which encompasses the concepts of performance improvement, oversupply, and the subsequent responses of a given market. In many of the industries explored within Christensen’s books and scholarly articles, incumbent corporations provided performance improvements in products at a faster rate than what was needed or indeed even helpful and attractive to the market (Christensen, 1997). In fact, Christensen in his second book noted that “the pace of technological progress almost always outstrips the ability of customers in any given tier of the market to use it” (Christensen & Raynor, 2003, p. 33).

This phenomenon is described by Christensen (1997) as “performance oversupply,” and as “performance overshoot” by Yu & Hang (2010). For the purposes of this analysis, our discussion will sometimes refer to this as “capabilities overshoot,” whereby an incumbent corporation or entity is providing capabilities or quality of a product that exceeds what the consumer base can reasonably use or even desires. Christensen provides

an example in the insulin market for treating diabetes, whereby Eli Lilly and Company focused primarily upon improving the purity of insulin available (Christensen, 1997). After investing nearly \$1 billion to develop synthetic insulin that was 100% pure, charging 25% more than for animal insulin, and receiving a tepid response from the market, Eli Lilly and Company realized “the market was not terribly dissatisfied with pork insulin” (Christensen, 1997, p. 195). Meanwhile, a small Danish company called Novo developed a more convenient way of administering insulin in the form of handheld insulin pens (as opposed to administration via syringe and bottle), an innovation that easily sold at a 30% price increase and successfully disrupted the insulin market (Christensen, 1997).

In these instances of capabilities overshoot, the established market becomes especially susceptible to an invasion of disruptive technologies (Christensen, 1997); continuously overshooting customers’ needs in pursuit of profits by selling to the most demanding market tiers is what opens the door for disruptive growth from the low-end market (Christensen & Raynor, 2003). This is due to the fact that capabilities overshoot is always directed at the most demanding and thereby most profitable sector of the incumbent’s market; unfortunately, this is what leads incumbent organizations to ignore the fringe elements of their market space (or their potential share of the market) and overlook their needs. This under-served segment is the share of the market that entrants seize upon and service with their disruptive innovations (Christensen et al., 2015).

Capabilities overshoot creates a shift in the basis for competition, changing which criteria consumers utilize to select one service or product in lieu of another; once the demand for performance improvement in a certain product attribute has been achieved (or surpassed), the market turns instead to other attributes for differentiation (Christensen, 1997). Typically, this results in a market preference for products with a more affordable price and perceived reliability of a product (Christensen, 1997). When two or more corporations prove equal in these factors (price and reliability), the market shifts its focus to *convenience* (Christensen, 1997). The axis only finally shifts to price again (consumers preferring to pay less for the same thing) when the level of convenience in a product finally meets consumer demand (Christensen, 1997).

It is, however, equally important to understand what disruptive innovation is *not*, as Christensen noted in later articles that the theory had been too broadly applied and suffered many misunderstandings and misinformed criticisms since its inception. Disruptive innovation is *not* a method to describe any circumstance where an incumbent is overtaken in their share of a given market by an entrant (Christensen et al., 2015). This distinction is especially important when considering potential mitigation factors, as the authors note that lessons learned in keeping incumbents afloat in a disrupted marketplace environment will not apply or prove effective in scenarios that do not fit the definition (Christensen et al., 2015).

Disruptive innovations are specifically those which begin in *low-end* or *new-market* footholds (Christensen et al., 2015). “Low-end” market footholds refer to those segments of the market previously ignored by incumbents because they were smaller and less profitable than the consumer base comprising the incumbents’ value network; this is the segment of the marketplace disruptive entrants seize upon and service, eventually moving into the mainstream (Christensen et al., 2015). “New-market” footholds are segments of a market created by an entrant that finds a way to make consumers out of those who were previously *non*-consumers (Christensen et al., 2015). Disruptive innovations start in these underserved or new market footholds and grow into the mainstream from there; they are not improvements on existing products or services (Christensen et al., 2015).

Disruptive innovations not only begin in fledgling segments of the established marketplace—they are also considered inferior products by most of the incumbent’s consumer base upon their first appearance (Christensen et al., 2015). The term is better understood when applied to a product or service in the context of its entire process—from entry into a low-end or new-market foothold to its inevitable competition with sustaining innovations produced by incumbents (Christensen et al., 2015). Something may not appear to be disruptive upon initial entry, but may demonstrate itself to be in time as its trajectory follows a disruptive path (Christensen et al., 2015).

Unfortunately, this concept of disruptive innovations as slowly progressing into the mainstream to earn a share of the mainstream market is precisely what makes it so dangerous, and what makes the conceptualization of disruptive innovation so important to

apply and understand properly (Christensen et al., 2015). Because they progress so slowly from fringe markets into the mainstream and may take significant time to identify, incumbents tend to ignore them during their fledgling stages of invading new or niche segments of the established market (Christensen et al., 2015). Though disruptive innovations need not be successful in order to fit the definition, this uninterrupted infiltration of an entrant into the mainstream market can certainly aid in pushing a new innovation into a disruptive trajectory (Christensen et al., 2015).

Perhaps most important is that the entry of a disruptive innovation into an established market is not a guaranteed success, leaving mitigation techniques and effective responses largely undetermined (Christensen et al., 2015). By the admission of the creator of the framework himself, disruptive innovation theory cannot hope to explain or mitigate every threat an incumbent faces from disruptive innovations; however, empirical research shows that an awareness and understanding of the theory helps in determining what innovations may succeed and which may not (Christensen et al., 2015). Though the theory is incapable of lending total understanding of a disruptive innovation and prediction of its trajectory, it is the intention of this thesis to utilize it for the greater understanding of how and why disinformation may succeed, and how incumbents can hope to compete with it.

2. Precedent for Application of Disruptive Innovation Theory

While disruptive innovation theory began and is deeply rooted in the business field, numerous examples of the theory being utilized as a framework for understanding innovations or phenomena in other realms exist (Kamga, 2019). One scholar even credits the new breadth of disruptive innovation theory's application to the digital age, citing applicability in the fields of media and telecommunications in addition to the traditional realm of commerce (Petrovic, 2017). There are a number of works which draw similar conclusions with other recent technologies that exist congruously with the framework proposed in this work.

Osée Kamga (2019) characterizes social media itself as a disruptive innovation, noting a number of instances where the technology disrupted the political landscape of Sub-Saharan Africa. For Kamga, disruptive innovation theory helps to explain the nature

of social media's adoption, perceived superior attributes, and the inevitable institutionalization (Kamga, 2019). Use of the theory to examine changes in the regional political landscape and the relationship to social media provides "a theoretical framework ... to shed an objective light ... devoid of an optimistic or pessimistic leaning" on their correlation(s) (Kamga, 2019, p. 252).

In accord with many of Kamga's points is Otto Petrovic (2017), who argues one of the most important criteria for the label of "disruptive innovation" is a significant social impact. In his work, Petrovic argues that the Internet of Things (IoT) has disrupted the traditional practices and processes of the advertising industry (Petrovic, 2017). Rather than "thinking in campaigns," companies post-IoT are "thinking in platforms," changing the fundamental and traditional methods of creative advertising design, length of advertising campaigns, consumer-brand relations, and methods of invoking consumer emotion (Petrovic, 2017). This transformative process is ongoing, and impacting not just how corporations advertise to consumers, but how those consumers conduct their daily lives as well; the IoT has inspired a trend of "self-measurement" and altered attitudes toward health and fitness (Petrovic, 2017).

Disruptive innovation theory has also been cited to explain technological disruptions in the financial industry (Anshari et al., 2020). Traditional delivery systems for financial services are being overhauled by numerous innovations in a so-called "Financial Technology (FinTech)" realm of industry (Anshari et al., 2020). FinTech innovations have induced new applications, processes, products, and business models in the financial services industry, some of which "threaten the existing players" in a way the authors theorize will change the industry forever (Anshari et al., 2020).

In examining the literature surrounding recent topics in the digital era coupled with disruptive innovation theory, it becomes clear the framework has been successfully leveraged for analyzing phenomena across multiple fields of academia. Despite numerous factors likening disinformation to disruptive innovation theory, there is a noted gap in existing literature examining the suitability of this connection. Disinformation as a disruptive innovation within the digital information "marketplace" presents a unique

paradigm for understanding the mechanics of its continued proliferation and potential future consequences.

B. DIFFUSION OF INNOVATIONS

While Christensen’s extensive work on Disruptive Innovation Theory is useful for explaining why incumbents may be displaced by a disruptor, it lacks descriptive explanation for the mechanisms involved with products or ideas moving from fringe users to the mainstream. Here, Everett Rogers’ book, *Diffusion of Innovations* (2003), offers a complimentary explanation as to how and why new innovations, new *ideas*, grow in popularity and shift from the novel to the mainstream.

“Diffusion is the process in which an innovation is communicated through certain channels over time among the members of a social system” (Rogers, 1995, p. 5). Two of the core elements in Rogers’ book which are complementary to Disruptive Innovation Theory are how earlier adopters differ from those who defer adoption to later, and how perceived attributes of an innovation affect the rate at which adoption occurs (Rogers, 1995). Those perceived attributes which affect adoption rate are (in order of decreasing importance): relative advantage, compatibility, complexity, trialability, and observability (Rogers, 2003). Research has shown that these attributes account for about half of the variance in adoption rates, with the other half being made up of other variables such as the type of innovation decision, the nature of the communication channels and the social system, and the efforts of change agents (Rogers, 2003).

Rogers (1995) also highlights that an innovation can be any thing, idea, or practice that is *perceived* as new. Whether it is objectively new is irrelevant, as the perception is what dictates the reaction and follow-on decision to adopt (or not to adopt). He also notes that innovation and technology are often used as synonyms, and technology may even be composed almost entirely of information (Rogers, 1995). It is notable that adoption of an innovation is not always desirable, and that an innovation may be desirable for one adopter, but not for another (Rogers, 2003). Christensen highlights a similar relationship between *disruptors* and *disruptees*.

The rate of adoption, the rate of *diffusion*, is what will propel an innovation from the fringe and set it on a trajectory to supplant incumbent products in the current mainstream. The rate of adoption will be increased as individuals perceive an innovation as having greater relative advantage, compatibility, trialability, and observability, and less complexity (Rogers, 1995). Cumulative adoption generally follows an S-shaped curve (shown in Figure 1) as initially only a few individuals elect to adopt a new innovation, followed by an increased adoption rate as knowledge of and experience within an innovation are communicated through the social system, followed by a gradual taper as late adopters eventually accept the innovation (Rogers, 2003).

Figure 1-2. The Diffusion Process

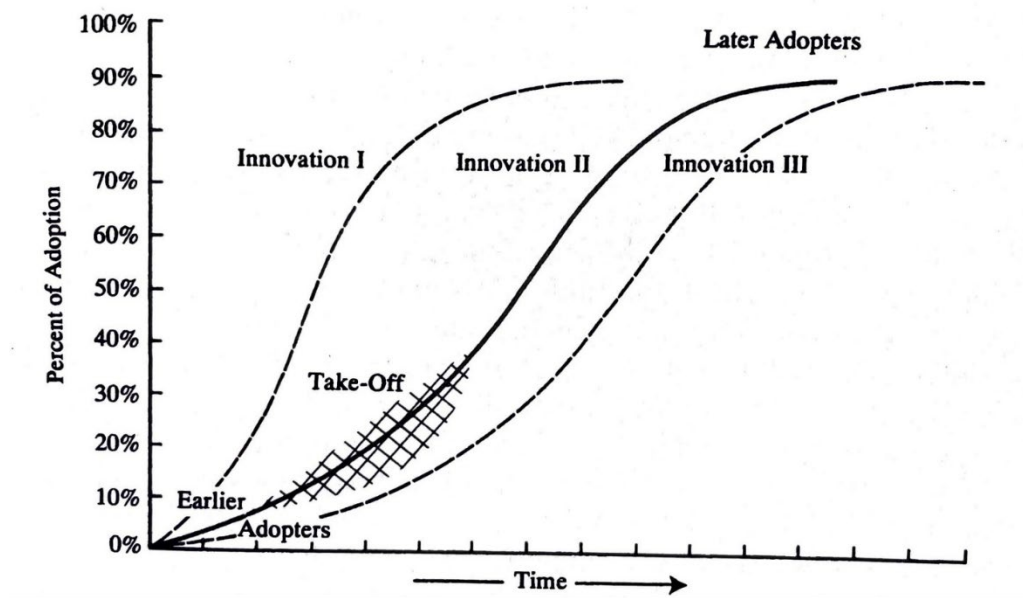


Figure 1. The diffusion process “S-curve.” Source: Rogers (2003).

Besides the perceived attributes of the innovation itself, other elements influencing the diffusion process and the rate of diffusion are the communication channel and social system. Communication channels fall generally into two classifications: mass media channels, and interpersonal communication channels. Of the two, the most rapid and efficient method of communicating knowledge about an innovation are mass media

channels, which involve some mass communication method such as newspaper, radio, or television disseminating information from one or a few individuals to many (Rogers, 1995). Interpersonal channels are those that involve face-to-face or peer-to-peer exchange of information. In a modern context, social media can serve simultaneously as both a mass media and an interpersonal communication channel.

Within the social system are several categories of adopters as well as community opinion leaders and change agents, who play various roles and influence norms and marketing regarding an innovation. As an innovation diffuses through and changes the social system, it may, itself, also be changed. Adoption is not a strictly passive process, and “many adopters want to participate in actively customizing an innovation to fit their unique situation” (Rogers, 1995, p. 17). This process of change and customization of an innovation is called reinvention, and often results in faster diffusion and a greater chance of sustained acceptance (Rogers, 1995). Social systems can vary in structure from casual to rigid, and the level of structure in the system may either aid or impede the diffusion of an innovation (Rogers, 2003). The most innovative members of the social system are often given low status of credibility (those on the fringe), and have relatively limited (albeit, crucial) role in the diffusion process except to introduce new ideas (Rogers, 2003). Opinion leaders, by contrast, are those with relatively high levels of influence on social norms and others’ attitudes with respect to an innovation (Rogers, 2003). These are the members of the system who begin to accelerate the diffusion process by giving their subjective review of a potentially new innovation.

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III. FACTS AND FALSEHOODS AS PRODUCTS FOR SALE

A. USERS AS CONSUMERS IN AN INFORMATION MARKETPLACE

Disruptive innovation theory and the process of diffusion are concepts typically used within a business context to describe and explain the success and spread of innovations. News and information at first glance may not appear germane to that discourse, but can in ways be viewed as products for sale when multiple entities (established news organizations, creators and disseminators of disinformation, users engaging with and unintentionally spreading false information online) are producing competing narratives and distributing them to the public for consumption. These competing narratives are products in the form of gathered, interpreted, and packaged information—whether that information is objectively factual or not. Consumers generally have a choice whether or not to purchase these products—a choice which may be influenced by factors such as reliability, quality, price (literal or metaphorical), or relationship to the vendor. In this way, consumers of information are like customers in a marketplace, inundated with product choices from a growing pool of vendors. What product users choose to purchase is that information they choose to engage with.

Before the internet, the public obtained information largely through word of mouth, print news, television, or radio. In the modern era where the world is being progressively digitized and digital media use is on the rise, more and more consumers of information are turning to the internet to obtain news. According to a recent white paper from the International Data Corporation (IDC), the landscape of digital information has experienced tremendous growth, with the estimated amount of data created on, captured by, or distributed through the internet at 33 Zettabytes¹ (ZB) in 2018 (Reinsel et al., 2018). The scope of the digital information landscape is estimated to exponentially increase by the year 2025, when the IDC anticipates 175 ZB of data will exist in various forms across the internet (Reinsel et al., 2018).

¹ For scale, 1 zettabyte is roughly equivalent to 1 billion terabytes.

With roughly 75% of U.S. adults having access to broadband internet service in their homes and 93% reporting using the internet as of 2021, it is logical to surmise that the exponential growth of information available online will impact a significant portion of the U.S. population (Pew Research Center, 2021a). But it is not enough to make the assertion that digital sources of information and the volume of available data are growing; the critical point is the implications this growth has on shaping the modern information environment and consumer interactions within it.

With this overwhelming variety of sources to select from when seeking out information, the modern information landscape can be likened to a competitive marketplace. Information can be viewed as a product for sale, offered at varying levels of affordability, quality, accessibility, and compatibility to the information consumer base by a number of proprietors. Consumers choose which vendors (sources of information) and which products (pieces of information) to purchase (read, believe, engage with, reshare or pass on to others) from those available. In the modern information landscape, with the sheer volume of available data, and data that will be created in the near future, this marketplace has become saturated with options for information consumers. Indeed, the rise of digital media alone reshaped print journalism and televised news, resulting in billions of dollars of lost revenue in print advertisements, hundreds of closed newspapers, and the loss of tens of thousands of journalism jobs (Rainie, 2022). In addition to the plethora of traditional news outlets and corporations still producing and distributing information through print, radio, podcast, television, and their own online avenues (websites and blogs), social media platforms have become popular resources for distributing information.

Research supports that social media platforms have been and likely will remain popular choices for internet users looking to consume information. By the year 2021, nearly three-quarters of Americans were using some type of social media platform, with 60–70% of users visiting those websites at least once a day (Pew Research Center, 2021b). While social media usage has recently grown in older demographics and become more representative of the U.S. population, younger U.S. adults and teens predictably maintain the highest levels of use (Pew Research Center, 2021b), with 35% of teens reporting they use at least one social media platform “almost constantly” (Vogels et al., 2022). These

trends suggest that social media use is frequent in digitally native generations and continually growing among older generations.

Users are not just engaging with social media platforms for their original purpose (i.e., to connect with others virtually), but rather with the intention of obtaining information, making social media a critical “storefront” of the modern information environment. In a report published in 2021, the Pew Research Center surveyed the use of ten different social media platforms to determine where Americans are turning to get their news, to include Twitter, YouTube, Facebook, TikTok, Instagram, and Reddit (Walker & Matsa, 2021). While demonstrating the plethora of social media platforms U.S. adults have to choose from, the report also showed just how popular they are as sources of news for users, with almost half of respondents reporting they obtain their news from social media “sometimes” or “often” (Walker & Matsa, 2021). Twitter, a platform used by almost a quarter of U.S. adults, seems especially popular among users as a source of information, with 55% of Twitter users reporting they use the platform regularly to get their news (Walker & Matsa, 2021).

In 2010, CNN Money reported most Twitter accounts were in fact not “true users,” meaning individuals intending to use the website to connect with other people (Pepitone, 2010). Nearly three-fourths of accounts had in fact tweeted less than ten times, indicating that Twitter was being utilized by most users as “more of a news feed” (Pepitone, 2010). In a Finnish study published in 2020, 20% of respondents reported actively gaining information about local violent crime events from Twitter or Facebook (Näsi et al., 2020). In a 2014 study on U.S. undergraduate students, over 95% of respondents reported using social media sites such as Facebook as a source of information (Kim et al., 2014).

A recent study surveying information sources used by the public to remain informed during the COVID-19 pandemic produced concurrent findings; in a 2021 report, nearly half of all respondents used social media as a source of information about the pandemic, a figure that ranged from 30% to over 65% depending upon the respondent’s country of origin (Brailovskaia et al., 2021). Of note, the study encompassing the behavior of social media users across multiple countries found most participants (69.9%) favored news reports delivered via television for COVID-19 information, while only 48.1%

frequently used social media instead (Brailovskaia et al., 2021). Still, social media as a source of information outperformed print media (32.6%), demonstrating that while the information landscape continues to be varied, digital sources enjoy noteworthy popularity considering their novelty as compared to more traditional mediums (Brailovskaia et al., 2021).

There are multiple theories as to why consumers in an information marketplace may choose to turn to social media platforms and digital media avenues to get their news. One possibility is that “official” news updates (i.e., news updates from traditionally credible sources) do not come as instantaneously as information updates released through social media outlets and digital platforms (Brailovskaia et al., 2021). Regardless of validity, truthfulness, or quality, this instant access to information satisfies an inherent need in consumers to have permanent and reliable access to up-to-date information (Brailovskaia et al., 2021). Frequency of updates, in fact, is often perceived by consumers as implying information produced by a source (as well as the source itself) is more reliable, regardless of other factors (Westerman et al., 2014). Other scholars concur with the appeal of rapid dissemination and instant access, as well as pointing out that many digital media outlets and social media platforms are free and appeal in their affordability as an information source (Shu & Liu, 2019).

Affordability, accessibility, and reliability are indeed many of the selection criteria consumers weigh when making choices about what product to purchase and from which vendor to do so. Whatever the criteria consumers may use to choose their information sources, it is abundantly clear that social media and digital media outlets represent a significant storefront in the information marketplace. This market continues to grow in size and engagement, with competition for sales only due to increase in the near future given the trajectory of the digital landscape. This market, however, will be demonstrated to have been disrupted by mis- and dis-information: two disruptive technologies emerging into the mainstream. These concepts are defined in the following section.

B. MIS- AND DIS-INFORMATION.

As early as 1996, Dr. Luciano Floridi predicted that the internet would become a superhighway for creation and distribution of disinformation. His early article in *The Electronic Library* did not distinguish between misinformation and disinformation, but did present some seminal characterizations and theories for the digital information sharing environment. Floridi (1996) stated that disinformation arises due to a defective process of information sharing which results in lack of objectivity, lack of completeness, lack of pluralism, or any combination thereof. The manipulation of information during communication, whether intentional or not, causes dissonance and disorder within the information environment. These types of information disorder can be placed in several categories based on content (factual or false) and intention (intentional or unintentional). With the subtleties between them, understanding the truthfulness of and intent behind their dissemination is important in distinguishing these forms of information disorder. Adding to the complexity is the realization that one type of information disorder can become another as it progresses throughout the digital information landscape, or may not very neatly fit a single definition.

1. Information

A review of literature on the topic reveals a common theme of the term *information* being independent of its objective truthfulness or any derivation from factual data (Søe, 2021). Information, for the purposes of this paper, is explained as being at the top of a hierarchy, with dis- and mis-information as subordinate elements; not as opposites of information as some scholars suggest, but complex entities related to non-natural information and to each other in a complicated relationship (Søe, 2021). For our purposes, the term information will be alethically neutral and assume no judgment of its factual accuracy. Instances of referring specifically to information as objectively truthful will explicitly state it as such.

Natural information as established by Scarantino and Piccinini (2010) is perhaps the only type of information with an inherent connotation of factualness, being that *natural information* is essentially raw data before the analysis, interpretation, and communication

of that data into non-natural information. Non-natural information comes from human agents interpreting objective, natural phenomena (Scarantino & Piccinini, 2010) and is where mis- and dis-information may arise into the information landscape.

By itself, however, information should presuppose nothing about factual accuracy. Information is commonly described in a manner that neglects an assessment of truthfulness or basis in fact; information is then alethically neutral, meaning the term by itself makes no insinuation of objective validity (Søe, 2021). Being that information can either be natural—meaning, raw data occurring without human interpretation—or non-natural, this research asserts that the term “information” by itself should be used with a neutral and truth-agnostic connotation. Figure 2 depicts the organizational relationship of information to all its subordinate information types as this research will understand it.

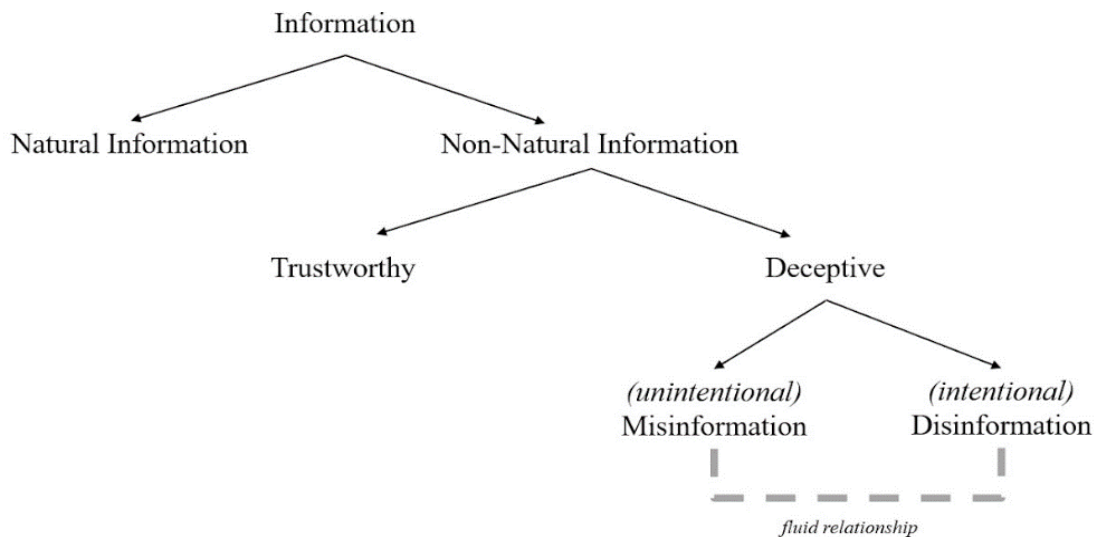


Figure 2. The information hierarchy. Derived from Søe (2021) and Glenski et al. (2020).

2. Misinformation

Mis-information is defined by some scholars as objectively false information that is not created with the intention of causing harm (Wardle & Derakhshan, 2017). In a similar vein with subtle distinction, Calero Valdez (2020) defines misinformation as merely

counterfactual, meaning it presents a contradictory narrative to other available information. Typically this is due to a misinterpretation or misrepresentation of the available facts or data, and has no ill-intent (Calero Valdez, 2020). Other writers clarify that misinformation is factually inaccurate information shared by consumers who do not know or realize that the information is false (Shu et al., 2020). A synthesis of research on the topic concurs with this characterization, describing misinformation as simply “unintended misleadingness,” though it hesitates to make an inherent judgment on the information’s factual accuracy (Søe, 2021).

For the purposes of this work, *misinformation* will be used in a similar understanding to Shu et al.’s (2020) definition, as factually inaccurate information consumed and shared without purposeful and malicious intent by users that do not know or realize that the information is false.

3. Disinformation

Disinformation—as opposed to *misinformation*—is false information that is intentionally spread with the purpose of achieving some sort of agenda (Shu et al., 2020). The intended end states with the spread of disinformation are varied, though each of them can be viewed as individual products or commodities. Wardle and Derakhshan (2017) corroborate this definition, identifying disinformation as false information created with the intention of harming a person, group, or organization.

In further consensus, Calero Valdez (2020) defines disinformation, as objectively false or fabricated information that is intentionally designed to misrepresent facts and manipulate opinions. Other reviewed works concur with this conceptualization, describing disinformation as “nonaccidentally [sic] misleading information” (Fallis, 2015) and “intentional misleadingness” (Søe, 2021)—though the latter work hesitates to assert a definitive judgment of factual accuracy when utilizing the term.

For the purposes of this work, *disinformation* will be used to describe information which is factually inaccurate and purposefully created to achieve some desired end state or effect upon either the users interacting with it or upon the information landscape as an entity itself.

4. The Complicated Relationship between Mis- and Dis-Information²

There can be significant flux between these characterizations during the spread and exchange of information, which contributes to an increase in information disorder. Disinformation can be intentionally distributed via social media and other digital platforms, and unwitting users can continue sharing and propagating the falsehoods without any knowledge of its dubious nature or malintent (Shu et al., 2020). In this instance, what began as disinformation (a knowing and intentional spread of false information) becomes the propagation of misinformation by unwitting participants in the information sharing process.

Likewise, a satirical news story may be distributed out of context to mislead an audience, in which case misinformation has now become disinformation (Shu et al., 2020). Wardle (2018) defined seven categories of mis- and dis-information which are useful for depicting the spectrum and relationships between the kinds of information disorder, shown in Figure 3.

² *Mal*-information is information with a factual basis but used with the intention of causing harm (Wardle & Derakhshan, 2017); Shu et al. (2020) corroborates this definition. For the purposes of this research, the term “malinformation” will not be used, as it is recognized in this work as factually accurate information and will be considered outside the scope of this research.

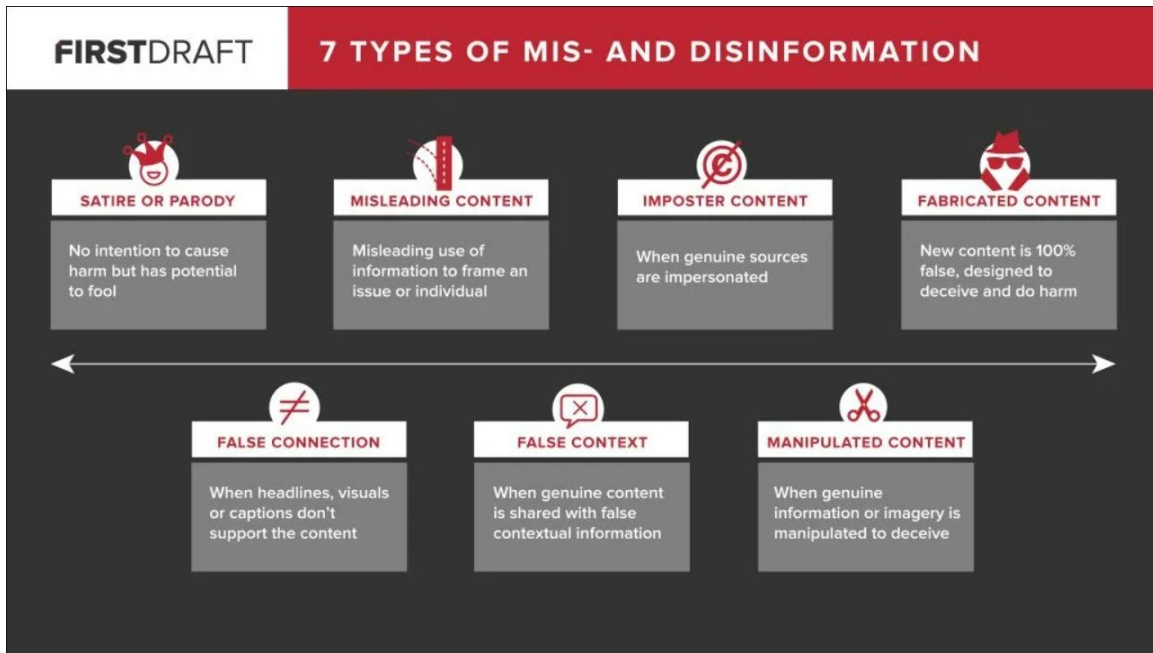


Figure 3. The seven categories of information disorder. Source: Wardle (2018).

Misinformation and disinformation can be generally understood as subsections of non-natural information (meaning, interpreted and communicated by human agents) (Søe, 2021). Misinformation and disinformation can become entangled as one may become the other over time, and the lines between them may blur in practice as information is passed through various channels, diffusing across the information landscape. Most important to understand is that the distinction in our discussion is largely semantic, as the relationship between the two should be seen as fluid and oftentimes unpredictable. Regardless of intent or the consumer’s awareness of whether the information is true or not, false information continues to create disorder in the information environment and, as argued in subsequent sections, has caused shifts within the information marketplace as a disruptive force.

C. DISINFORMATION AS A DISRUPTIVE INNOVATION

While mis- and dis-information can easily be understood as undesirable facets of activity throughout digital media, examining their role in terms of the “marketplace” of the information landscape will serve to justify the classification as a disruptive innovation. The pre-internet information marketplace was fed by print news sources and libraries which

held a monopoly on generating and distributing information to the public; however, in recent years digital media platforms have lowered the barrier on creating and disseminating news and other information online (Shu et al., 2020).

This research intends to establish disinformation as a form of disruptive technology based on the characterization provided and expounded upon within Christensen’s books. In this allegory, factual information is the incumbent product that has lost ground within the information marketplace by the disruptive appearance and proliferation of disinformation in the digital landscape. To establish this framework, this section will demonstrate how each individual aspect of a disruptive innovation coincides with the characteristics of disinformation (see Table 1, p. 39)

(1) Disinformation is a Lower Quality Product

Similar to a disruptive technology, *dis*-information (information which is objectively untrue and intentionally so) is of lower quality than truthful information. Where the “quality” of information is measured by its objective fact, disinformation is a lower-quality product than its predecessor (factual news).

(2) Disinformation Introduces a Novel Value

Disinformation likewise introduces novel value to the information marketplace not previously provided by factual information—that is, information that can confirm already-held biases, information that can further a particular agenda or narrative, or information that can provide a tailor-made entertaining and sensationalist experience factual news may not be able to compete with. Rather than the incumbent “value” of news—e.g., to merely convey actual information or events as they truly are or were to inform the public—the value of *dis*-information is to serve the specific purpose of providing emotional release or to convey a chosen narrative.

(3) Disinformation is More Convenient and Affordable

Similar to disruptive technologies, disinformation is more convenient to use and more affordable in the sense of oftentimes being easier and faster to read as compared to the incumbent product (factual news), more readily available (a significant proliferation of

disinformation occurs via social media outlets), and more affordable in the temporal and cognitive “cost” of consuming it. The aspect of relative cost of consuming disinformation is discussed in greater fidelity in part 6 of this section.

(4) Factual Information as the Incumbent Product

With dissection of any incumbent impacted by disruptive entrants in an established marketplace, an understanding of the incumbent’s value network is an important context for analyzing the disruptive innovation. In terms of the information marketplace, the incumbent’s “value network” can easily be understood by looking at the established gatekeeping practices of traditional news media. The decision to disseminate a product into the marketplace is measured by how closely it aligns with those values, primarily in whether or not the information is “close” and relevant to the given audience and the pragmatism of covering such news (Stöcker, 2020). In addition to producing “products” (news stories) that their consumer base finds relevant, and thereby worthy of the cost, factors of trustworthiness must also be considered. Organizational credibility is one determinate of trust and therefore influences the public’s willingness to purchase a product (Metzger et al., 2003). Traditional media outlets are also beholden to maintaining alignment with the value network of their consumer base (their target audience). Businesses which sell tangible products or services favor catering to these values, electing to pursue sustaining innovations, vice moving “downmarket” in pursuit of something that may or may not *become* disruptive. A downmarket move by a media or broadcast agency might sacrifice some truthfulness or completeness “value” in exchange for a more sensationalist tack, however that kind of downmarket movement is not aligned with the way their value network does business. This important factor makes competing with the disruption caused by disinformation in the low end of the market substantially more difficult.

Traditional news organizations must attempt to compete with disinformation in order to stay relevant. The competition here is for consumers’ *attention*. What they choose to *engage* with. The problem is they cannot easily compete with disinformation in the information landscape due to the fundamental principles of organizational nature; in short, incumbents are dependent upon their established market, and cannot be sustained through

unpredictable and niche products. The production and dissemination of blatant disinformation is in direct contrast to the needs of the incumbent's value network. Thorough investigative journalism is not "sexy," and often the news is just plain boring, but producing and distributing truthful and relevant news to consumers is the core of traditional media's value network. This is why the attempt to downward mobilize into disinformation's niche, sensationalist, and emotionally evocative market is still mostly unappealing to traditional news outlets.

As explained by Christensen in his various works, this tendency to focus on the established, larger, and more profitable segment of the marketplace that formulates the consumer basis of an incumbent's value network is what creates space for entrants. The consumer base of incumbent information sources comprises the majority of mainstream media consumers who use traditional media outlets to get timely, relevant, and accurate news. The fact that useful news which helps to create informed citizens is often unexciting, leaves space in the market for emotional and engaging fabrications to gain momentum and distract attention from traditional news. Indeed, we have seen disinformation do exactly what disruptive innovation theory predicts may happen in these instances: take hold of an underserved and previously ignored segment of the market.

Table 1. Summary of disruption in the information environment.

Disruptive Innovation Theory Element	Information Environment Equivalent Element
Customers	Consumers Of Information
“Product”	Information
Quality / Performance	Objective Truthfulness / Factuality
Incumbent / Established Firms	Traditional News Corporations
Entrant Companies / Firms	Disinformation Peddlers
Price	Time To Read, Complexity of Thought Required to Understand, Effort Required to Obtain (E.G. Paywalls), Literal Price (Subscriptions)
Convenience	Easy Access, Easily Digestible, Quick to Read, Easy to Understand, One-Stop-Shop (One Place For Everything You Need), Level Of Engagement/Interest
Marketplace	Digital Information Landscape
Product Reliability	The Perceived Truthfulness, More Subjective as Compared to Quality, Perceived Trustworthiness of Source
“Fringe Group Of Consumers” [The Group Of Individuals That Disruptive Innovations Initially Appeal To / Target]	“Non-Mainstream” Social Media Outlets, Such as Reddit (Tentative); Low-Literacy Audiences; Extremist Viewpoints or Extra-national organizations (Gets A Few Shares From A Fringe Organization And Then Makes Its Way To Mainstream Consumers/ Average People)
Performance Oversupply = “Shift In The Basis For Competition”	Performance Oversupply = “Failure” to address market need for entertainment, traditional sustaining focus on factuality and speed. “Shift In The Basis For Competition” = Preference For Easy-To-Consume, Bias-Confirming, Easy-To-Find Information Vice Accuracy

1. The Information Landscape as a Disrupted Market

Christensen's most interesting developments in his second book are a series of questions which help identify the potential for a market disruption. If one or both of the following questions are satisfied, there is a potential for disruption to occur: "Is there a large population of people who historically have not had the money, equipment, or skill to do this thing for themselves, and as a result have gone without it altogether or have needed to pay someone with more expertise to do it for them? To use the product or service, do customers need to go to an inconvenient, centralized location?" (Christensen & Raynor, 2003, p. 49).

News outlets, or information in general, meet both these criteria. People are not out there doing their own interviews, research, and analysis of world events. Consumers of information in the modern era pay for subscriptions to newspapers or commentary style television which publish formatted, contextualized, and *interpreted* stories for us. This meets the first criteria of paying someone else with more expertise to gather the news and feed it to us in an easily digestible manner. Customers consuming news media products also face the problem of having to navigate to separate websites or TV channels for different content, creating an inconvenient stovepipe of information access. But, more and more, there are free news and media outlets which can produce legitimate sounding and looking stories, but without the journalistic integrity of traditional media, leading to the spread of misinformation. These freely available news sources conveniently publish their content directly to social media or as advertisements on website sidebars, avoiding the stovepiped media problem. State owned or sponsored media may also purposefully and maliciously sell a half-true or even wholly untrue story for their benefit and to sow discord.

As opposed to directly competing with market leaders, new-market disruptions enable larger populations to begin buying or using a product they were previously excluded from due to financial elements (cost) or required skills (operational constraints, knowledge, training) (Christensen & Raynor, 2003). Schmidt and Druehl (2008), also refer to this as "fringe-market" or "detached-market" low-end encroachment. This could apply to both creators and distributors of disinformation campaigns and to consumption of disinformation by end users. Disinformation campaigns are easier and cheaper to conduct

than traditional counterintelligence, opening the door for low-budget adversarial groups such as small extremist countries or violent extra-national organizations to create just as much chaos and uncertainty.

On the consumer end, lower cost can literally refer to price, as a number of established new sources with digital platforms levy a subscription fee for access to their information. Besides strictly monetary cost, the cost in cognitive load can also significantly influence consumption. Consumers not having the time, energy, or desire to consume traditional news media, are instead drawn to the relative “ease of use” of consuming sensationalist false news. Indeed, research consistently shows that consumers of information tend to select their sources based on familiarity of the source rather than the perceived trustworthiness of the source (Field & Green, 2004; Orji et. al., 2020), highlighting the fact that people will choose ease of use or familiarity over a more reputable, factually rigorous information product.

Christensen further proposes a litmus test for whether a market disruption will occur in the low-end market (versus a new market). “Are there customers at the low end of the market who would be happy to purchase a product with less (but good enough) performance if they could get it at a lower price?” (Christensen & Raynor, 2003, p. 50). The authors of this paper argue the information market also passes the test for potential low-end disruption. From a cognitive cost perspective, *low-end customers* in the “information market” are those that may have low-literacy, or little time and desire (personal stake) to invest in gathering and processing their news. The *lower price*, then, is an abridged, summarized, or modified (sensationalized) version of the news which is easier (cheaper) or more engaging (more attractive), but which potentially sacrifices some truth (performance).

Christensen also observes that innovations which enable low-end disruption are focused on improvement which reduce overhead cost or improve business processes, allowing the company to earn more attractive returns or turn assets faster (Christensen & Raynor, 2003). Fake news campaigns (i.e., disseminating disinformation) fit this model by getting “attractive returns” (e.g., more clicks, more shares, and wider distribution) at a lower overhead cost than operating a state-owned media structure or trying to influence or

coerce a private media corporation to publish favorable, narrative driving stories. So, disinformation is both more attractive to low-end *customers* who desire to be emotionally engaged (entertained) by media in simple formats, and more accessible by low-end *distributors* based on its relative ease and low cost of generation and distribution.

Further, Christensen notes that “the ability of brands to command premium prices tends to atrophy when the performance of [their] products from multiple suppliers is manifestly more than adequate” (Christensen & Raynor, 2003, p. 163). We argue that it is not the objective, measurable performance of the product, but the *perceived* performance which is more important.³ The perceived performance, in this instance, is the relatively higher number of attention-grabbing snippets or headlines of disinformation pieces as compared to thorough investigative and educational journalism. As previously discussed, when performance overshoot occurs, the profitability of the value-added chain shifts to somewhere else, such as the retail interface where speed, simplicity, and convenience require improvement (Christensen & Raynor, 2003). The retail interface of digital media has shifted from traditional news outlets (TV and print) to social media, and to ever more abbreviated versions of news stories. This opens the door for false narratives because the average media consumer does not do the diligence of reading into all the facts, understanding context, and rigorously analyzing the story from multiple points of view. People cling to a few sensational details that are devoid of context or understanding in favor of simplicity and speed of consumption enabled by social media.

2. The Role of Performance Oversupply

Having previously established traditional news outlets disseminating factual information as the incumbent business model in the information landscape (the marketplace), we must also establish how the incumbent (traditional news outlets) helped create room for the disruptive force of disinformation. One of the largest driving forces behind it—in keeping with Christensen’s writings—is performance oversupply, which causes a cyclical shift in how the market assesses product value. Performance, or quality,

³ Chapter III.D provides additional discussion on the role of perceived attributes in diffusion and adoption of disruptive innovations.

in this case is assessed as the level of truthfulness, the ability of a piece of media to convey the facts—and traditional media has essentially maximized the level of performance in truth it can muster.

Disruptive technologies succeed because they satisfy market needs in the areas of functionality, simplicity, affordability, reliability, and convenience over those offered by incumbent products or services. Factual information can only “improve” so much in terms of its quality, timeliness, delivery methods, and accessibility (both in terms of literacy and availability for consumption). Once traditional news reached a certain level of performance in gathering, interpreting, and producing factual information for the audience, the way was paved for the information marketplace to turn to other attributes outside the quality of the facts for differentiation. In Christensen’s work, these other attributes are typically more affordable prices, perceived reliability, and simplicity.

For the purposes of this comparative analysis, the “cost” or “price” of consuming information is best related to the time it takes to consume it, the complexity of thought required to understand it, the effort required to obtain it, and literal pricing (free versus paid dissemination platforms). In terms of this conceptualization of cost, disinformation products are consistently “cheaper” to consume than news disseminated from traditional sources. Disinformation products are usually designed with these very considerations in mind, commonly distributed en masse, for free, via social media and other digital platforms in engaging and provocative formats.

A study analyzing how news is being consumed in 38 countries found that information consumers—primarily those of younger generations—“do not want to work hard for their news” and prefer their information to be “easy and entertaining” (Newman et al., 2019, p. 58). This suggests that information consumers are reluctant to pay the cognitive price of analyzing information for validity, and prefer the relative simplicity of believing sensationalist falsehoods. Corroborating this idea, a 2019 study found that “lazy” thinking and quick judgements were higher indicators of believing presented information, regardless of other factors such as political ideology (Pennycook & Rand, 2019). A synthesis of several scholars’ findings further demonstrates this low-effort engagement in the information marketplace that has propelled disinformation to success, showing that

lower levels of education and analytical cognitive ability make information consumers more susceptible to engaging with and believing false, sensational information (João & Gradim, 2020). The cognitively “cheaper” price of engaging with disinformation is part of what makes it so endemic and disruptive to the information market.

For information dissemination, product “reliability” can easily be tied to credibility; the purpose of information is to inform, and for information to serve its purpose it must be factual, or at the very least, it must be *perceived* as factual. In the digital information landscape, many traditional controls for the validation and endorsement of information outlets are rendered ineffective, meaning the perceived reliability of a news product is left to the determination of the consumer (Metzger et al., 2003). Credibility perceptions outside these controls are typically informed by how much the source of the information is liked by the consumer, and how similar the consumer is to the source (Metzger et al., 2003). With reliability so incredibly subjective and disinformation considerably cheaper than the incumbent product, disinformation took the marketplace by storm once the performance threshold was reached.

Disruptive innovations redefine the capabilities overshoot trajectory by introducing products which have lower performance characteristics, but offer other benefits such as simplicity, convenience, and lower cost (Christensen & Raynor, 2003). These features make the lower performance product more attractive to lower market tier customers who have been overshoot by the capabilities trajectory; the improvement cycle only begins after these disruptors feel a sufficient foothold has been gained in the low-end market (Christensen & Raynor, 2003). The pace of product improvement still exceeds the customers’ ability to use it, meaning it will quickly catch up to the needs of more demanding customers. Customer needs in this context are the appearance of being generated by a legitimate source and adding value to their information consumption choices. In other words, disinformation first targets and meets the requirement to gain customer interaction (engagement), then improves on earning the trust of more demanding consumers through improving the appearance of legitimacy. Schmidt & Druehl (2008) refer to this type of diffusion from the bottom upwards as “low-end encroachment.”

3. Product Improvement and the Shift to Mainstream

A product may not just be of lower quality than the incumbent product in order to be considered disruptive. As previously stated, a disruptive innovation is classified not just by what it is when it first appears within the marketplace, but also by what trajectory it follows and how it behaves afterward. Disinformation's convenience, lower quality, and relative affordability is not enough to qualify it as a disruptive innovation; it must also follow the pattern of improving its business model first, and only focusing on improving product quality once a subjectively acceptable business model has been achieved.

While the stated goals of traditional news outlets and journalism is bringing truthful information to the public, and maintaining public trust, social media giants like Facebook, for instance, are chiefly concerned with maximizing engagement (Stöcker, 2020). Higher levels of active participation with content by a platform's users is directly tied to monetization opportunities; notably, highly-emotional content—especially content which inspires colloquially “negative” emotional responses—elicit higher rates of engagement from platform users (Stöcker, 2020). Knowing this, we can infer that disinformation campaigns, so often emotionally evocative by their very design and purpose, are inherently going to be more successful as business models than factual and credible news when distributed on social media sites. And so, like many other disruptive innovations, disinformation has and likely will continue to outperform factual information.

With the growth and optimization of social media, notably recommendation algorithms and content optimization, came what could arguably be described as a higher quality business model for disinformation campaigns to launch themselves (Stöcker, 2020). So-called “recommendation systems” now at the core of sites like Facebook and Twitter provide “the perfect platform for the radical voice,” allowing information to reach a volume of consumers previously not possible (Stöcker, 2020, p. 129). And indeed, the term *disruptive innovation* is specifically meant to refer to a product as it evolves over time, rather than at a single point in its history (Christensen et al., 2015). The trajectory of disinformation campaigns from the fringe elements of the web to mainstream content endemic across social media and other digital platforms represents an evolving product which has made a place for itself in stark competition to reputable, traditional news.

Like most modern businesses, disinformation campaigns, too, utilize a multi-platform strategy (Lukito, 2020). Russia's Internet Research Authority (IRA)'s disinformation campaigns provide an excellent case study for demonstrating how disinformation manufacturers behave similarly to a business marketing itself (Lukito, 2020). In order to "market" their "product" to a widely dispersed consumer base, the Internet Research Authority (IRA) utilized a coordinated campaign to increase the average consumer's likelihood of encountering disinformation; and, "because many U.S. citizens have multiple social media accounts ... a coordinated campaign could also increase how often a citizen was exposed to disinformation" (Lukito, 2020, p. 240).

Similar to any business with a multi-platform strategy, the IRA utilized strategic communication to ensure their messages reached peak efficacy with their intended market (Lukito, 2020). Indeed, one of the noted goals of disinformation content in the IRA's campaign was for the information to be perceived as "organic" by the consumer, as organic content has been found to be more persuasive than paid advertisements in traditional marketing (Lukito, 2020). In this way, distributors of a disinformation product seek to improve their business model and appeal to more consumers after the initial conceptualization.

Businesses frequently use beta-testing in order to parse out the forecasted success of a given product, giving manufacturers or designers room to improve the product before its full release. In the example of the IRA, the social media site Reddit was utilized to test new message strategies before full release to other platforms (Lukito, 2020). Messages which became the most popular and controversial among those tested were then disseminated to larger audiences on other platforms, such as Twitter (Lukito, 2020). This is a textbook example of a disruptive innovation (the intentionally false disinformation strategy) moving from the fringe (Reddit threads) into mainstream or upmarket media platforms like Facebook and Twitter.

Yet the evolution of the product of disinformation does not operate within a bubble; rather, it changes with external sociopolitical factors as well. Like any business, disinformation campaigns such as the IRA's will respond to the behavior of the market and the conditions surrounding it, and tailor their products accordingly (Lukito, 2020). In the

case of the 2016 U.S. Presidential Election, for instance, the IRA’s activity tracked positively with public sentiment regarding then-candidate Trump, suggesting the IRA’s production of disinformation was sensitive to polling data as well as audience metrics (Lukito, 2020).

D. DIFFUSION LEADS TO DISRUPTION

In *Diffusion of Innovations* Rogers outlines several studies which show that *perceived* attributes of an innovation, not objective evaluations by experts, drive the diffusion process and dictate the rate of adoption (Rogers, 2003). The higher the adoption rate, the greater the chance that a particular innovation will be set on a disruptive trajectory. These perceived attributes are subjectively derived by secondhand experience with the innovation in question conveyed by peers through interpersonal communication channels (Rogers, 2003). Disinformation measuring highly in many of these perceived attributes shows that it meets many criteria which accelerate its adoption rate and make it a potent disruptor in the information marketplace.

The subjective attribute which is the strongest predictor of adoption rate is *relative advantage*. “Relative advantage is the degree to which an innovation is perceived as being better than the idea it supersedes” (Rogers, 2003, p. 229) and is frequently expressed as economic profitability or social prestige. Relative advantage can be expressed as a ratio of expected benefits to costs of adopting the innovation (Rogers, 2003). A disruptive innovation, as previously discussed, may lower the expected benefits (such as performance or capability), but simultaneously lowers the cost more, tipping the ratio and providing greater relative advantage. Other characteristics which may contribute to the subjective measure of relative advantage include profitability, initial cost, social prestige, level of time or effort required, and immediacy of reward (Rogers, 2003). All of these characteristics are often associated with misinformation which achieve rapid diffusion through free access, catchy headlines, and engaging, easy to read writing styles.

The second perceived attribute affecting rate of adoption is *compatibility*. As defined by Rogers (2003), compatibility is “the degree to which an innovation is perceived as consistent with the existing values, past experiences, and needs of potential adopters”

(p. 240). Innovations or ideas which are more compatible with a person's needs and value system will be perceived with less uncertainty, and align more closely with their situation (Rogers, 2003). This is closely aligned with Christensen's point on successful disruptors targeting the *circumstances* of potential customers, rather than the customers themselves. In addition to compatibility with adopters' needs and experience, diffusion can also be accelerated or slowed down based on the new idea's compatibility with existing ideas or technology. The spread of disinformation, and information in general, has been highly accelerated by the digital age, facilitated even more by social media.

There has always been state-spun propaganda, half-truths, and internet trolls. A 2022 report by the Media and Journalism Research Center showed that of nearly 600 state-administered media entities surveyed, 84% lack editorial independence (Dragomir & Söderström, 2022). Even the United States attempted to stand up and operate a domestic government radio network at the outbreak of World War II (Socolow, 2007). And most of us have probably experienced the annoyance of online "trolling" intended to derail legitimate discourse or community building. Well crafted lies and convincing news stories or deep-fakes are a sustaining innovation (to use the disruptive terminology) in the business of biased media. They become disruptive to traditional mass-media when they can be mass produced and mass distributed over online social networks and other digital platforms, greatly accelerating the diffusion process.

An additional aspect of compatibility is the degree to which potential clients perceive the innovation as meeting a felt need (Rogers, 2003). Here, especially, the importance is placed on client *perception*. Whether the client needs are actually met is irrelevant. The client must merely *feel* that their needs are being met to result in a positive subjective evaluation and lead to accelerated adoption. Misinformation aligns with the characteristic by attempting to force a feeling of fulfillment and evoking an emotional response with sensationalist headlines and reporting which align with one's preconceptions.

Complexity is another subjective attribute which impacts the rate of diffusion. “Complexity is the degree to which an innovation is perceived as relatively difficult to understand and use” (Rogers, 2003, p. 257). The improvement cycle described by Christensen is one way a disruptive innovation can move from being perceived as complex, and only desirable by a fringe market, to simple and more widely accessible by mainstream consumers. Characteristics of misinformation which meet these criteria are its simple, sensational, and straightforward content.

The final two perceived attributes affecting diffusion are trialability and observability. *Trialability* is the extent of possible experimentation with the innovation and *observability* is the public visibility or measurability the innovation offers (Rogers, 2003). The ability for potential customers to personally test the innovation under their own circumstances can greatly increase adoption rate (Rogers, 2003). Misinformation is a prime example of highly experimental and modifiable content due to its low cost, rapid generation, and ease of dissemination. The IRA disinformation campaign described in section III.C.7 is a textbook example of trialability being leveraged to improve diffusion. Observability is also related to tangible verification that the product or service is functioning as intended and achieving the desired results. In the case of a misinformation campaign, statistics on clicks, shares, and related posts are readily available on most social media platforms, making successful spread of malicious content easily observable. Table 2 provides a summary of how perceived attributes align with the characteristics of a disruptive innovation, specifically using the example of disinformation.

Table 2. Perceived attributes of disinformation that contribute to disruption.

Perceived Attributes Affecting Diffusion Rate	Characteristics of Disruptive Innovation
Relative Advantage (economic)	Lower cost
Relative Advantage (related to social prestige, convenience, and satisfaction)	Niche market foothold gains mainstream attention, value placed convenience and ease of use (vice outright performance)
Compatibility (needs of potential adopters)	Filling the “jobs-to-be-done” necessity, capabilities overshoot concept (extra performance that customers <i>do not</i> need)
Complexity (or conversely, simplicity)	Simplicity, ease of use
Trialability	Accessibility, convenience, ability to refine and re-try
Observability (tangible or visible innovation and its effects)	Data accessibility (visibility of “trending” topics on social media, election poll results, etc.)

Besides the attributes of a specific innovation which impact its rate of diffusion, Rogers describes several different adopter categories which are impactful at different stages of the diffusion process, and how their characteristics affect the rate of diffusion. The adopter categories are based on a normal distribution (shown in Figure 4) from the mean time of adoption and are, in order of time required to adopt, as follows: Innovators, Early Adopters, Early Majority, Late Majority, and Laggards (Rogers, 2003). Integration of this normal curve yields the typical “S-curve” cumulative adoption graph (see Figure 1, p. 22) which shows that early in the adoption process there are relatively few adopters per unit time, followed by a sharp increase and taper as all or most members of a system adopt the innovation (Rogers, 2003). The characteristics of each of these categories of adopters generally align with the movement of a disruptive innovation from the fringe to the mainstream.

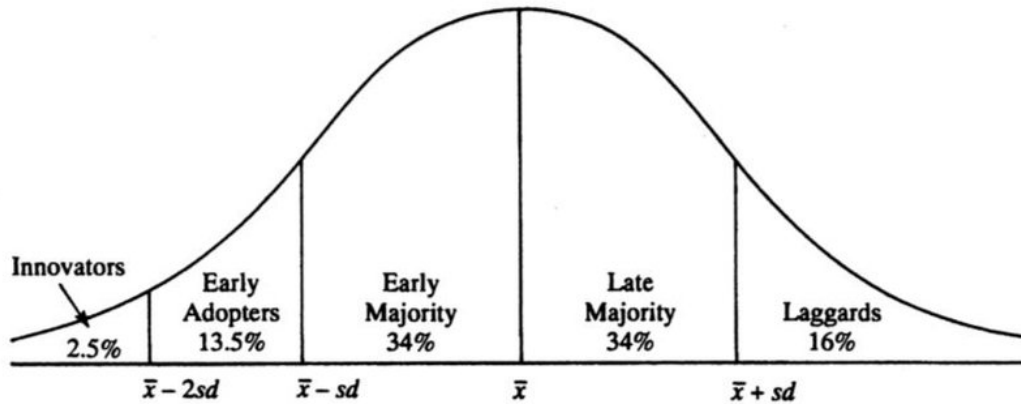


Figure 4. Adopter categorization. Source: Rogers (2003).

Innovators play an important role in their system, despite their network of interpersonal relationships generally being oriented outside of the system (Rogers, 2003). This orientation frees them from the normal constraints of the system, allowing them freedom to try out previously untried ideas (Rogers, 2003). Rogers (2003) also describes innovators as those who may not be respected by other members of the system, but who serve the crucial function of injecting new ideas into the system from outside the established, typical system boundaries. This description aligns with the characteristics of the “fringe” market from Disruptive Innovation Theory.

In the typical diffusion scenario, Early Adopters are the next group of individuals who would have exposure to the innovation and potentially adopt it on a trial basis. Their experience and newly formed subjective opinions on the innovation are then further communicated through the social network to propel the diffusion process (Rogers, 2003). The diffusion curve then accelerates as these interpersonal networks become activated, reaching a “critical mass” around 10% to 20% adoption (Rogers, 2003). One of the assumptions in Rogers’ theory on diffusion is that members of a system do not have free and total access to the other members within that system. This assumption needs to be reassessed in the current, highly connected, digital information environment. He admits that some assumptions and relationships in diffusion networks will need to be modified with the dawn of the internet allowing innovators and change agents to directly reach Late Adopters with targeted messaging and subjective peer review (Rogers, 2003). This helps

explain the often-viral nature of misinformation spread, and how it has become so popular in itself. Interpersonal networks are so much more connected in the digital sphere, meaning each adopter (i.e., customer who has been turned to fake news) can spread it to far more people, rapidly crossing the threshold of 10%-20% and the point of no return. This is also why it is so hard to combat. The time scale for diffusion has become so compressed that by the time it has been identified, it has already progressed past the diffusion event horizon.

The Late Majority and Laggard categories of adopters are less favorable towards expert opinions and scientific evidence regarding innovations, placing “greatest credibility in their peers’ subjective experience with the innovation, conveyed to them through interpersonal networks” (Rogers, 2003, p. 294). This characteristic along with the increased interpersonal connectivity enabled by social media helps explain the deviation of viral misinformation spread from the normal S-curve of diffusion. Communication in the digital information environment is so rapid and widespread, it skips the Early Adopters and Early Majority categories to the majority of adopters who fall into the categories with generally lower socio-economic status and education level, at which point the cost and ease of access trump the uncertainty barrier and quickly reach the critical mass of inevitable mainstream adoption. Relying mostly on interpersonal networks (which are highly connected in the digital environment), the Late Majority and Laggards adopt based on the favorable opinions of innovators directly. When misinformation is posted in the public sphere, such as on social media, it has the appearance of coming from a peer via interpersonal network, thus giving it greater credibility (Wardle, 2017; Lefevre et al., 2012) and bypassing the normal evaluation and testing phases conducted by Early Adopters and the Early Majority.

The final important connection between Christensen and Rogers’ work is the role of communication channels in propagating a new innovation, or a new idea, through a diffusion network. People primarily depend on a select few individuals within their social system whose opinions are highly valued and carry additional weight in the adoption decision, called Opinion Leaders (Rogers, 2003). These subjective evaluations are then communicated through the diffusion network via communication channels. The two primary communication channels are mass media, and interpersonal channels. Mass media is effective at rapidly reaching a large audience, creating knowledge of an innovation, and

changing weakly held attitudes, while interpersonal channels are more effective at overcoming resistance or apathy regarding adoption, making peer to peer communication especially important for late adopters and laggards (Rogers, 2003).

In a digitally connected world, the channels of mass media and interpersonal networks are beginning to merge. It used to be that opinion leaders were cosmopolites with higher education, higher socio-economic status, and better connection to sources of information (Rogers, 2003). These people were often at the center of a large radial network which connected them to the majority of their social system, giving them greater influence in innovation adoption decisions (Rogers, 2003). Now, access to information is nearly universal, but there is still (relatively speaking) limited access to formal education which develops the cognitive tools to analyze and interpret the swath of information that is publicly available. Anyone with a social media account and an opinion can place themselves at the focal point of a large radial network and become an opinion leader. Opinion leaders (think, “influencers” on social media) can crop up from anywhere and sway opinions without the critical thinking credentials to back it up. And these messages of dubious quality reach a much wider audience via the connectivity of the internet.

The characteristics presented here show how innovations with certain attributes can attain accelerated diffusion through a social community and result in rapid adoption. The characteristics of disinformation are aligned with innovation attributes which lead to rapid diffusion and adoption, demonstrating how and why disinformation has followed a disruptive trajectory and become a major disruptor in the information marketplace.

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IV. IMPLICATIONS AND CONCLUSION

A. THE BUSINESS OF ADDRESSING DISRUPTION

In Christensen's seminal works he acknowledges the business practices which create successful and enduring enterprises are the very same practices that make them vulnerable to disruptive innovations overtaking the marketplace (Christensen, 1997) (Christensen & Raynor, 2003). The proliferation of disruptive innovations throughout the incumbent's share of the market is not something they can reasonably be blamed for, as "*good management itself* was the root cause. Managers played the game the way it was supposed to be played" (Christensen, 1997, pg. 98). Nevertheless, disruptive innovations can displace an incumbent's position within the market, and negatively impact their profitability and trajectory for long-term success. The same can be said for factual news, a product which seems increasingly challenged by the successful proliferation of disinformation. Though much of these original works are dedicated to explaining and demonstrating disruptive innovation theory, some instruction is given on how incumbent entities may manage disruptive changes and attempt to inoculate themselves against the potential negative impacts.

Recommendations for managing disruptive change are difficult to provide even within the traditional realm of corporate business. Christensen (1997) recognizes an incumbent's dependence upon their value network for continued success. In his work, Christensen (1997) notes that corporations are often unwilling to risk their relative security in order to make drastic and potentially unprofitable changes that may cause lost ground with their consumer base, the very thing that provides them the resources they need in order to continue operating. This resource dependence renders the role of management largely symbolic in nature, as the driving force behind management decisions is in fact the consumer (Christensen, 1997). The same can be said for news organizations, who are dependent upon their viewer, listener, or reader base in order to continue operations.

To address this dependency upon consumers as a resource, Christensen (1997) recommends creating a new organization (e.g., a child company or department) to address

the needs of the new market. This recommendation is made again nearly twenty years later, though with the added caveat that it sometimes will not adequately address the incumbent's challenges (Christensen et al., 2015). Though it is by no means a failsafe resolution, Christensen (1997) argues that this solution aligns itself with the existing resource dependency (i.e., satiating the needs of the customers a corporation has already) while addressing the threat presented by a disruptive innovation. This methodology was successfully employed in the disk drive industry whereby “managers harnessed, rather than fought, the forces of resource dependence” and “spun out independent companies to commercialize the disruptive technology” (Christensen, 1997, p. 104). Similar success with this response method can be seen in discount retailing and personal printing technology use cases, where incumbent corporations created “spin-off” companies to appeal to the new consumer needs that disruptive innovations created and introduced to the market (Christensen, 1997).

Applying this recommendation to the information landscape could not only be exceedingly difficult but could present an almost insurmountable consumption of resources. Christensen (1997) recommends that the size of this new organization, branch, department, or child company should be equivalent to the size of the market the disruptive technology in question pertains to. Unfortunately, the market reach of disinformation is not only on par with but sometimes outperforms the relative reach of factual information (Glenski et al., 2018). A study in 2018 found that disinformation sources were retweeted by a higher number of users than trusted information sources, and with shorter delays, meaning disinformation proliferates through the market at a faster rate than trusted information (Glenski et al., 2018). Another 2018 study corroborates this finding, reporting that false news “diffuses significantly farther, faster, deeper, and more broadly than the truth, in all categories of information, and in many cases by an order of magnitude” (Dizikes, 2018). Of note, humans (real consumers) rather than bots are primarily responsible for the rapid diffusion of disinformation online (Dizikes, 2018). Given the size, speed, and dedication of the market that disinformation appeals to—coupled with the loss of thousands of journalism jobs in recent years (Rainie, 2022)—creating a child organization to address its specific needs is a monumental task in terms of scale.

Unfortunately, personnel and funding are not the only issues traditional news organizations selling factual information may have with this recommendation—there is also a question of ethics. Christensen’s (1997) recommendation is meant to satisfy the disrupted market’s new needs while keeping an incumbent organization aligned with its value network. Unfortunately, the very act of catering to the public’s appetite for disinformation would put traditional news organizations in direct contradiction with their value network. Most traditional journalistic entities have and presumably attempt to adhere to a code of ethics, though profitability and long-term success as a news organization alone makes upholding the appearance of trustworthiness vital to maintaining good standing with their value network. Trustworthiness is, in fact, a greater indicator of an audience’s perception of source credibility, more than “liking” the source or believing the source to have relevant expertise (Metzger et al., 2003). To blatantly create child organizations dedicated to feeding the public sensationalist pieces of disinformation could cause irreparable harm to the incumbent’s rhetorical ethos, alienating them from the value network they rely on to survive.

Other recommendations for the business world seem a bit more palatable and appropriate for the information landscape by contrast. Christensen (1997) points out that disruptive innovations’ future applications are unknowable at the time of their development; the very nature of a disruptive innovation makes its use by the consumer base that adopts it unpredictable. This makes preparing for disruptions in the marketplace difficult for corporations, as “markets that do not exist cannot be analyzed: suppliers and customers must discover them together” (Christensen, 1997, p. 147). Discovery, therefore, is the key to mitigating the unknowable nature of an innovation.

The recommendation Christensen makes in addressing this particular aspect of disruptive innovations is admittedly more applicable in a proactive context rather than a reactionary one. Disinformation—by contrast to an unformed disruptive innovation which has yet to enter its initial, niche portion of the marketplace—has already established a significant foothold in the information environment. While some level of investigation into the shape and trajectory of the information marketplace can undoubtedly shed light into how to appeal to the evolved needs of the consumer base, it is certainly too late for the

implementation of precautionary measures by traditional news organizations. There is, however, perhaps some wisdom in what Christensen refers to as “discovery-driven planning” even in hindsight (Christensen, 1997).

Keeping in mind Christensen’s assertion that the trajectory of a disruptive innovation is unknowable, it could be said that the same is true no matter what direction that trajectory may eventually take; an innovation may appear on the market and take it by storm, displacing the incumbent and the appeal of their product—but it stands to reason it could also fail or lose its initial hold on the market. It may also be possible that the emergence of a disruptive innovation may cause not just the initial shift in consumer needs, but eventually another shift as that innovation changes the market and improves in quality as all disruptive innovations inevitably do. In the disrupted marketplace of the information landscape, there may be a second shift already on the horizon—but research on the topic is (fittingly) sparse.

There are fledgling signs that the innovation of disinformation—a product which evokes largely negative emotions and serves a pathological need in the market (Stöcker, 2020)—may have reached its point of performance oversupply. Though it’s still too early to know, true to the unknowable nature of a disruptive innovation’s future implications in advance, the needs of the information market may again experience a shift as disinformation—which typically relies upon the manipulation of strong, negative emotions rather than the dissemination of truth—surpasses consumer need in performance. The Congressman with the most followers on TikTok, for example, is Rep. Jeff Jackson (D) of North Carolina, with over one and half million followers (Rodriguez, 2023). A user of social media since 2015, Rep. Jackson has attempted multiple different methods and styles of connecting with his constituents with limited success until very recently (Rodriguez, 2023). Rep. Jackson’s strategy is to deliver “factual” messages brief enough to hold the shortened attention spans the “dopamine-release mechanisms” (vertical-scrolling social media apps) have created in the information marketplace (Rodriguez, 2023). This approach has been categorically successful, a strategy which Rep. Jackson may summarize as “being a halfway sensible person and speaking directly to people in a normal tone of voice” (Rep. Jeff Jackson, 2023). According to Jason Linton, a successful content creator on TikTok

with nearly 13 million followers, Rep. Jeff Jackson’s approach has become so popular because it “really connects with the younger generation ... honest communication—just authenticity ...” (Rodriguez, 2023).

Whether this trend is indicative of the future of the information marketplace post-disinformation disruption or merely an anomaly requires further research. Indeed this is the sort of empirical question which may make Christensen’s recommendation worthwhile to incumbent news organizations. Disinformation, while being a disruptive innovation, is a product for sale just like the incumbent product (factual information) and may thereby be susceptible to the very same threat of inevitable disruption; the key may be in making the unknowable a little less unknown. Discovery and investigation into the changing needs of the market and emerging fringe elements of the information landscape may illuminate some ways that truth can make a resurgence. Christensen’s (1997) next recommendation in mitigating the impacts of disruptive innovations aligns neatly with this idea, highlighting that perhaps not an entirely new product is required to regain a foothold in the information market—merely a new marketing strategy.

Perhaps unique to this problem set is that a disruptive innovation’s greatest weaknesses (in the initial context of the value network) are precisely what propels them to such levels of success and become their greatest strengths (Christensen, 1997). The literature is very clear about the relative quality (in our case, truthfulness) of disruptive innovations (disinformation) as compared to the incumbent products (factual news). The success of these lower-quality commodities, then, is not owing to a *technological* inadequacy of design on the part of the incumbent, rather an insufficient focus on *marketing* (Christensen, 1997). In many of the use cases explored in Christensen’s (1997) first book, incumbents facing disruptive challenges believed their reactionary focus should be on technological development; as a result these firms sought to improve the quality of the innovation causing disruption, aiming to make it palatable to the established market. Incumbent organizations that took this approach invariably failed (Christensen, 1997). By contrast, “the firms ... framing their primary development challenge as a *marketing* one ... [building] or [finding] a market where product competition occurred along dimensions that

favored the disruptive attributes of the product” were those who successfully survived in the disrupted market (Christensen, 1997, pp. 173–174).

This point could be understood to mean that truth is still a viable product within the information landscape; it is perhaps a misalignment of thought to believe “truth” can never recover its position in the marketplace due to “technological” inadequacies. Disruptive technologies often succeed because they “[satisfy] the market’s need for functionality, in terms of the buying hierarchy, and because it is simpler, cheaper, and more reliable and convenient than mainstream products” (Christensen, 1997, pg. 174). But once disinformation reaches a point of performance oversupply—when it becomes as simple, cheap (easily digestible, free), and convenient (quick to read, easy to access) as it possibly can—it, too, may become vulnerable to disruption. Incumbent news organizations must prepare now for that potential scenario, for when a vacuum will open in the information landscape for the innovation of truth—simply in a different package or with a revitalized marketing approach.

B. INTERVENTIONS FOR DIFFUSION

We have previously discussed that innovations are placed on a disruptive trajectory by achieving a rapid rate of diffusion, leading to widespread adoption. One method of interrupting this disruptive—and, in the case of disinformation, *undesirable*—track is to target the characteristics which lead to rapid adoption, therefore preventing it from becoming disruptive. Combating these individual attributes may enable us to decelerate the rate of adoption and prevent the disruptive cycle from starting.

Trialability is one easily targetable factor accelerating adoption and acceptance. What if we could detect attempts at trialability by identifying multiple iterations of small changes and modifications to a particular news story? There is substantial research investigating the viability of leveraging AI and machine learning to identify mis- and dis-information on the web (Aïmeur et al., 2023). This vein of research is primarily focused on calculating and classifying truthfulness, source identification and validation, and how to most effectively augment human fact-checkers (Demartini et al., 2020), but does not consider some of the hallmark characteristics of mis- and dis-information that facilitate

rapid diffusion. Incorporating these types of characteristics into the analytics may help to reduce false positive and false negative identification errors. Further, by flagging and blocking attempts at re-invention, these pieces of misinformation become less useful and desirable to actors attempting to pollute the information landscape. Without the ability to cyclically improve upon their disruptive product, misinformation cannot supplant the factual news as an entertaining or emotionally evocative alternative.

Another method which can be used to speed or slow the rate of adoption is by providing incentives. Incentives are “one means through which a higher level of social organization, such as government, community, or a commercial company, can exert its influence on the behavior of individual members of the system” (Rogers, 2003, p. 239) and are one of the principal ways in which change agents can directly interact with the social system and its members. A similar method could be useful in *discouraging* adoption through implementation of *negative* incentives. By disincentivizing creation of, and interaction with, mis- and dis-information, a regulatory body could get ahead of the disruptive nature of virally spreading fake news.

Rogers’ (2003) theories on diffusion state that adoption will not occur until the level of uncertainty has been reduced to a sufficient level to overcome skepticism regarding a change to the status quo in acceptable use. This is especially true within the categories of the Late Majority and Laggards. Digital literacy, along with robust critical thinking skills, are valuable tools in reducing uncertainty with the overload of information available on social media (Alobaid & Ramachandran, 2021). Reducing uncertainty will accelerate the diffusion rate of new information, but the key is to reduce uncertainty with legitimate information to promote diffusion and acceptance, while maintaining the level of uncertainty with illegitimate sources to defeat diffusion of these undesirable information products. Promoting information literacy may help users to remain skeptical of unreliable sources or suspect stories, reducing diffusion of these potential pieces of misinformation.

Research has shown that while bots can help the initial spread of false information, human interaction and sharing are necessary to achieve wider diffusion through social and interpersonal networks. Shao et al., (2018) generated substantial empirical evidence showing that social media bots have a significant impact on the early spread of low-

credibility articles prior to becoming viral. This early diffusion from low credibility sources was primarily contained within relatively small echo chambers until escaping into a larger diffusion network through shares by real human users (Shao et al., 2018). These human users serve as the so-called “Innovators,” introducing a new idea into the system, or also sometimes the “Opinion Leaders,” influencing the subjective views of others, described in Rogers’ (2003) book on diffusion. Identifying these human hubs of misinformation at the center of a larger diffusion network may also help to “get to the left” of misinformation spread before it has a chance to diffuse through the wider public domain.

Diffusion of preventive innovations has proven historically difficult, meaning measures taken to limit people’s exposure to mis- and dis-information are unlikely to achieve a high rate of adoption. The primary reason adoption of preventive measures is so difficult is in the often-delayed response time of the reward (or relative advantage), and in low observability of a “non-event” (Rogers, 2003). It is hard to perceive the advantage of an event that *didn’t* happen or a consequence that was avoided because there is precisely nothing there to observe (which is the point). One method for overcoming this hurdle is through rigorous, dedicated communication campaigns. *Communication campaigns* are a set of organized communication activities intended to generate specific effects on all or a large part of a given group (Rogers, 2003). A dedicated communication campaign on preventing the consumption or distribution of misinformation could be an effective means of limiting its diffusion and preventing it from reaching a disruptive level. This strategy also aligns with Christensen’s recommendation of reframing the marketing approach to combat disruptive innovations. Research by the Stanford Heart Disease Prevention Program and other related studies demonstrated that preventative methods such as dedicated communication campaigns promoting healthy habits can be effective, though special effort is required to develop and implement a successful campaign (Rogers, 2003). A communication campaign promoting healthy information consumption may be effective at promoting information literacy and inoculating the public against consumption of misinformation.

One area of research that Rogers (2003) admits is severely lacking is in anti-diffusion, or methods to *prevent* the diffusion of undesirable innovations. The pro-diffusion

focus of most studies limits our knowledge base on innovation rejection and reinvention, leaving a substantial gap for applications which aim to interrupt the diffusion cycle (Rogers, 2003). Further research into this area is needed in order to provide a prescriptive answer to limiting the diffusion of mis- and dis-information through the digital media environment. Other research which could provide significant contributions on this front is methods for combating the characteristics of misinformation which enable its rapid diffusion rate—low cognitive cost of consumption, high perceived usefulness, adaptability, observability, and high speed, highly connected communication networks. Finding ways to mitigate these factors would go a long way in interrupting diffusion prior to setting it on a disruptive trajectory. It is unlikely that efforts to mitigate the connectivity and speed of online communication would be effective at combating rapid misinformation diffusion, but, as previously discussed, it may be possible to mitigate the factors of adaptability, perceived usefulness, and observability.

The consequences of adoption or non-adoption are also an area lacking substantive research (Rogers, 2003). Consequences are historically unpredictable, and of low priority for evaluation by innovators, change agents, and potential adopters (Rogers, 2003). The widespread adoption of misinformation in digital media (whether deliberate or not), has had major consequences on the information environment. Continued acceptance of misinformation in this “info-demic” is likely to further erode consumer confidence in the information available online and in the news.

C. DISRUPTIVE DIFFUSION OF DISINFORMATION: THE THOMAS-KENFIELD COMBINED FRAMEWORK

The goal of this thesis was to develop a novel framework to aid in analyzing the phenomena of disinformation spread in the digital marketplace. To that end, Table 3 distills the key elements from the several business and social theories which we have used to explain the disruptive diffusion of disinformation.

Table 3. The disruptive diffusion of disinformation: A combined framework.

Thomas-Kenfield Combined Framework	
The Market	Digital information and platforms on which it is hosted or shared
The Product	Mis- and dis-information
Product attributes which make it “attractive”	Ease of access, low cognitive and fiscal cost of consumption, bias-confirming, emotionally evocative
The modern diffusion network	Social media serves as both a mass media <i>and</i> interpersonal communication channels
Disruptive adopter archetypes	Late majority and laggards
The Result	Displacement of factual news in the information marketplace

In a digitally connected world, information is just another product for sale. In the case of mis- and dis-information, its defining characteristics make it easily diffusible by nature. Ease of access online, low cognitive and financial cost of consumption, and entertainment or emotional value of its content give it a perceived relative advantage over more truthful news products with journalistic pedigree. The hyper-connectivity in a digital marketplace of information makes it a near perfect broadcast or mass media distribution channel, while simultaneously serving as an interpersonal network for peer-to-peer communication. This means misinformation products can reach a wide audience, who are more likely to adopt and consume it based on the perception that it has been evaluated and shared by a peer consumer. The archetypes of late majority and laggards make up 50% of potential adopters and are easily targeted by distributors of misinformation who can reach them directly through digital media. Their reliance on subjective experience of social peers makes them vulnerable to manipulation by change agents and innovators attempting to field a new idea into the system. When they adopt based on these biased reviews, they quickly push cumulative adoption past the self-sustaining point of 20% adoption rate, and abruptly set it on a disruptive trajectory. Figure 5 shows the progression of how misinformed adoption can rapidly lead to disruptive diffusion.

Disruptive Adoption S-curve

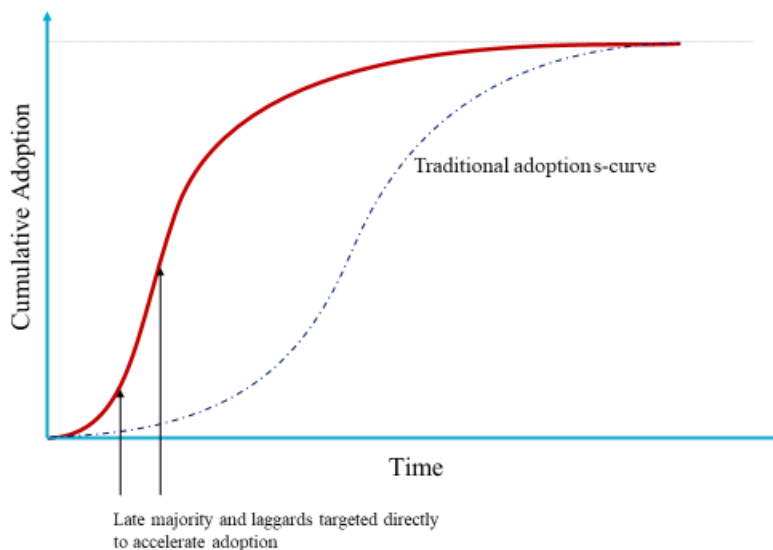


Figure 5. Progression of misinformed adoption to disruptive diffusion.

In the traditional adoption s-curve, early adopters and the early majority are afforded time to evaluate an innovation and develop subjective opinions through use and interaction with innovation experts. This slows adoption rate creates the possibility that a product will be unsuccessful and fail to achieve widespread diffusion. In the case of disruptive diffusion, a larger population of the late majority and laggards can be targeted directly by innovators and change agents to dramatically increase adoption rate and quickly accelerate it past the point of becoming self-sustaining.

We see two potential intervention points where decision makers, movers, and shakers may find insight into combating the information pollution epidemic. Firstly, is targeting the most likely consumers of misinformation: customers fitting the late majority and laggard archetypes. Improving the digital information literacy of the public may help to inoculate them against misinformation consumption, improving their resistance to influence by innovators and change agents selling a biased story. Secondly, attempting to imbue factual news and responsible reporting with some of the characteristics of misinformation which make it so attractive to casual consumers. Leveraging ease of access,

some level of entertainment value, and encouraging peer-to-peer sharing of factual information may help to get truthful information back on a positive trajectory to take back the information marketplace. Both strategies present challenges in design and implementation. Further research is required to help solve these difficult problems.

D. CONCLUSION

This paper embarked on a mission to analyze the phenomena of mis- and dis-information spread in digital media from a previously unexplored angle—one of business theory. It began with a comprehensive review of the literature characterizing mis- and dis-information and its impact on the digital information environment. Of particular importance was the fluid relationship between *misinformation* and *disinformation*, which complicates the precise definitions and results in a spectrum of information disorder.

We proceeded by outlining the central framework applied to this paper of Disruptive Innovation Theory, and how a business perspective may be useful in analyzing the way in which information is marketed to online consumers. Disruptive innovations are those which initially offer lower performance characteristics compared to mainstream products, but which differentiate themselves by offering simpler features at a lower price point. These products initially only appeal to a fringe group of consumers who are oversupplied by the performance or feature set offered by more expensive mainstream products. The process of diffusion results in an increasing adoption rate as the new product gains popularity and becomes set on a disruptive trajectory to replace products in the existing market. We also showed how the disruptive innovation framework has been applied in an array of fields to explain major market disruptions from seemingly niche startups.

The central point of this thesis is that misinformation and disinformation can indeed be thought of as disruptive innovations based on their characteristics and the way they have changed the information marketplace. The daunting volume and velocity of available information on the web, and even on a single social media platform, makes it easy to characterize users as consumers of information products for sale by a variety of vendors (news sources). Disinformation can be seen as a lower quality, fringe entrant into the

information marketplace, as it is designed to be misleading or counterfactual to the information or news products offered by traditional media corporations. Disinformation gains consumership because it offers features such as greater accessibility, greater entertainment value, and ease of consumption from a temporal and cognitive processing perspective. It is also able to achieve widespread diffusion because of its characteristics of compatibility with existing biases, ease of use, and highly adaptive, trialable nature, all of which contribute to greater relative advantage over incumbent news products. Information consumers (especially those who rely primarily on social media as their source of information) are naturally drawn to these characteristics to fit into their high speed lifestyles and demand for emotional engagement.

Finally, we outlined some potential mitigations and complications for combating misinformation as a disruptive technology. From a business perspective, brand and storefront reputation are key elements in building and maintaining a robust customer base. Social media platforms function as a virtual department store stocking news and information products from a variety of brands (sources). Shifting the focus to the channel through which users consume their information could place the responsibility on social media as the entity that earns a reputation for being a reliable and truthful source of information. In this way they could build a loyal customer base that can depend on responsible information consumption.

Not all recommendations from Disruptive Innovation Theory are readily applicable to the disruptive diffusion of disinformation. The efforts which require proactive action to stay ahead of disruptive technologies are too late to employ against an already polluted information landscape; other efforts are poorly suited to the product of factual information, and the valued incumbent business practices in question. One silver lining in this information arms race is that the information market may already be ripe for another disruption. One in which misinformation is overtaken by some other form or format of getting the news. Future work is necessary to capitalize on the fickle, shifting interests of the information-consuming public for factual news to regain the upper hand.

Defeating the mechanisms of diffusion is another way to get in front of disinformation before it can disrupt the information environment. Scholars agree that

research into *antidiffusion* solutions to prevent the spread of undesirable innovations is severely lacking. The new way of looking at characteristics of misinformation presented in this paper could be a useful starting point for future research into leveraging AI and machine learning to identify and block fake news before it can achieve widespread diffusion. Incentives (or disincentives) can also be a powerful way for change agents or governing bodies to interact directly with consumers and affect innovation adoption decisions. Finally, dedicated communication campaigns (marketing) have proven effective in a variety of fields to jump start the cycle of diffusion leading to widespread adoption. Further research is necessary to determine a strategy for effectively marketing good information to consumers while discouraging the consumption of misinformation.

The problem of misinformation in digital media is complex and has proven difficult to combat using traditional methods. Creative solutions are necessary to change the angle of attack for addressing disorder in the information environment—or, in other terms, the disruptive force of disinformation in the information marketplace. This paper has sought to develop a novel framework for analyzing mis- and dis-information from a perspective of business theory in order to understand the phenomenon more clearly using a unique angle. It is our hope that future research will be able to utilize this framework to identify potential pathways for the resurgence of truth.

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