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Demystifying Disruptive Innovation Phenomenon: Economic and Societal Impacts

Roula TABBAH¹, Alex MARITZ²

Abstract

This research aims to demystify disruptive innovation phenomena and its economic and societal impacts. The study is investigative in nature and highlights the gap between the current endorsed disruptive innovation theory and the actual impacts of the phenomena as evident in markets, industries, and societies. The study adopts a positivism philosophical approach and deductive reasoning that builds on secondary data from literature across multiple disciplines that have a strong correlation with the research topic and case study analysis of five market-leading organizations that have significantly impacted their respective industries. The paper presents a comprehensive definition and a conceptual framework that provides an appropriate illustration of the term disruptive innovation based on the conceptual findings. The findings reveal that despite challenging mainstream incumbents, disruptive innovation yields positive impacts on economies, consumers and societies. The research concludes by advocating further research to empirically test the conceptual framework and validate it through primary data and assess its generalizability.

Keywords: disruptive innovation, economic impact, societal impact, digital disruption, customer experience.

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Introduction

Christensen formally introduced disruptive Innovation theory in the 1990s. According to Christensen (Bower & Christensen, 1995; Christensen, 1997; Christensen, Raynor & McDonald, 2015), a disruptive innovation is a product or service that is of 'inferior performance' and 'lower quality' than that of incumbent companies, and that is offered to a niche market segment. This offering continues to improve with time until it reaches a level of quality and performance that is acceptable and fit for the majority of the mainstream consumers, and, as such, disrupts the incumbent firms.

The current disruptive innovation theory focuses solely on the negative impacts on incumbent firms and does not investigate why mainstream consumers shift from incumbent firms to the disruptors. As such, to demystify disruptive innovation, it is imperative first to revisit its impacts on incumbent firms (and associated ecosystems) and understand the needs of mainstream consumers. Second, a demystified understanding of the disruptive innovation phenomena should account for its effects on the economy and society.

Therefore, the main research question that guides this research is: What constitutes a demystified understanding of disruptive innovation phenomena and its economic and societal impacts? The paper addresses the following set of sub-questions: (1) What a demystified understanding of disruptive innovation phenomena, and its effects on incumbent firms? (2) Why do mainstream consumers adopt disruptive innovations? (3) What is the role of technology in deriving disruptive innovations? (4) How does disruptive innovation prompt economic growth? (5) How does disruptive innovation shape societies?

We commence with a background of disruptive innovation theory and terminology, followed by a systematic literature review. We introduce a case study approach to provide practical and implementation contexts, followed by the delineation of terminology and a conceptual framework of disruptive innovation.

Background

Evolution of Disruptive Innovation Theory

Disruptive innovation is rooted in economics as evident through the technological waves of Kondratieff in 1925, and Creative Destruction technologies of Schumpeter in 1942. Per se, disruptive innovation was initially the domain of economists who focused primarily on the analysis of economic growth and exploitation of wealth through the creation of solutions that enhance the quality of life (Kondratieff, 1925; Schumpeter, 1942). Disruptive innovation as a business concept was introduced by Christensen in the 1990s. Christensen (Bower & Christensen, 1995; Christensen, 1997; Christensen *et al.*, 2015) through his observation of particular industries

established that disruptive innovation is a timely process through which market outsiders target a niche market segment with a low-quality and low-priced product. Then, through continuous improvements and enhancements, the market outsiders end up disrupting the industry and replacing the main incumbent firms. Christensen *et al.* (2015) disruptive innovation theory is as such based on two footholds, low-end markets, and new markets.

First, in the low-end markets, Christensen (1995) indicates that this type of product or service has low-performance standards than the one that established incumbents in the industry provide. The innovator starts slowly with a niche market and capitalizes on a product or service that is affordable to the low-end consumers who accept the bargain on quality. However, that niche market grows through incremental technology improvements to eventually deliver the same level of product or service as the established ones, before disrupting the incumbent firms and overtaking the market (Christensen, Anthony & Roth, 2004).

Second, a new-market whereby technological innovations create a market that did not exist before by turning non-consumers into consumers (Christensen *et al.*, 2015).

In the meantime, economists had an earnest desire to carry on and further previous research as evident through the findings of the economist Carlota Perez in 2010. Perez introduced the term ‘techno-economic paradigm shifts’ to highlight that innovation, technical surges, and institutional changes are strongly correlated with economic development. Drawing to more contemporary times, it is clear that disruptive innovation became less under the academic discipline and more under the business industry domain that continued to explore the term and its implication on the business setting. As such, to the business industry domain, disruptive innovation became disruptive in its terminology. In 2013 McQuivey, introduced the term digital disruption as the aggressive use of new digital technologies and incorporating them into newly designed business models that significantly enhance customer experiences at low prices.

There were very few attempts to build on Christensen’s disruptive innovation theory from the academic perspective. It was not until 2014, when Saba illustrated that Christensen’s theory is not comprehensive as it targets disruption from below only, that is, just focusing on a low priced, low-quality tolerant niche market that trades quality for the price. Seba (2014) added two further dimensions to Christensen’s theory; ‘Disruption from Above’, and ‘Big Bang Disruption’. Disruption from above is disruption caused by a product that is far superior to the ones offered by the incumbent companies; nevertheless, it comes at a substantial cost to consumers. However, by coming down in price to a match incumbent market offering, the product disrupts the market from above (Seba, 2014). Big Bang Disruption, on the other hand, is where the new product is more capable and lower priced than incumbent market offerings.

A more elaborated approach to Big Bang disruption was emphasized by Downes and Nunes in 2014 who referenced the term ‘Big Bang Disruption’ to digital innovations that attack the existing established incumbents in the market from the top, bottom and sides. By relying on technology, disruptors provide cheaper alternatives that have the potential for extraordinary growth, and as such qualify to be a “devastating innovation” (Downes & Nunes, 2014: 6).

In 2014 Paetz made a distinction in that disruptive innovation creates a new dimension of value that is not available in the existing established product or business model. According to Paetz (2014, p. 6), “These benefits typically include simplicity, convenience, accessibility, significantly lower price, or ease of use.” Thus, Paetz attempted for the first time to add a few dimensions that customers would associate with ‘value’ when describing disruptive innovation.

Methodology

The research philosophy is based on positivism given the nature of this study and objective to develop a conceptual framework to be used as a hypothesis for future possible empirical research. Since the objective of the research is to find a holistic and demystified explanation to disruptive innovation phenomena, and examine it from various aspects - incumbent firms, mainstream consumers, economic, and society - indicates that this is investigative research and that a deductive approach to gain knowledge on the disruptive innovation phenomena is ideal.

Yin (2014: 18) emphasizes that case study is ideal to investigate a “contemporary phenomena in depth and within its real-world context, especially when the boundaries between phenomena and context may not be evident.” As such, case study has been identified as an ideal research technique to complement the literature review in demystifying disruptive innovation.

Literature Review

Disruptive Technologies

It is inevitable to discuss innovation in isolation of technology. Whitehead (1861 – 1947) is often famously quoted for his saying “invention of a method of invention”. The confluence of disruptive technologies such as Big Data, Artificial Intelligence, Blockchain, 3D Printing, and Internet of Things, pose a wave of change that has the potential of transforming economic structures, business models, companies and jobs. Those technologies can be classified as General-Purpose Technologies (David, 1976; Rosenberg, 1982; Bresnahan & Trajtenberg, 1995) that can be deployed across multiple sectors, and that they can derive other

innovations. Just as Henry Ford's mechanical assembly line led to increased wages among Ford's factory workers, increased efficiency, higher production, and cheaper cars (Perez, 2010), general-purpose technologies could eventually prove to be Ford's modern assembly line.

The Role of Customers in Disruptive Innovation

In traditional settings, organizations offer their value propositions to specific market segments based on identified socio-economic profiles. This approach reveals that consumers have been perceived for years by mainstream organizations as mere recipients of their 'value propositions' (Osterwalder, Pigneur, Bernarda & Smith, 2014; Anderson, Narus & Van Rossum, 2006; Seppanen & Laukkanen, 2015; Ayvari & Jyrama, 2016; Sheehan & Bruni-Bossio, 2015).

In disruptive innovation theory, Christensen (Bower & Christensen, 1995; Christensen 1997; Christensen *et al.*, 2015) highlights that incumbent firms are disrupted by innovators who present the market with alternative value propositions. Christensen did not address 'what' value consumers are actually seeking nor fully answered 'why' the majority of consumers adopt those disruptors.

In current times, due to the advancement of digital technologies such as Big Data, Machine Learning and Artificial Intelligence organizations are in a better position to acquire more data about the type of job (Christensen, Duncan, Dillon & Hall, 2016) and experience that the customer is after directly from the customers themselves (Gupta & Malhotra, 2013; Foroudi, Melewar & Gupta, 2014) and position their value propositions in the market in the form of a unique product or service. Therefore, organizations' role changes to value facilitators, while consumers assume the role of value creators (Pralhad & Ramaswamy, 2004). Thus, creating opportunities to innovate and disrupt in areas where there are white spaces or market opportunities that are not accounted for by incumbent firms (Maynes & Rawson, 2016; Maletz & Nohria, 2001).

The Economic Impacts of Disruptive Innovation

As established earlier originally innovation is rooted in the economic field. The notion of waves or changes that disrupt the commercial setting was reflected in the works of the British economist, Mancur Olson (1982; 2000). Olson maintained that a static economy yields a zero-sum game. Per se, if societies remain stable and do not undergo through technological shifts that break the dominant economic monopolies, the stability could lead to economic obscurity. Only by breaking this static that societies can become economically prosperous (Olson, 2000).

Perez (2010: 199) provides a detailed, comprehensive description of the successive economic waves and their disruptive impacts in that "each great surge of development involves a turbulent process of diffusion and assimilation. The major incumbent industries are replaced as engines of growth by new emerging

ones; the established technologies and the prevailing paradigm are made obsolete and transformed by the new ones; many of the working and management skills that had been successful in the past become outdated and inefficient demanding unlearning, learning and relearning processes. Such changes in the economy are very disturbing of the social status-quo and have each time accompanied the explosive growth of new wealth with strong polarising trends in the income distribution. These and other imbalances and tensions, including a major financial bubble and its collapse, result from the technological upheaval and end up creating conditions that require an equally deep transformation of the whole institutional framework. It is only when this is achieved and the enabling context is in place that the full wealth creating potential of each revolution can be deployed.”

According to Fagerberg (1994: 1149), some technologies can be considered as “public goods”, because of the fact that once invented they become available for everyone to benefit from them. In this sense, states Perez (2010: 190) as those technologies “overlap and generate externalities and markets for each other”, they prompt more growth and development. So, with the transformation potential offered through those technologies to “rejuvenate mature industries and open new innovation trajectories” that “rejuvenate all the other industries and activities” (Perez, 2010: 190), the effects on the economy and global growth could be assumed in trillions of dollars per annum (Manyika, Chui, Bughin, Dobbs, Bisson & Marrs, 2013).

Case Studies

The selected Organizations that are part of the case study of this research are rich in data that contribute to the understanding of disruptive innovation in real life contexts. Due to their disruptive impact on their respective industries, and their leading market position, each of these organizations could provide data that could enrich the understanding of the phenomena of disruptive innovation in a real-world context. *Table 1* illustrates the findings of the case study analysis, providing an overview of each organization within contexts of description, industry, technology, consumer and economic and societal impacts.

Table 1: Findings of the case study analysis

Case	Description	Industry	Technology	Consumer	Economic and Societal impacts
Spotify	Online music streaming service	Disruptive to the online music streaming industry	Online presence that relies on big data and machine learning to create a customized and personalized customer experience	Accessibility - legal unlimited music anytime and anywhere Convenience - simple and cheap Personalization - enhanced customer experience through customization, recommendation service and sharing playlists	Instead of piracy, a legal content that injects more revenue into the industry Helps artists & publishers to publish and promote their songs
Netflix	Online television streaming service	Disruptive to home videos rentals and television	Online presence that relies on big data and machine learning to create a customized and personalized customer experience	Accessibility - legal unlimited television, anytime and anywhere on a number of devices Convenience - simple to use, cheap and allows binge watching Personalization - enhanced customer experience through customization, recommendation service	Instead of piracy, a legal content that injects more revenue into the industry
Airbnb	Peer-to-peer accommodation service	Disruptive to the tourism accommodation & hotels	Online presence that allows hosts and guests to communicate, share trust, book accommodation, and secure payment	Accessibility - allows guests to accommodate in a large number of cities Convenience – simple, practical and convenient to both hosts and guests Personalization - customers can personally select their ideal type of accommodation and have a more authentic local experience	Enables hosts to make use of their spaces to generate income Allows more disbursement of income from the touristic areas and hotels to other areas in the economy

Stitch Fix, Inc	Online personal styling retail service	Disruptive to the traditional physical and online retail model	Online presence that relies on big data and machine learning combined with human touch for customized, and personalized customer experience	Accessibility - allows customers apparel, shoes, and accessories that are personally picked for them by a stylist Convenience - simple, practical, time saving, customized per the customers budget, taste and preferences and is home delivered Personalization - personalized one to one relationship with a stylist	Allows designers to promote their designs and generate income Provides Stitch Fix employees with work flexibility to choose their work location and working hours through the incorporation of Artificial Intelligence
Uber	Peer-to-peer ridesharing service	Disruptive to taxis	Online presence that connects drivers and riders, provides interactive feedback, and secures payment	Accessibility - customer can hail a ride anytime and anywhere Convenience – simple and practical application that connects drivers and riders Personalization - enhanced customer experience through a nice car per Uber's requirements, besides, riders can select their ideal type of ride per their budget	Allows more disbursement of income among individuals Enables individuals to use their car to generate income Drivers can work their own hours and select their own areas to work drive in to work

Source: compiled by the author

Discussion

The disruptive innovation background review revealed gaps in academic literature that contributed to the evolution of disruptive innovation. The gaps are so numerous that many analysts and practitioners tried to bridge the gap by bringing their elaboration on the topic to the public, therefore, shifting it from the academic domain to analysts and practitioners (Perez, 2010; McQuivey, 2013; Downes & Nunes, 2014).

Furthermore, such phenomena that have multiple implications should be considered from a broader perspective than a limited focus on one area or discipline of study. It is essential as such, to investigate the effects of such powerful phenomena from other aspects such as economic, consumer, and incumbents and industry, besides individual and societal impacts besides assessing the role of technology in deriving disruptive innovation.

Consumers

According to Christensen's disruptive innovation theory (Bower & Christensen, 1995; Christensen, 1997; Christensen *et al.*, 2015), disruptive innovations introduce a different value proposition to the ones offered by incumbents namely cheaper, and more convenient. However, Christensen in his theory failed to include customers and what value propositions and jobs they are after. Therefore, to provide a more concise discussion, the following question should be addressed; why do mainstream consumers shift from incumbents to disruptors?

Throughout the literature review and case study analysis, it was noted that three main factors stood out as to why consumers adopt a disruptive innovation.

Accessibility – the replacement of old technologies by new ones (Kondratieff 1925; Schumpeter, 1942) creates more accessibility opportunities for consumers through unlimited, anytime and anywhere access (case study findings of Spotify, Netflix, Airbnb, Stitch Fix, and Uber).

Personalization - enhanced customer experience, and value to customers (Schumpeter, 1942; McQuivey, 2013; Paetz, 2014; Gupta & Malhotra, 2013; Foroudi *et al.*, 2013) to satisfy their jobs and be co-creators throughout the process (Holbrook, 1999; Ayyari & Jyrama, 2016; case study findings of Spotify, Netflix, Airbnb, Stitch Fix and Uber).

Convenience – Christensen (Bower & Christensen, 1995; Christensen, 1997; Christensen *et al.*, 2016) refers to convenience in his theory as a cheap, simple, and more convenient product or service attributes. While Christensen mostly links convenience to low-end markets, the case study analysis that is part of this research reveals that convenience is appreciated by consumers of various budgets and is not limited to low-end markets. Furthermore, Paetz (2014) associates convenience with the availability of other alternatives that can better fulfill the customer's job.

In this respect, consumers can be assessed as the principal winners of disruptive innovations. Technology-based innovations facilitate better fulfillment of the customers' jobs and experiences, through offerings that the market did not expect, and in ways that have not been precedent (Foroudi *et al.*, 2014; Gupta & Malhotra, 2013).

Incumbent Firms

While disruptive innovation can bring desirable impacts to some firms, it could have massive destructive effects on others. In this sense, Yu and Hang (2010: 439) contradicted Christensen and advocated that disruptive innovation is a "relative phenomenon".

Firms and incumbents that leverage the use of disruptive technology, and innovate across their products, services, and especially business models can benefit from growth, expansion, and lower operating costs, such as, savings in labor cost, and increased labor efficiency.

On the other hand, the firms and incumbents that fail to leverage technology due to massive sunk costs, and rigid business models could be displaced by disruptive innovation (Bower & Christensen, 1995; Christensen, 1997; Christensen *et al.*, 2015). Such an event renders great damage on the company and its value, stakeholder investment, and with the possible displacement of human capital that is employed in these firms.

Societal Impacts

Technology, which fuels disruptive innovation, is assessed with varying desirable and undesirable impact. Economist, John Maynard Keynes (1930), transcribed on the impact of advancing technology, that it advances productivity, reduces the cost of goods, and drastically reduces the amount of needed labour.

With regards to the workforce, technological disruptions have the potential to redefine jobs, eliminate others, and create new ones that require up skill and new knowledge (Brynjolfsson & McAfee, 2014; Perez, 2010).

Nevertheless, Perez (2010, p. 199) inferred that "only when transformation of the whole institutional framework is in place that the full wealth-creating potential of each revolution can be deployed". This means that socioeconomic factors need to adapt and resolve imbalances in order to fully adopt the changes. Therefore, it is crucial to look beyond the temporary phase, and critically assess what advantages will be reflected on individuals and societies as a result of such disruption especially that many economists agree on the long-term advantages to societies (Kondratieff, 1925; Schumpeter, 1942; Perez, 2010).

First, is the rise in the need for other types of jobs such as developers, programmers, analysts and creative jobs (Goldin & Katz, 2009; Trajtenberg, 2016). Second, disruptive technologies empower new work arrangements such

as remote working and freelance (Chui, 2015). This allows individuals with more flexibility towards family, caregiving, and other social commitments (Chui, 2015).

In the same token, disruptive technologies could give rise to new job families that are beneficial and meaningful for societies and humanity (Kai Fu, 2018).

Finally, while disruptive innovation has displaced some jobs or decreased the income earning potential of others, it has also created opportunities for the creation of different jobs and more disbursement of income to other individuals such as Uber drivers, and Airbnb hosts for instance. As such, it is assessed that overall, individuals and subsequently societies benefit from the introduction of disruptive innovations and technologies. The case study analysis findings reveal that societies will benefit from peer-to-peer economies, restructures employment towards more flexible and fulfilling roles that eventually enhance the societies' welfare.

Economic Impacts

The American economist, Adrian Stoian (2012) summarizes two things that economists agree upon. The first is that economic growth contributes to dropping the poverty rate, and the second is that economic growth is the outcome of innovation and productivity growth.

It has been established in this research that disruptive innovation brings positive impacts to the economy and in particular increased productivity, economic growth and more efficiency. According to Brynjolfsson and McAfee (2014) despite attempts to capture this growth, the market value cannot be captured in full because of free products and services. Therefore, while it is challenging to capture its actual economic value, still the degree of change in the economy is massive.

Nevertheless, disruptive innovation is a transformational process that comes with multiple challenges. According to economists (Kondratieff, 1925; Schumpeter, 1942; Perez, 2010), there have been some technological waves over the last century that left their impact on growth and prosperity. Despite the desirable effects on the economy and consumers, there have been significant challenges and impact on incumbent firms and employment. The takeout from the previous technological waves that occurred during history is that societies eventually transform and adapt, leading in due course for the full benefit of the change to be realized.

Table 2 provides a summary of the desirable and undesirable effects of disruptive innovation on the economy, incumbents, consumers, and individuals and societies.

Table 2: The desirable and undesirable effects of disruptive innovation

Domain	Desirable Effects	Undesirable Effects
Economy	Economic Growth	None
Incumbents and industry	If incumbents and industry adopt disruptive technologies: Increased profits Increased productivity Increased efficiency with less cost Increased utilization of human capital towards meaningful purposes	If incumbents and industry fail to adopt disruptive technologies: Obsolescence Displaced employees Loss of shareholder value
Customers	Better product and service alternatives Enhanced customer experiences, job fulfilment and co-creation	None
Individuals and Societies	Peer-to-peer economies Transforms employment Benefits societies by shifting jobs towards societies' welfare	Temporary challenges until transformation is achieved: Displacement of labour Need to retrain and up skill

Source: compiled by the author

Proposed Definition

Noting that the terminology that is associated with disruptive innovation phenomena is continually changing and evolving, it is important to develop a description and definition for the phenomena that focuses on the features of the theory rather than being bound by a specific technology, type of market, dimension or scale of disruption.

By clustering the common characteristics that scholars, analysts, and practitioners find in common from their analysis of the phenomena, the literature review across multiple disciplines, and the case study analysis findings, this thesis assesses that a representative descriptive definition that helps to demystify disruptive innovation and bridge the gap among all stakeholders is: Disruptive innovation is a product or a service offering with a business model that is based on a unique value proposition to enhance customer experiences and co-creation expectations through the use of advanced technology, and that causes disruptive challenges among incumbents while improving the industry setting, and yielding positive economic and societal development.

Proposed Conceptual Framework

Based on the extensive and holistic research it is concluded that a demystified understanding of disruptive innovation cannot be achieved without including all relevant aspects that are impacted by the phenomena. The proposed below conceptual framework provides a comprehensive understanding of the disruptive innovation phenomena and all its impacts.

Figure 1 illustrates the proposed conceptual framework for a demystified understanding of disruptive innovation.

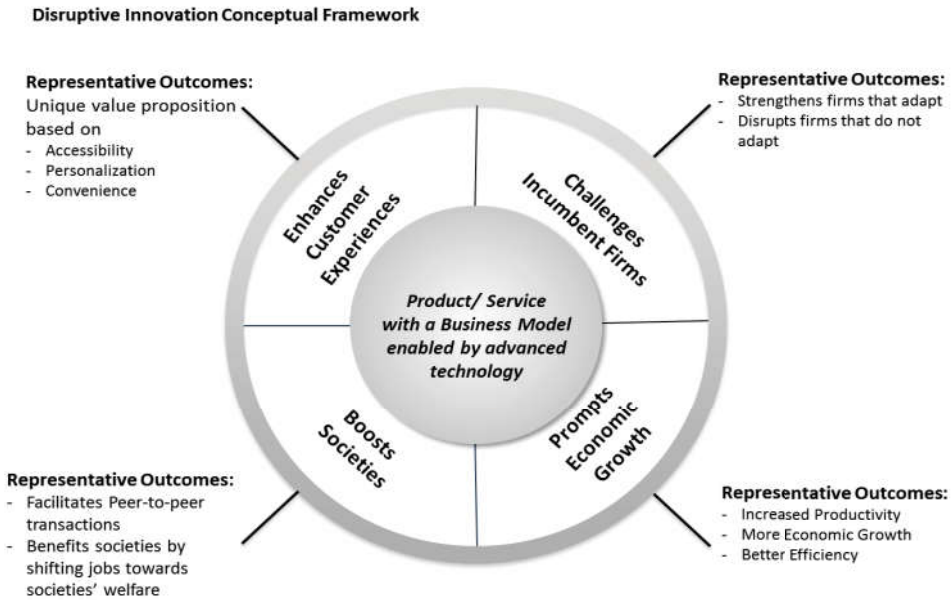


Figure 1: Disruptive Innovation Conceptual Framework
 Source: compiled by the author; adopted from (Schumpeter 1942; Perez, 2010; McQuivey, 2013; Christensen et al. 2016; Paetz, 2014)

The conceptual framework recognizes that the advancement in technology is the primary driver that empowers disruptive innovations. As such, by utilizing advanced technology, companies can offer a product or a service through an innovative business model to:

- Enhance customer experiences - disruptive innovation yields most of its rewards on consumers by providing them with a unique value proposition that targets three major dimensions among others: accessibility, personalization, and convenience.
- Challenge the incumbent firms and industry - the major challenge is faced by incumbents. New and disruptive technological capabilities can render major incumbents obsolete if they are not able to adapt to the change.

Nevertheless, the incumbents that can endorse new technology, and modify their business model, could sustain benefits in terms of growth, productivity and efficiency.

- Prompt economic growth – disruptive innovation results in positive economic impacts in the form of increased productivity, economic growth, and more efficiency to mention but a few, yielding eventually to economic growth and diminished poverty.
- Boosts societies - disruptive innovation impact expands to include individuals and societies. Some of the business models of the disruptive companies offer opportunities for individuals to engage in peer-to-peer transactions and a sharing economy. Whereas other disruptive companies allow individuals with opportunities to earn the right revenue for their talents, besides providing work flexibility arrangements for individuals with families, personal obligations or even have their own work preferences.

However, significant technological changes are accompanied by temporary challenges to existing employment setting, until socioeconomic factors eventually stabilize, leading to the creation of new jobs, and the up skill of the current workforce. Ultimately, societies feel the impact as people alter their attention to jobs that contribute to society's welfare such as caring and teaching roles.

Conclusion

By providing practical inferences from organization case studies, coupled by a literature review this paper provides a conceptual definition and framework of disruptive innovation. The discussion further placed outcomes on organizations and consumers, particularly from economic and societal perspectives. Cognizance is taken of the technological era governing technological and disruptive change, yet this paper proposes such change in realistic economic and societal contexts. Hence, disruptive innovation cannot be measured or studies in isolation, but within parameters and contexts of surrounding ecosystem participants. Our definition is proposed from organizational and positivism perspectives, with effects on the broader society. Despite a positivism approach, we are mindful of possible negative associations, together with technology not always being a catalyst for disruption. The findings however reveal that despite challenging mainstream incumbents, disruptive innovation yields positive impacts on economies, consumers and societies. As limitations in scope and resources governed the research, it is advocated for further future empirical research to validate the conceptual framework. Future research can use the proposed definition and the conceptual framework as the base hypothesis towards an empirical study that can test the validity and generalizability of this research.

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