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The Governance of Global Value Chains: Unresolved Human Rights, Environmental and Ethical Dilemmas in the Apple Supply Chain

Thomas Clarke[1] · Martijn Boersma[1]

Abstract The continued advance of global value chains as the mode of production for an increasing number of goods and services has impacted considerably on the economies and societies both of the developed world and the emerging economies. Although there have been many efforts at reform there is evidence of unresolved dilemmas of human rights, environmental issues and ethical dilemmas in the operation of the global value chain. This paper focuses on the role and performance of Apple Inc in the global value chain in Asia. Apple is the most successful corporation on earth measured in financial terms and yet has failed to find a solution to recurrent employment and environmental problems occurring in plants manufacturing Apple components. This analysis informs the current theoretical debate on the development of the global value chain and the continuing institutional failure that leaves employees vulnerable and the environment neglected.

Keywords Global value chain · Institutional failure · Exploitation · Ethical dilemmas

Introduction

The continued advance of global value chains as the mode of production for an increasing number of goods and services has impacted considerably on the economies and societies both of the developed world and the emerging economies. While the globalisation of production in complex, interconnected supply chains has brought employment and economic growth to many developing economies, particularly in Asia, it is also associated with exploitative employment relations, environmental irresponsibility and recurrent ethical dilemmas. Meanwhile, the impact of the transfer of very large amounts of manufacturing and services work from the advanced industrial countries to the emerging economies at the periphery, has often meant declining wages and conditions, and increasingly employment insecurity for the workers of the advanced countries (Davis 2013; Ferner et al. 2012; Kalleberg 2009; Reinecke 2010). This analysis examines how the further development of global value chains initiated by large multinational corporations has compounded and intensified the accumulation process and extended exploitation internationally.

Although there have been many campaigns to improve workers' rights and employment conditions in the plants operating within global value chains in the emerging economies, and multinational corporations have been reminded of their responsibilities and often signed up to corporate and environmental responsibility principles, there remain widespread abuses, and it appears that there is significant institutional failure (Bartley 2007; Locke 2013; Levy 2008; Bondy et al. 2008; Mayer and Gereffi 2010). This institutional failure is reflected in the lack of collective bargaining rights, the weaknesses of international employment framework principles in practice, the lack of traction of social movements except in extreme situations, and the failure of states to remedy known problems with governments committed to investment and economic growth at all costs (Fransen 2011).

This paper examines the unresolved dilemmas that the most successful corporation in the world Apple Inc faces in

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Asia as an acute example of the larger issue of business ethics and integrity in the operations of global value chains. This analysis is placed in the context of the theorization of the global value chain (Gereffi et al. 2005; Buckley and Ghauri 2004; Mudambi 2007; Brammer et al. 2011; Buckley and Strange 2015). Theoretically the paper focuses on a number of key questions. First, what are the values that Apple is committed to? does Apple have a clear and unambiguous commitment to social responsibility? and how has this developed over time? Secondly what institutional and stakeholder pressures does Apple experience, specifically concerning the social responsibilities of the firm, and how do these pressures shape the values of Apple? The third question revolves around legitimacy: how institutional and stakeholder pressures as well as Apple's responses to them shape the legitimacy of the company? This leads to an analysis of whether the responses of Apple to human rights, environmental and ethical concerns in its supply chain concerns are adequate and effective, and will suggest ways in which responses can potentially be improved.

Broader issues the paper will examine include the growing literature concerning the possibility of sustainable supply chain management: how is sustainable supply chain management defined and what theoretical advances have been made? Secondly, the disaggregation of global supply and value chains will be studied: what are the consequences of increased international interdependence between actors involved in global production and what does this mean for Apple as the richest and one of the most powerful companies in the world? Finally, the many incidents that have occurred in the factories of Apple's component suppliers since 2006 will be investigated: as the events unfolded, how did these incidents come to light, how did Apple respond and which issues are left unresolved? Finally, the paper will conclude with a critical theoretical discussion of the Apple experience.

Apple Inc: An Iconic Corporation

Apple Inc. is the richest and most iconic corporation in the world. As the world's most valuable brand early in 2015 at $247 billion, Apple was the first US corporation in history to reach a market capitalisation of $700 billion, almost twice the market capitalisation of Google and Microsoft combined (*Fortune* 10 February 2015; *Guardian* 28 May 2015). In the final quarter of 2014 with the launch of the iPhone 6, Apple made profits of $18 billion, the largest quarterly return of any US corporation ever. By 2015, Apple had accumulated liquid assets of $195.5 billion much of it in the Nevada-based asset management corporation Braeburn capital established by Apple executives,

and Apple Inc is well on the way to becoming one of the world's best capitalised asset managers.

All this wealth has rapidly accumulated following Steve Jobs' return in 1997. Projecting the newly revived Apple brand and products as not only the most advanced electronic devices but also the most elegant in design: Apple products are more than electronic goods it was implied—they are life-style transforming and enhancing objects. This imagery of attaining creative autonomy through consumption reached celestial heights in Apple's 1997 advertising campaign, which adapted IBM's slogan 'Think' to 'Think Different'. In its marketing efforts, Apple did not blush at using images of Albert Einstein, Gandhi, the Dalai Lama, Miles Davis, Allen Ginsberg, Che Guevara, John Lennon and Yoko Ono, Nelson Mandela, Martin Luther King Jr. and Barack Obama (none of whom have any known association with, or affection for, electronic consumer goods, with the exception of President Obama, who apparently prefers a Blackberry). Each new Apple product is accompanied by rising crescendos of excitement at their announcement and long queues outside every Apple store when launched, indicating that brand loyalty has become a faith that embraces millions.

Yet while Apple was enjoying a meteoric rise as the world's most iconic business, increasing evidence was emerging of the tragic consequences of unresolved human rights, environmental and ethical dilemmas in the Apple supply chain in China. In a stark illustration of how extreme inequality continues to disfigure the operation of global value chains, it appears that the beauty of Apple's brilliant design and highly polished products ultimately rests upon the suffering of young workers in electronic sweatshops where human rights, labour standards, environmental safety and business integrity are routinely ignored. It is the case that since these abuses in its supply chain were first brought to Apple's attention in 2006, the company has made continuous efforts to eradicate problems and enforce higher standards in all of its suppliers.

However, there is much recent evidence to suggest that the successive interventions of Apple to advance audit and management systems and improve standards in suppliers' factories are too often overwhelmed by the intensity of the production regimes being enforced. There is evidence of bleak working conditions throughout much of the electronics supply chain in Asia including at factories manufacturing products for Dell, Hewlett–Packard, IBM, Lenovo, Motorola, Nokia, Sony, Toshiba and others (Barboza and Duhigg 2012). However, as the present market leader, and currently the richest and most successful consumer electronics company in the world, Apple has a particular responsibility to ensure the integrity and responsibility of its value chain.

Global Value Chain Theory

Supply chain management refers to the control of operations beyond core business activities (Svensson 2007; Carter and Rogers 2008; Van Tulder et al. 2009; Carter and Easton 2011). Alternatively, the term value chain is used, which "…describes the full range of activities which are required to bring a product or service from conception, through the intermediary phase of production, delivery to final consumers, and final disposal after use" (Kaplinsky and Morris 2001, p. 4). Sustainable management of supply chains concerns "…the strategic, transparent integration and achievement of an organization's social, environmental, and economic goals in the systemic coordination of key inter-organisational business processes for improving the long-term economic performance of the individual company and its supply chains" (Carter and Rogers 2008, p. 364). It is also defined as "…the management of material and information flows as well as cooperation among companies along the supply chain while taking goals from all three dimensions of sustainable development, i.e. economic, environmental and social, and stakeholder requirements into account" (Seuring et al. 2008, p. 1545). Lindgreen et al. (2009: p. XV) contend that sustainable supply chain management "…remains an uncertain concept with few absolutes. The social and environmental issues that organizations should address can easily be interpreted as including virtually everything". Indeed, existing literature describes initiatives dealing with diversity, human rights, safety, philanthropy, community and environment (Kleindorfer et al. 2005; Campbell 2006; Srivastava 2007; Mueller et al. 2009; Sarkis et al. 2011; Carter and Easton 2011).

While Marxian analysis traditionally has regarded the international manoeuvres of multinational corporations as part of the globalisation and intensification of exploitation, in recent years, focus has shifted towards more specific issues "…related to labour and workplace issues, such as low wages, sweatshops, labour practices, and working conditions" (Brammer et al. 2011, p. 17). Companies such as Apple, Google, Nike, GAP, Adidas and Hewlett Packard have had to deal with governance gaps in global operations (Brenkert 2009; Frost and Burnett 2007; Locke et al. 2009; Locke et al. 2007b; Mayer and Gereffi 2010). As a result, private regulation in the form of codes of conduct has emerged to fill this gap (Bartley 2007; Locke et al. 2007a). Research into this subject is "…in basic agreement that the efforts to implement corporate codes of conduct are often ineffective" (Chan and Siu 2010, p. 167). First of all, a supplier code of conduct does not equal commitment (Bondy et al. 2008), while in addition there has been "…little progress in improving labour standards through

such [private] regulation" (Wells 2007, p. 53), and the codes are "…not producing the large and sustained improvements in workplace conditions that many had hoped" (Locke et al. 2007b, p. 21). And although codes of conduct can potentially lead to better sustainability performance along the supply chain, monitoring remains important as cost or time pressures can lead to suppliers rigging numbers to obscure performance (Jackson and Apostolakou 2010).

Based on literature reviews, Brammer et al. note that "…supply chain research is in its infancy, relative to other fields in business and management research, and thus is characterised by a relative absence of (1) theoretically informed research and (2) a large amount of descriptive empirical research" (Brammer et al. 2011, p. 9). Connelly et al. (2013) offer a basis for further theoretical supply chain research by discussing the application of six prominent organisational theories (real options theory, internationalisation theory, organisational economics, resource dependence theory, social network theory and institutional theory), which "…range in emphasis from primarily endogenous to primarily exogenous influences" (p. 227). Other distinctive features of these theories are their foundational components, the motivations and concerns they emphasise, and the key insights for research they generate. This paper will continue to build on insights provided by institutional theory and will furthermore be informed by stakeholder theory and legitimacy theory. We argue that these theories are apt for the following reasons. First, institutional theory can explain how formal and informal institutions influence decision-making in supply and value chains; second, stakeholder theory considers the influence of stakeholder groups and describes responsibilities of firms towards them, and third, legitimacy theory describes motivations and reactions to both institutional and stakeholder pressures.

Institutional theory emphasises firm decisions based on the influence of norms and values expressed by formal and informal institutions. Formal institutions, for example, include governments and regulatory bodies, firms and non-governmental organisations (NGOs), while informal institutions include social norms and values. Both institutions manifest everywhere along the supply chain and apply normative pressures onto firms. There are several ways in which formal institutions can influence firms in making supply chain choices. For example, public policy can result in companies having additional responsibilities towards employees or concerning the environment. This could result in companies complying with regulation or by them moving production elsewhere. Conversely, firms can be enticed to make supply chain decisions based on flexible labour or environmental laws. Informal institutions also influence supply chain decisions, for example, through

cultural norms concerning social standards and the environment. Research shows that understanding and successfully managing pressures exerted by informal institutions are crucial in making appropriate sourcing decisions (Lai et al. 2006).

One of the prominent conceptions of institutional theory is the idea that organisations working in the same area are likely to adopt comparable organisational forms and practices as the organisations are exposed to similar social pressures and stakeholder expectations. (DiMaggio and Powell 1983). From a supply and value chain perspective, companies can adopt approaches of other companies in their sector or geographical regions. Yet, mimicry provides no lasting solution, as formal and informal institutional pressures will never be entirely similar in global supply chains, which span different industries and countries. Apple as the market leader is ideally equipped to lead by example, instead of emulating the poor example of industrial peers. Institutional theory can help explain sustainable supply chain management in a global context and is foreshadowed to become more prominent in related research (Ni et al. 2010).

Large multinational firms increasingly focus on corporate social responsibility (CSR) in supply chains following pressure from stakeholders (Andersen and Skjoett-Larsen 2009). In a broad sense, stakeholders are defined as follows: "any identifiable group or individual who can affect the achievement of an organisation's objectives, or who is affected by the achievement of an organisation's objectives" (Freeman and Reed 1983, p. 91). What is fundamental to the stakeholder view is that companies have responsibilities towards a wide range of participants who collectively contribute to the wealth generation of the company. This concept forms the basis of stakeholder theory and CSR (Donaldson and Preston 1995; Freeman and Reed 1983). Stakeholder theory describes how firms can prioritise and manage interactions with various groups. As circumstances become increasingly complex, stakeholder identification, engagement, demands and the potential for desirable outcomes become increasingly important and challenging (Stone and Brush 1996; Matos and Hall 2007). This is due to stakeholders groups becoming more heterogeneous (Freeman and Evan 1991; Harrison and Freeman 1999) and associated rights, claims or interests being conflicting or difficult to reconcile (Hall and Vredenburg 2003). In addition, these pressures are accompanied by varying degrees of legitimacy, urgency and power (Mitchell et al. 1997), which affect "…the degree to which managers give priority to competing stakeholder claims" (Agle et al. 1999, p. 507). The relative infancy of sustainable supply chain management adds to the difficulty of accomplishing this task (Parmigiani et al. 2011).

Stakeholder theory manifests in descriptive and operational terms, specifically through management and engagement of different groups, yet it has foundations in the view stakeholder engagement is based on moral principles (Donaldson and Preston 1995; Clarke 1998). Institutional theory similarly has a values basis. However, the views on what the values should be differs, as each institutional or stakeholder perspective potentially comes with a distinctive outlook on the "correct" way of doing things, which may result in tensions and conflicts in the value chain. These tensions are "characterized by contestation as well as collaboration among multiple actors, including firms, state and international agencies, NGOs, and industry associations, each with their own interests and agendas" (Levy 2008, p. 943). Companies facing supply and value chain pressures need to establish or reaffirm organisational legitimacy, which is a concept central in institutional theory (DiMaggio and Powell 1983). Given the pressures of stakeholder groups, organisational legitimacy can also be attained though appropriate stakeholder management and engagement. In short, both institutional and stakeholder theories have foundations and may explain the endowment of organisational legitimacy.

The process by which values are determined and organisational legitimacy is achieved is dynamic, given the heterogeneous character of institutions and stakeholder groups, the pressures they exert, and ways in which particular agendas are prioritised. In some cases, a firm can have a specific motto or have the explicit aim to contribute towards the "common good" and well-being society (Argandoña 1998). One example is Google's corporate slogan "Don't be evil". However, mottos are meaningless unless they are accompanies by positive actions in support of them (Brenkert 2009). In other cases, articulation of a firm's responsibilities vis-à-vis society is less specific. Regardless, the normative basis on which a company acts in society is under continuous pressure from institutions and stakeholders. Legitimacy theory emphasises processes by which organisational legitimacy is obtained or challenged. It offers a conceptual tool to analyse institutional and stakeholder pressures, corporate responses and the consequences for organisational legitimacy (Idowu et al. 2013). Suchman (1995) defines legitimacy as "…a generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions" (p. 574). In other words, legitimacy offers companies the right to operate, be it in line with institutional and stakeholder interests or other interests. Consequently, companies seek to enhance their image in order to positively influence corporate social reputation (Brown et al. 2006). Better social and environmental reputation is shown to correlate with increased long-term firm performance,

suggesting that it is beneficial for companies to focus on reputation as a part of overall objectives and strategies (Fombrun 2005). As global supply chains are characterised by dynamic settings, changing legitimising factors are marked as a critical area of analysis. Studies may focus on decision-making processes based on demands from institutions and stakeholders, and what company responses are best suited (Connelly et al. 2013).

CSR reports and policies are a useful source of information to understand firm intentions and activities. Firms benefit from reporting through improved corporate reputation among stakeholders and other concerned parties (Wilmshurst and Frost 2000; Klettner et al 2014). Firms are shown to have a many different motivations for disclosing information about corporate social and environmental responsibility. Institutional and stakeholder pressures are major driving forces behind social, environmental and economic responsibility in supply chains (Tate et al. 2010; Carter and Jennings 2002; Sarkis 2001; Zhu and Sarkis 2004). Yet, it is also implied that many firms operate on a series of *halftruths* that result in a sole focus on profits and that instead businesses should focus on their broader responsibilities to other stakeholders including employees and communities (Mintzberg et al. 2002). Indeed, concerns exist about the ways in which CSR disclosures compare with actual commitments and activities. Research has found discrepancies between actual practices of firms and their CSR publications (Cerin 2002; Banarra 2010; Clarke 2016).

The Disaggregation of the Global Value Chain

The interplay between global economic forces and local circumstances poses a number of challenges for economic and employment security, and for business accountability, transparency and integrity (Roh et al. 2014). Multinational corporations benefit from outsourcing large parts of their operations to low-wage countries: it keeps production costs low and allows greater profit margins (Fig. 1). Industries that have profited most from outsourcing production to low-wage countries have produced goods such as clothing, sports apparel or toys. Since the early 2000s, the electronics-manufacturing sector started to appear on the radar of labour rights activists, NGOs and investigative journalists. They found that *Original Equipment Manufacturers* (OEMs) were outsourcing production of components to firms in low-wage countries that provided *Electronic Manufacturing Services* (EMS) at a low cost (2004a). The conditions in which workers produced these goods gave rise to the term 'electronics sweatshop' (CAFOD 2004).

Apple sources most components from manufacturers based in Asia (Litzinger 2013). In fact, Apple has 785 suppliers in 31 countries worldwide contributing to the
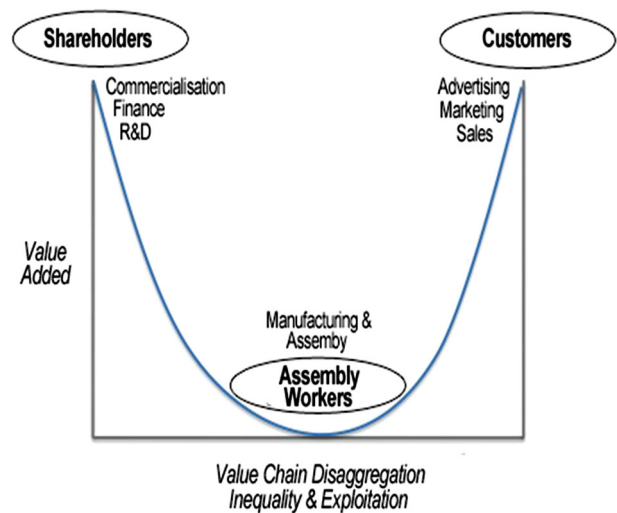

Fig. 1 Disaggregation of the global value chain. *Source* Adapted from Mudambi (2007)

production of the iPhone; however, 349 of the suppliers are in China (Table 1). Indeed according to Li Qiang, an activist of US-based organisation China Labour Watch: "Without China, Apple wouldn't be the company it is today. No other country can provide labour so cheaply, and make its products so quickly" (Bilton et al. 2014).

Should multinationals operating in developing nations be regarded as the arrival of a new and more sophisticated form of sweatshop exploitation? If one could disregard the socio-economic inequality that lies at the core of the imbalanced relationships in global supply chains, an argument could be made for the potential emancipatory effects that the globalising economy and workforce could have on developing and newly industrialised countries. However, Apple not only externalises production, it externalises the responsibility for the production process and the entire workforce: these burdens are to be carried by

Table 1 Location and number of top ten Apple suppliers internationally

China	349
Japan	139
USA	60
Taiwan	42
South Korea	32
Malaysia	21
Philippines	24
Singapore	17
Germany	13
Vietnam	11

Source comparecamp.com, How & Where iPhone Is Made: Comparison of Apple's manufacturing process (2015) http://comparecamp.com/how-where-iphone-is-made-comparison-of-apples-manufacturing-process/

the EMS providers. In its Supplier Code of Conduct, Apple states "…suppliers are required to provide safe working conditions, treat workers with dignity and respect, act fairly and ethically, and use environmentally responsible practices wherever they make products or perform services for Apple …. Apple will assess its suppliers' compliance with this Code, and any violations of this Code may jeopardize the supplier's business relationship with Apple, up to and including termination" (Apple 2014b). This statement illustrates the normative basis on which Apple operates.

Yet the global value chain produces a number of complicating dynamics that tests this statement. As component suppliers are specifically and often solely involved in manufacturing, cutting corners in the production process is often the only way they perceive to create a greater profit margin. As Apple has high demands concerning the quality of electronics components, suppliers often conceive the only way to create a greater profit margin is to cut down on costs of the production process itself, often translating into lower compensation for workers and unsafe production facilities. In a similar way as Apple shifts the burden of cost and production to EMS providers, the suppliers in turn make the labourers carry the burden of cost cutting through low wages and unsafe working conditions. Workers meanwhile receive little protection from the government and independent trade unions are forbidden in China while labour strikes are illegal.

These circumstances result in a degree of labour flexibility that can eventually lead to a race to the bottom, which may threaten the most basic labour standards in developing countries. Although factory labour standards audits performed at Apple's EMS providers have uncovered violations of China's labour laws, operations are generally found to be in line with the formal regulations stipulated by Chinese authorities. In the instances that they were not, Apple and the EMS companies have pledged to make changes in order to comply with China's labour laws. Chinese labour laws offer inadequate protection for workers, and the Chinese government has the right to change labour laws to offer better protection to workers, and the authority to force OEMs and EMS providers to comply with stricter regulation. Yet with the global economy struggling to sustain recovery following the global financial crisis, the Chinese government will be apprehensive about enforcing stricter labour and wage regulation, as this could further weaken the Chinese economy which has already begun to slow down, with fears of the loss of further contracts to even lower wage neighbouring economies in Asia (Inman 2012).

Stakeholders such as workers and consumers play a modest role in global value chain dynamics compared to other institutions. The Chinese labour force is becoming less docile, however (Chan 2013; Chan et al. 2013), evident in the uprisings at the factories of many multinationals in China in recent years (Richburg 2010). Meanwhile, it could be argued that consumers of Apple products might exert greater pressure on Apple's corporate social responsibility. However, as global supply chains have become extraordinarily long, consumers have arguably become geographically and morally dissociated from the circumstances in which goods are being produced. As a result, it is likely that many Apple consumers are unaware of the circumstances in which their products are being manufactured. Yet through the mediation of investigative journalism and international NGOs, the public has had the opportunity to become aware of these circumstances. For Apple's main demographic, cosmopolitan city dwellers and young people who are style conscious and well educated, it may have been imagined that human rights and labour practices would be significant matters. However, there is little indication at this stage of any consumer boycott, concern or even awareness of what is happening down Apple's supply chain. Furthermore, Western companies have learned how to respond to criticism of business practices, and even preemptively counter future criticisms by incorporating environmental, social and governance themes into their marketing strategy. For example, by pledging to give a percentage of a product's cost to causes in the developing world, Starbucks helps to ensure that the consumer's conscience is absolved through their purchase (Fiennes 2012).

Corporations are well versed at portraying themselves as socially responsible, while silencing critics and appealing to consumers. Consumer and worker power often need to be harnessed and mediated by third parties such as NGOs, organised labour and interest groups to have any impact. Examples are Greenpeace harnessing consumer power by launching a campaign in 2006, challenging Apple to be clearer about its environmental policies. Using the positive slogan *'We love our Macs, we just wish they came in green'*, the campaign succeeded in mobilising consumers to convince Apple to phase out of the worst chemicals in its product range: Brominated Fire Retardants (BFRs) and Polyvinyl Chloride (PVC) (Greenpeace 2007). In 2012, after Greenpeace had been pressuring Apple for more than a year to clean up its act and commit to renewable energy, the company announced that by early 2013, the energy used to power its data centres would come solely from renewable sources (McMillan 2012), and in 2015 Apple committed to an $850 million investment in solar power. Other examples are groups such as Students and Scholars Against Corporate Misbehaviour (SACOM) and China Labor Watch, which continue to provide exploited workers with a voice (SACOM 2010, 2011, 2012; China Labor Watch 2012a, b, 2013).

Apple as a Monopsony

In 2010, Apple became the most valuable brand, with an 84 % jump in brand value to $153.3 billion (Indvik 2011). By March 2015 Apple's revenue rose to $212.2 billion (Fig. 2), while in February 2015 Apple attained a market capitalisation of $770 billion (Fig. 3), nearly double that of ExxonMobil, Google and Microsoft (the other corporations with the largest market capitalisation) (Platt and Badkar 2015). Apple's large profit margins (Fig. 4) have contributed to liquid assets of $193.5 billion (Fig. 5), which means that the company has more cash on hand compared to the cash balances of most industries in the United States combined (Fingas 2015).

Apple's sustained competitive advantage over its competitors is not simply due to superior design and marketing, it is due to Apple's domination of the advanced consumer electronics supply chain. Apple has effectively created a closed ecosystem, controlling every part of the supply chain from design to retail. "Because of its volume—and its occasional ruthlessness—Apple gets big discounts on parts, manufacturing capacity, and air freight. Operations expertise is as big an asset for Apple as product innovation or marketing," says Mike Fawkes, the former supply chain chief at Hewlett–Packard and now a venture capitalist with VantagePoint Capital Partners. "They've taken operational excellence to a level never seen before"(Satariano and Burrows 2011). Leading this supply chain revolution was Tim Cook, now Apple CEO, inspired by the book *Competing Against Time: How Time-Based Competition is Reshaping Global Markets* (1990), which states that "[…] the traditional pattern has been to provide the most value for the least cost. The expanded pattern is to provide the most value for the least cost in the least elapsed amount of time. These new-generation competitors use flexible factories and operations to respond to their customers' needs rapidly by expanding variety and by increasing the rate of innovation" (Stalk and Hout 1990, p. 59).

The combination of rapidly rising gross revenues and sustaining remarkably high gross profit margins with each

product launch allowed Apple to accumulate a vast mountain of cash. Apple has employed its hoard of tens of billions of dollars in cash to further dominate and control the electronics component supply chain in Asia and beyond.

New component technologies are expensive to make when first invented, and building factories to make these in mass quantities is more expensive still, while margins are small and shrink as new products become commoditised. As such it is hard for EMS companies to raise investment capital to cover their costs, yet Apple pays towards the cost of construction in exchange for exclusive rights to output for a period, with a discounted rate afterwards (Elmer-DeWitt 2011). This allows Apple access to new advanced components before competitors. When competitors eventually secure access to these components, Apple continues to have access to the same parts at lower cost due to the discounted rates it has negotiated, which may be subsidised by other electronics companies buying the parts from the same provider. In this way Apple "has become not a monopoly (a single seller), but a *monopsony*—the one buyer who can control the market" (Elmer-DeWitt 2011).

In 2011, Apple announced it was intending to invest $7.1 billion on its supply chain in the next year, together with $2.4 billion in pre-payments to key suppliers. This wave of Apple cash ensures availability and low prices for Apple, while limiting the options to competitors. For example, in order to make the iPad 2, Apple ordered so many high-end drills to make the internal casing that other electronics companies waiting time for drills stretched for months. Meanwhile Apple drives down supplier quotes, including recent estimates for materials (Worstall 2014), as well as labour costs: in 2012, the programme ABC Nightline found that assembly workers at Foxconn, Apple's largest supplier, made $1.78 an hour (Arthur 2012). In addition, Apple recently sought more control over the global electronics supply chain by "binge hiring" hundreds of engineers and supply chain managers, in order to accelerate the release of new products (Tate 2014). This sense of Apple controlling the supply chain reaches a

Fig. 2 Apple Revenue. June 2005 to March 2015 (US$ billions). *Source* adapted from Wolfram|Alpha Knowledgebase 2015
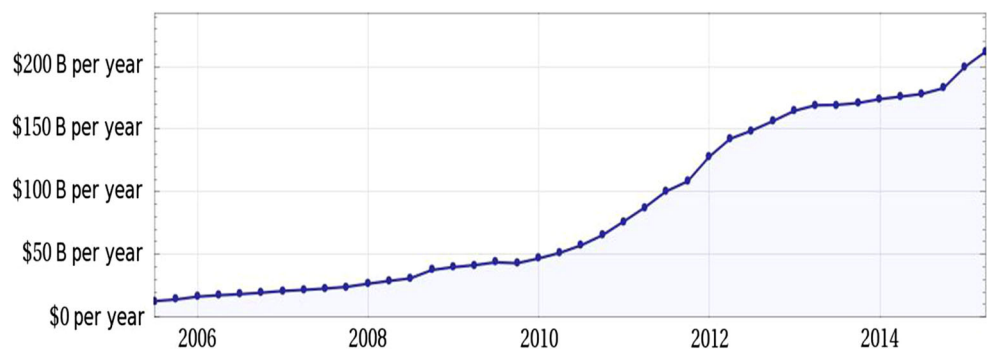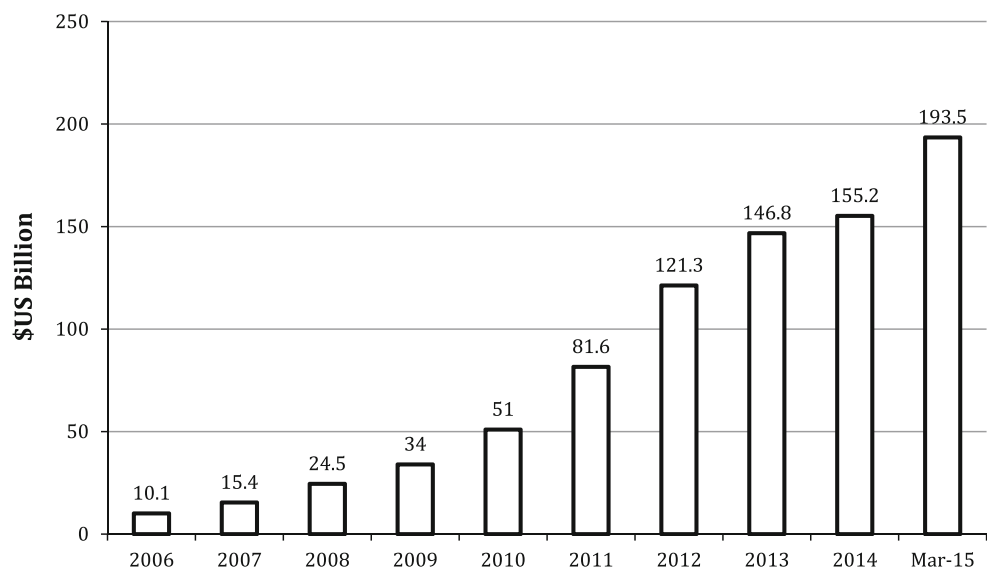
Fig. 3 Apple market capitalisation. May 2005 to May 2015 (US$ billions). *Source* adapted from Wolfram|Alpha Knowledgebase 2015

Fig. 4 Apple profit margins. June 2005 to March 2015. *Source* adapted from Wolfram|Alpha Knowledgebase 2015

Fig. 5 Apple cash, cash equivalents and marketable securities. 2006 to March 2015 (US$ billions). *Source* Apple annual and quarterly reports

pinnacle with the unveiling of each new Apple product, intensified over years of launching new products.

Apple contends that its business model is about more than just money. It does not just sell products, it argues it offers an ethical production model. In the words of CEO Tim Cook: "…to me that goes from everything, from environmentally, to how you work with suppliers, with labour questions, to the carbon footprint of your products,

to the things you choose to support, to the way you treat your employees" (Haslam 2013). Indeed, due to its status and size, it has the power to end chronic labour rights abuses in its supply chain: "…the paramount issue remains whether Apple will ever choose to apply its legendary business prowess and spirit of innovation, and its enormous financial clout, to the goal of protecting the basic human rights of the people who make those products" (Economic Policy Institute 2012, p. 8). Former United States Presidential candidate and business ethics campaigner Ralph Nader argues that "…Apple is in the best position of any company in the world because of its massive surplus profits to clean up its supply chain and set an example for the rest of the world" (Bilton et al. 2014). Yet as a former Apple executive told the *New York Times*: "We've known about labour abuses in some factories for 4 years, and they're still going on. Why? Because the system works for us. Suppliers would change everything tomorrow if Apple told them they didn't have another choice. If half of iPhones were malfunctioning, do you think Apple would let it go on for 4 years?" (Duhigg and Barboza 2012).

Apple and Foxconn: Supply Chain Issues

Foxconn is one of the largest EMS companies employing approximately 1.6 million people in China. The company is a contractor for many international OEM companies and is Apple's principal supplier in China (Hille and Jacob 2012). Both companies have experienced an unprecedented and sustained rapid escalation in their gross revenues, which shows that they are intricately linked (Luk 2015). Although Apple has extremely high profit margins and Foxconns are wafer thin (Culpan 2012), both companies are immensely well resourced: while they might claim some of the supply chain issues were due to the pressures of unimaginably rapid growth, they could make no claim to a shortage of funds with which to remedy the problems if they had resolved too.

Since 2006, Apple has been under fire for sourcing components from producers that have a poor reputation with regard to employment conditions and practices. In that year, the first criticisms were voiced in the media regarding the circumstances in which Apple's iPods were being produced. It was alleged that production line workers were earning as little as US$50 a month, while working 15 h a day (Klowden 2006). The story featured images and first-hand accounts; for example, one worker described the factory regime as follows: "…like being in the army. They make us stand still for hours. If we move, we are punished by being made to stand still for longer… We have to work overtime if we are told to and can only go back to the dormitories when our boss gives us permission… If they

ask for overtime we must do it. After working 15 h until 11:30 pm, we feel so tired" (Klowden 2006). One of the factories owned by the Foxconn was described as harbouring as many as 200,000 workers, who inhabit onsite dormitories that house up to one-hundred people and are not open to outside visitors. Employees at this facility were paid approximately US$50 a month for labouring 15 h day. Elsewhere workers live in offsite dormitories and were paid approximately $100 a month, of which half has to be paid to their employer for housing and food.

The media report spread like a wildfire as international newspapers started to feature stories that carried the same allegations, while posts about Apple's 'sweatshops' started to appear on countless blogs, resulting in worldwide controversy in both online and offline media. Apple was experiencing a public relations nightmare: the maker of the world's most popular music player had been linked to appalling workplace conditions in unprecedented large-scale factory cities, where workers were drilled in military style, lived in crowded dormitories and were forced to work long shifts for low pay.

The long-running Apple controversy took a dramatic turn for the worse in early 2010 when labour unrest shook up the south of China in the form of mass strikes and protests for wage increases and better working conditions. Three-dozen strikes took place at the factories of Foxconn, Honda, Hyundai and other multinationals (Richburg 2010). It was suggested that increasing numbers of younger male workers, as well as an increased awareness of rights, were likely to have been catalysing forces behind the uprisings. Protests received global media attention after a string of suicides and attempted suicides occurred at the factories of Foxconn (Dean and Tsai 2010). On 23 January, the body of the 19-year-old Ma Xiangqian was found in front of his high-rise dormitory of the Foxconn plant in Guanlan. Police investigators concluded that he had jumped from a high floor. Ma had worked 11-hour overnight shifts, seven nights a week, forging plastic and metal amid fumes and dust, until he was demoted to cleaning toilets after a dispute with his supervisor. His wage slip showed that he worked 286 h in the month before he died, including 112 h of overtime, three times the legal limit in China (Barboza 2010). Others tried to commit suicide but failed, such as the 17-year-old Tian Yu. On March 17 2010, she jumped from the fourth floor of her dormitory, leaving her bedridden without sensations beneath her waist and carrying metal plates inside her body. After having worked for Foxconn for a month, she was unsure how to obtain her wage. She was told to go to a Foxconn facility an hour away, where she was sent from office to office, being told to go ask elsewhere. Tian returned humiliated and angry. The next morning she jumped from her dormitory. In 2010, thirteen Foxconn employees had taken their lives, with another four

attempting suicide, and surviving badly injured (Lau 2010; SACOM 2010).

Incidents did not only occur at Foxconn, but also at other Apple suppliers (China Labor Watch 2012a). In 2011, during a strike at Wintek, Chinese workers urged Apple to help resolve the incidence of chemical poisoning by hexyl hydride. Also called n-hexane, the chemical is regarded as a narcotic by the US Environmental Protection Agency, which in high concentrations can damage the central nervous system, induce vertigo and cause muscular atrophy (US EPA 2000). Wintek, produces of touchscreens for Apple products at the time, used n-hexane from May 2008 to August 2009. It claims it ceased using the chemical after discovering it was making workers ill (Branigan 2010). Authorities in Suzhou reported that in 2011, 137 Wintek employees had been poisoned by n-hexane (Chan 2010). Workers complained about sore limbs, dizziness, headaches, extreme weakness and experiencing difficulties performing simple tasks such as climbing stairs and getting dressed. Among them was Jia Jingchuan, a 27-year-old who claims he was exposed to the chemical, and says that it has left him with nerve damage and hypersensitivity to cold (Barboza 2011).

In May 2011, an explosion at Foxconn in Chengdu caused three deaths and left many injured. The Chinese media reported the blast was caused by dust that had accumulated in the ventilation system, being ignited by a faulty wire. In December 2011, an explosion occurred at RiTeng Computer Accessory, a subsidiary plant of Pegatron Corp, another of Apple's Chinese suppliers, injuring 61 workers (Rundle 2011). Two months before the first explosion occurred, non-profit organisation SACOM interviewed Foxconn factory workers, who complained the polishing department was filled with aluminium dust and had poor ventilation (D. Chan 2010). In the aftermath of the second explosion, a Pegatron executive admitted that the factory had not started operations fully, and that parts of the facility were still under inspection and running trial production (Jim and Chang, 2011). Both explosions received global media attention. A 2013 report by China Labor Watch highlighted 86 labour rights violations at Pegatron. Among the violations listed were recruitment discrimination, women's rights violations, underage labour, contract violations, excessive working hours, insufficient wages, poor working conditions, poor living conditions, difficulty in taking leave, labour health and safety concerns, ineffective grievance channels and abuse by management (China Labor Watch 2013). In 2014, while assembly workers gear up to work overtime to build the new iPhone 6, one of Apple's key suppliers in the Philippines fired twenty-four workers that attempted to negotiate a new collective bargaining agreement (IndustriALL Global Union 2014). A 2014 investigation by the

BBC programme Panorama exposed ongoing controversies in Apple's supply chain. It found that the identity documents of workers were seized by labour recruitment agencies, workers were sleeping in rooms with twelve people (where eight are allowed), suppliers conducted sham safety exams and created fake audit-trails, while the extremely exhausted workforce was drilled and intimidated. It also found children digging for tin in illegal mines (Bilton et al. 2014).

Apple and Foxconn's Response: Supplier Responsibility Programme

Apple started a supplier responsibility programme in 2006, when it established its Supplier Code of Conduct. Since then the company publishes a supplier responsibility report annually, in which it makes its audit findings public. Apple states that it is "…committed to ensuring that working conditions in our supply chain are safe, workers are treated with respect and dignity, and manufacturing processes are environmentally responsible" (Apple 2010). When violations of the Code of Conduct are encountered, Apple insists that the perpetrating company addresses the violation within 90 days. Should a supplier not meet Apple's demands, the business relationship is terminated (Apple 2011). In an attempt to ensure Foxconn and other EMS companies were meeting the guidelines set out in the Supplier Code of Conduct, Apple probed labour conditions by means of hiring the independent audit provider Verité, who investigated production facilities (Frost and Burnett 2007). An Apple spokesperson was quoted as saying: "This is a thorough audit, which includes employee working and living conditions, interviews of employees and managers, compliance with overtime and wage regulations, and other areas as necessary to ensure adherence to Apple's supplier code of conduct. Apple's supplier code of conduct sets the bar higher than accepted industry standards and we take allegations of noncompliance very seriously" (Hessendahl 2006).

In 2006, over one-hundred Foxconn workers where interviewed, of which eighty-three were assembly line workers. In total, over 500 factory line workers in eleven factories were questioned. From these interviews, Apple concluded that at one supplier the off-campus dormitories, (essentially converted factory spaces with triple-decker bunk beds), failed to meet the Supplier Code of Conduct. At another supplier the overtime pay structure was deemed overtly complex. Although the Supplier Code of Conduct allows labour for up to 60 h a week, the survey showed that Foxconn employees surpassed this limit 35 % of the time. Two per cent of the workers interviewed reported that some individuals were disciplined inappropriately, being

required to stand in the corner or do push-ups (Apple 2007). Workers were generally happy with the dormitories and were earning at least the local minimum wage. Apple stated that it expected suppliers to adhere to the principles set out in its Supplier Code of Conduct: "In cases where a supplier's efforts in this area do not meet our expectations, their contracts will be terminated" (Apple 2007, p. 4). Foxconn promised to make appropriate changes in order to adhere to Apple's Supplier Code of Conduct. New off-campus dormitories were built, weekly overtime limits were to be strictly enforced, payment procedures simplified, and a supervisor-training programme was launched to ensure no harsh treatments would occur. Apple announced follow-up audits and an expansion of the monitoring programme, probing suppliers deeper in its supply chain (Apple 2007).

In June 2010, Steve Jobs was interviewed for over 90 min at the eighth edition of the annual D conference, a global technology summit. While giving his thoughts on Google and the iPad, Jobs was also asked to give his thoughts on the Foxconn suicides: "I actually think that Apple does one of the best jobs of any companies in our industry, and maybe in any industry, of understanding the working conditions in our supply chain. We're extraordinarily diligent and extraordinarily transparent about it. We go into the suppliers, and into their secondary and tertiary suppliers, places where nobody has ever gone before and audited them. And we are pretty rigorous about it" (Kafka 2010). Jobs went on less convincingly:

"I mean, you go to this place, and, it's a factory, but, my gosh, I mean, they've got restaurants and movie theatres and hospitals and swimming pools, and I mean, for a factory, it's a pretty nice factory" (Kafka 2010). He went on to comment on the suicides, which numbered thirteen at the time, by saying they were "…still below the national average in the U.S.", adding that "…this is very troubling to us … so we send over our own people and some outside folks as well, to look into the issue" (Kafka 2010).

In an interview with BusinessWeek, Terry Gou, the CEO of Foxconn stated: "The first one, second one, and third one, I did not see this as a serious problem". After the fifth suicide, Gou "…decided to do something different". After the ninth suicide occurred, Foxconn ordered over three million square meters of mesh netting to be put up around its buildings, 24-hour stand-by counselling teams were introduced, and wages were increased (Haslam 2013). In its 2011 Supplier Responsibility Report, Apple stated that it had hired suicide prevention specialists to understand the conditions. They met with then Apple COO Tim Cook and Foxconn's CEO on a visit to the Shenzhen factory to assess Foxconn's measures to prevent further suicides. Three months after their visit, they praised Foxconn for its quick and adequate response on multiple fronts, such

as hiring counsellors, establishing a 24-h care centre, and attaching nets to its buildings. They concluded that Foxconn's response had saved lives. Foxconn pledged to implement further recommendations into long-term plans for addressing employee well-being. Apple stated that it would continue to work with Foxconn on these programmes, and take key learnings to other producers in its supply chain (Apple 2011).

The n-hexane incidents were also addressed in the 2011 Supplier Responsibility Report. Apple stated that it had asked Wintek to cease using n-hexane and to fix the ventilation system. In order to prevent further incidents at Wintek, Apple furthermore asked them to improve their environmental health and safety processes and announced an audit of the Wintek facility (Apple 2011). Apple stated that it verified that all affected workers were treated successfully. In line with Chinese law, Wintek had paid for all medical costs and foregone wages of sick employees. Apple further reported other incidents involving n-hexane. After they learned that a supplier and a subcontractor were still using the chemical, Apple investigated and found that the subcontractor had already been shutdown by local officials. It further ensured that the supplier was no longer using n-hexane and instructed its supplier to optimise Environmental Health and Safety systems and follow-up on the health of workers who were exposed to n-hexane (Apple 2012).

In Apple's 2012 Supplier Responsibility Progress Report, the company announced that it was "…deeply saddened by events at two of our suppliers in 2011" (Apple 2012). Apple acknowledged that two explosions took the lives of four workers and injured dozens of others. According to the report, Apple sent in expert teams to investigate the circumstances in which each of the explosions occurred and provide suggestions for better health and safety conditions. The experts concluded that the explosions involved combustible dust, in which aluminium particles provided explosive fuel. In an effort to prevent similar incidents from occurring at other suppliers, Apple went on to audit all suppliers handling aluminium dust, while establishing new requirements for handling combustible dust such as specific ventilation, regular inspections of ductwork, banning usage of compressed air for cleaning, and having type-D fire extinguishers at hand to handle metal fires. According to Apple, all its suppliers except one have followed up on its demands and implemented the proposed measures: "the one supplier that has not will remain shut down until modifications are in place" (Apple 2012).

Apple has addressed a range of other issues that it has encountered during factory audits, such as discrimination, wages and working hours, dormitories and dining, freedom of association, employee treatment, and

environmental impacts. Apple performed follow-up audits and sets key performance indicators for its suppliers, reports on progress and determines whether other core violations occurred. From 2005 onwards, Apple has reported and taken action on recruitment fee overcharges, underage labour, forging of records, and improper disposal of hazardous waste. It is also engaged in the Electronics Industry Citizenship Coalition (EICC), an alliance of electronics firms whose aim is to improve working conditions and reduce environmental impact throughout the supply chain of the electronics sector. Companies can join the EICC by adopting the Code of Conduct through signing a commitment letter and completing a self-assessment questionnaire, after which the board of directors of the EICC will determine whether the company is eligible for membership (EICC 2015). The board of the EICC, however, is entirely made up of executives from the electronics sector, however, and funding is derived from the same sector though membership fees and company audits, causing a potential conflict of interest. In 2012, Apple announced a deal it made with Foxconn regarding the hiring of labourers, stricter safety and overtime rules, and improving on facilities such as dormitories (Gupta and Chan 2012). According to CEO Tim Cook, the company is: "…measuring working hours for 700,000 people. I don't know anybody else doing this. And we are reporting it, and we are showing a level of care that I don't see in other places. And I think it is really important" (Bilton et al. 2014).

Unresolved Dilemmas

It is clear that Apple is aware of the pitfalls of outsourcing manufacturing to low-wage countries. In order to balance the assessment of Apple's and Foxconn's responses, it is helpful to see what independent organisations have found after Apple and its suppliers had promised to address wrongdoings. Organisations such as the Centre for Research on Multinational Corporations (SOMO), China Labor Watch, and SACOM have focused on labour practices, while the Chinese Institute of Public and Environmental Affairs (IPE) has studied pollution through Apple's supply chain and its impacts on workers and the environment. The reports of these organisations need to be approached with the same rigour as Apple's supplier reports, yet the fact remains that the findings in these reports are dramatically different to the information published by Apple and Foxconn. This shows that conditions have not improved to the point where critics have been silenced.

In 2007, a year after Apple had first come under scrutiny because of its iPod production facilities, SOMO assembled a report on Apple's corporate social responsibility. It found that, although Apple stressed the importance of its Supplier Code of Conduct, the means by which compliance is verified remained opaque. Furthermore, workers continued to express concerns about forced overtime, lack of safety while working with hazardous substances, low wages, disproportionate wage deductions and withheld wages (Van Dijk and Schipper 2007). In 2010, the year that witnessed the labour unrest in South China and the first of the Foxconn suicides, SACOM investigated working conditions at Foxconn by conducting interviews with factory workers and sending in undercover researcher to work in production facilities. It alleged that workers were compelled to work overtime, as they were required to sign an overtime pledge clause as part of their contract, and that physical and mental abuses by superiors was far from uncommon (SACOM 2010). In 2011, SACOM found that although Apple commends actions taken by Foxconn, many promises remain unfulfilled (Table 2). According to SACOM, conditions have hardly improved (SACOM 2011).

In 2011, the IPE published a report concerning hazardous waste in Apple's supply chain and its impacts on factory workers and the environment. From their investigation, IPE concluded that more than twenty-seven Apple suppliers experienced environmental problems, the majority of which had failed to dispose of their hazardous waste properly, ignoring regulation for hazardous waste transport, leading to unknown whereabouts of toxic waste products. Despite Apple's self-audits, the 2011 *Supplier Responsibility Report* does not mention violations regarding the disposal of hazardous waste. Unfortunately, there is no way to confirm these queries with Apple, as its long-term policy is not to disclose supplier information (Institute of Public and Environmental Affairs 2011).

In June of 2012, the US-based NGO China Labor Watch published a report that detailed the working conditions at ten of Apple's electronic component suppliers in China.

Based on interviews with employees and observations made in the workshops, which took place without Apple's approval, China Labor Watch concluded that employees were exposed to health hazards in the workplace, as well as being paid poorly and having to work long shifts (China Labor Watch 2012a). The organisation is sceptical about Apple's dealings with EMS companies, and doubts whether its actions are an incentive for change in China's technology manufacturing industry (Gupta and Chan 2012). In contrast, the Fair Labor Association (FLA) published a report in 2012 on the progress made by Apple's largest suppliers. In the *Foxconn Verification Status Report* (Fair Labor Association 2012), it suggests that "…Foxconn and Apple are carrying out the robust remediation plan developed following FLA's investigation, published on March 28, 2012. Over the past three months, steady

Table 2 Apple and Foxconn unfulfilled promises

	Apple and Foxconn promise 2010	Operational reality 2011/2012
Recruitment and terms of employment	In strict compliance with the law	Misleading statements (e.g., regarding wages, benefits, and location of work
Wages	Across the board increases	Miscalculation of wages; unpaid overtime work per month; continuous shifts denying meal breaks
Health and safety	Adequate personal protective equipment; health examination	Lack of protection; workers not well informed about the chemicals in use
Student workers	Length of internship regulated; skills training provided; underage workers protected (16–18 years of age)	Interns are de facto workers; mandatory night shifts
Grievance mechanisms	Better worker-management communication by launching a hotline for workers	Workers cannot find effective ways to handle grievances at the workplace

Source SACOM (2011)

progress has been made at the three facilities…and all remediation items due within the timeframe have been completed, with others ahead of schedule" (p. 3). In a scathing review of this report, the Economic Policy Institute (Nova and Shapiro 2012) dismisses these conclusions: "…Foxconn receives a perfect completion score from the FLA only because FLA gives Foxconn credits for reforms that are either incomplete or purely symbolic" (p. 2):

- FLA gives credit to Foxconn for increasing the numbers of workers on a 32 person union leadership committee from two to "at least three", when the other 29 members can still be factory managers.
- The FLA maintained (2012d; 2012e) that Foxconn employees were working no more than 60 h per week, and 80 h monthly overtime (above China's legal maximum of 36 h). SACOM (2012b) argues that as iPhone 5 reached peak production, overtime hours reached 100 h per month, with workers only getting one day off every 13 days (China's legal minimum).
- The promise made by the FLA and Apple that Foxconn workers would all received back pay where overtime was illegally undercompensated was broken. The Foxconn practice was to pay overtime in 30-min units, with 29 min not counting for payment. Later Foxconn reduced this threshold to 15 min.
- While the FLA reported that Foxconn was formally meeting the goal of limiting the working week to 60 h, this standard remains illegal, and there is no basis in Chinese law to exempt companies. China Labour Watch (2012b) reported that to the extent, working hours have been reduced, work intensity has increased: workers are expected to have the same output in fewer hours with less pay.
- Findings by SACOM in 2012 contradict the FLA report, with other media reports of violations including the use of underage labour by Foxconn, involving workers as young as 14 and forced overtime in the

production of the iPhone 5, involving the denial of national holidays (Nova and Shapiro 2012).

SACOM's observes that it: "[…] is ironic that Apple declared to the world that it would ensure that working hours and other working conditions would be improved, but would then push its major supplier Foxconn, and consequently its workers, to meet product schedules inconsistent with such improvements" (SACOM 2012, p. 1). In 2014, the BBC programme *Panorama* found that workers are left exhausted as Apple's promises are being broken on the factory floor. All of Panorama's undercover reporters were routinely on shifts that lasted at least 12 h with the longest shift lasting 16 h. Overtime was standard, as the workers did not have much choice. An instructor yelled: "There are four options. Two show you will consent and two show you will not. Don't tick the options that indicate that you are not willing. Tick the two which say you are. If you tick the boxes which say you are not willing, the forms will be cancelled" (Bilton et al. 2014). This is a breach of Apple's promises: "…all overtime must be voluntary" (Apple 2015). In spite of Apple's promise to protect workers who are under 18 by stating that "…juvenile workers shall not work overtime" and "…juvenile workers shall not conduct night work" (Apple 2014c). The reporters found evidence of the contrary, and payslips suggest that illegal working hours are commonplace. One of the reporters was even asked to sign a form consenting to work hours that were a breach of Apple's hours limit. Another reporter's overtime payments were disguised as a work bonus (Bilton et al. 2014).

Although Apple states that it goes "…deep into its supply chain to enforce standards" (Apple 2015), in only a few days, the BBC TV programme *Panorama* found a connection between Apple and dangerous tin mines in Indonesia. As legal mining alone cannot keep up with demand, illegal mines have been created where miners are often members of families, among which minors (Bilton

et al. 2014). Apple says that the "…ethical sourcing of minerals is an important part of our mission" (Apple 2014a). While the company has confirmed it gets tin from Banka, it has never been confirmed whether illegal tin ends up in Apple products. One smelter operator that provides tin to Apple says that all smelters get an amount of tin through middlemen, and they cannot tell whether the tin is legal or illegal. Yet *Panorama's* investigation confirmed that illegally mined tin is provided to smelters that provide to Apple (Bilton et al. 2014). According to China Labour Watch, it is "…impossible that they don't know about the issues, we have repeatedly pointed out the problems in our reports, but we have seen almost no improvement" (Bilton et al. 2014). *Panorama* informed Apple about its findings 6 weeks prior to a meeting at Apple's headquarters. After a 3 h meeting, Apple said it would not be putting anybody up for interview (Bilton et al. 2014).

The 2015 *Apple Supplier Responsibility 2015 Progress Report* is the latest account of the policies and practices in the Apple supplier plants. The comprehensive nature of the report is to be commended, and the fact that a series of statistics indicating poor performance is published rather than concealed. However, it is profoundly worrying that a commitment to review and reform responsibility policy and practices in Apple supplier factories commenced in 2006, after 10 years of reviews could still record what appear to be dangerous levels of non-compliance. According to Apple, the number of responsibility audits and the participation in workers rights training have improved dramatically over the years. But what has improved modestly, if at all, are core policies and practices on the whole range of responsibility issues (Figs. 6, 7).

As Table 2 indicates on Labour and Human Rights, only 72 % of plants are compliant on Wages, Benefits and Contracts, and the relevant Management Systems are only 70 % compliant. On Health and Safety (Table 3), compliance with Prevention and Preparedness stands at 70 % and Management Systems at 61 %. On the Environment, the Air Emission Management is at 71 % and Management Systems at 65 % (Table 4). On Ethics (Table 5) Business Integrity is rated at 93 % and Management Systems at 90 %. Finally on Management Systems (Table 6), Management Accountability and Responsibility are rates at 60 %. While these figures could be regarded as a testament of Apple to discover and disclose the truth, given the years that these poor compliance rates have existed, what is concerning is that the improvements, if any, have taken so long. This is a company that would not tolerate 0.01 % non-compliance in the precision of engineering supplies and yet in employment practices appears positively lax. Of course, these are largely production plants in China owned and operated by Taiwanese and other corporations, but if they are capable of producing such elegant, wonderful

consumer electronics it might be reasonable to expect them to manage to ensure their workforce have shift patterns that are humane, that they can have regular leisure time, sleep regularly and are not exposed regularly to hazards? (Table 7).

Discussion

How does a corporation that is fabulously wealthy live with the reality of employing up to a million predominantly young people in conditions which often could at the least be described as harsh? This question exposes the dilemmas of global value chains which through distance may conceal the intensity of exploitation from the affluent consumers who enjoy its products. How does the Apple company obtain its organisational legitimacy? It has become evident that inspired marketing efforts have succeeded in creating the world's best known and highest valued brand, in which Apple has deployed the imagery of many progressive icons and civil society activists. Yet in its marketing efforts and slogans, Apple never expressly brands itself as an ethical or sustainable corporation, nor is the pursuit of corporate social and environmental responsibility ever expressed as part of Apple's core mission. Reference to operating in a socially and environmentally responsible manner primarily follows controversies and takes the shape of hastily assembled press statements by managers and corporate policies.

In other words, Apple's social and environmental actions can be characterised as reactive, which suggests that the values upon which Apple has been built, and upon which it presently operates, and the fundamental organisational legitimacy of the company, is negotiated through a dynamic process with a specific configuration of institutions and stakeholders. Apple's quest for legitimacy frequently encounters issues of human and employment rights Apple raised by NGOs, the media, organised labour and other interest groups, which give voice to the social and environmental concerns stakeholders are often unable to express themselves. Put differently, stakeholder concerns about Apple's supply chain are relayed and broadcasted by more formal and independent institutions.

Withdrawn from this process, and apparently not acknowledging any responsibility beyond encouraging investment and employment from overseas multinationals, is the Chinese Government. Global value chains are prone to exhibiting governance gaps or weaknesses. In Apple's case, these occur where existing Chinese labour laws and lack of enforcement provide insufficient protection for workers. Apple's private initiatives have attempted to fill this gap to a degree, while independent audits, investigative journalism and civil society organisations play a role in
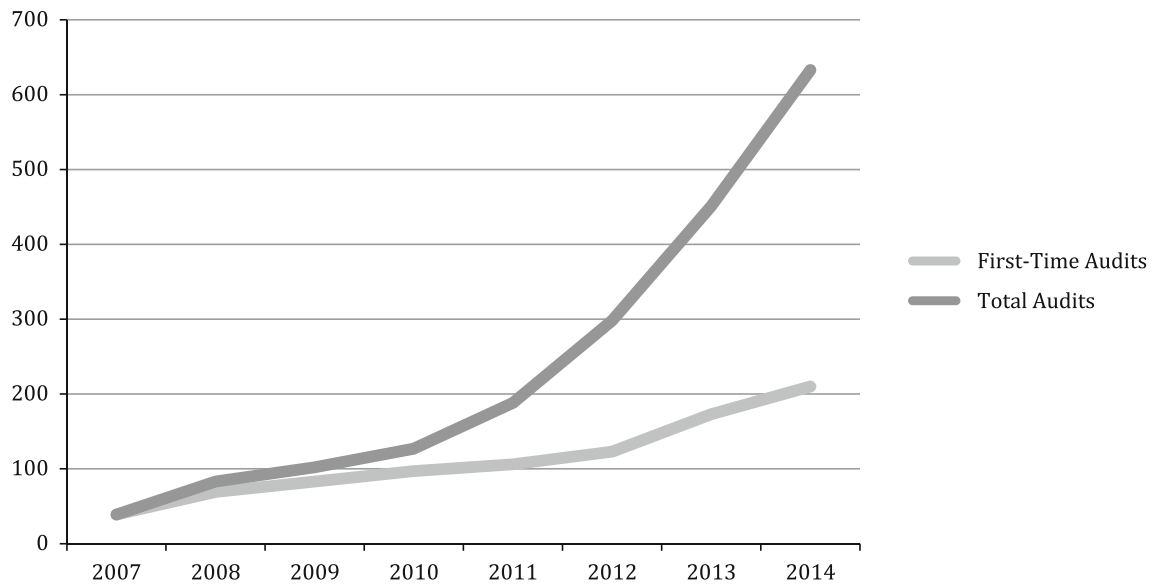
Fig. 6 Apple responsibility audits. *Source* adapted from Apple supplier responsibility 2015 progress report
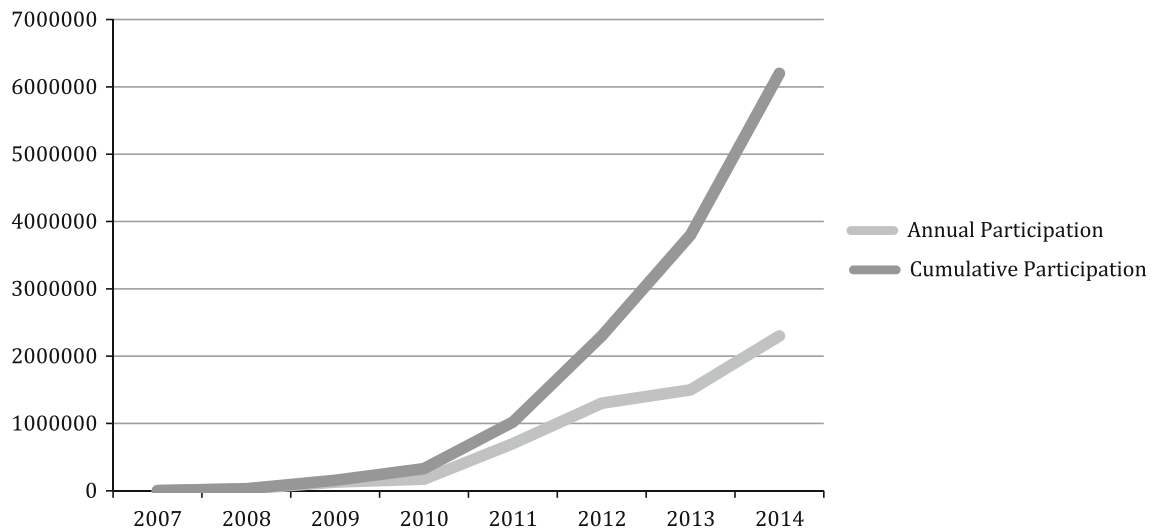

Fig. 7 Participation in workers' rights training. *Source* adapted from Apple supplier responsibility 2015 progress report

keeping Apple accountable, replacing the Chinese government as the guardian of public interest. Consumers have proved largely absent in this process: the sales of Apple products are unaffected by supply chain controversies, and Apple continues making record profits. Customers do not to penalise Apple in the marketplace for the issues in its supply chain, and there is little evidence to suggest that Apple experiences consumer pressure at all. Emphasis on Apple has largely kept Foxconn out of the firing line: "Apple bears ultimate responsibility for the way the workers who make its products are treated. Apple's responsibility is underscored by the reality that the company has profited greatly from a production system at

Foxconn that has long been defined by low wages and harsh and illegal treatment of workers—a system that has in many ways been necessitated by the price pressures and production demands Apple imposes, especially when it is rolling out new products" (Economic Policy Institute 2012, p. 10).

It is evident that the existing configuration of institutional and stakeholder pressures has not prevented human and employment rights abuses in the Apple supply chain from occurring. At present, Apple's main concern is to reaffirm its legitimacy with consumers of its products, a task that it fulfils readily despite continuing misconduct in its supply chain, as consumer awareness or pressure

Table 3 Labour and human rights

Category	Practices in compliance (%)	Management system compliance (%)
Anti-discrimination	88	82
Anti-harassment and abuse	85	82
Prevention of involuntary labour	85	84
Prevention of underage labour	95	92
Juvenile work protections	79	73
Working hours*	92	*
Wages, benefits, and contracts	72	70
Freedom of association and collective Bargaining	96	94
Grievance mechanisms	88	87
Student worker protections	67	64
Overall compliance	81	78

Source Adapted from Apple supplier responsibility 2015 progress report

* Apple gauges this process by tracking working hours weekly for over 1.1 million workers. It reports that in 2014, suppliers achieved an average of 92 % compliance across all work weeks, and the average hours worked per week were under 49 for all workers, and 55 h on average for those who worked at least 40 h per week

Table 4 Health and safety

Category	Practices in compliance (%)	Management systems compliance (%)
Occupational health safety and hazard Prevention	70	61
Emergency prevention, preparedness and response	61	52
Ergonomics	69	66
Working and living conditions	83	79
Health and safety communication	55	42
Health and safety permits	52	44
Incident management	77	73
Overall compliance	70	63

Source Adapted from Apple supplier responsibility 2015 progress report

Table 5 Environment

Category	Practices in compliance (%)	Management systems compliance (%)
Hazardous substance management and restrictions	72	65
Wastewater management	73	67
Stormwater management	67	57
Air emissions management	71	65
Solid waste management	85	77
Environmental permits	65	60
Pollution prevention and resource reduction	94	92
Boundary noise management	88	83
Overall compliance	76	69

Source adapted from Apple supplier responsibility 2015 progress report

Table 6 Ethics

Category	Practices in compliance (%)	Management systems compliance (%)
Business integrity	93	90
Disclosure of information	97	96
Whistle-blower protection and anonymous complaints	89	87
Protection of intellectual property	95	92
Overall compliance	93	91

Source adapted from Apple supplier responsibility 2015 progress report

appears largely absent. Similarly, Foxconn succeeds in reaffirming its legitimacy in the eyes of Apple. It is clear that Foxconn makes symbolic efforts, while circumstances on the factory floor have changed little. The private initiatives by Apple and Foxconn have thus created a façade of social and environmental compliance with which both parties and consumers, are content. If not for the efforts by NGOs, the media, organised labour and other interest groups, this smokescreen would continue to obscure supply chain exploitation. However, as the legitimacy of Apple

with customers is not under threat, these whistle-blower groups can do little more than bear witness and raise awareness. The safeguard of public authority falls dramatically short, leaving workers and those that relay their voice with few influential avenues to pursue remedies. If conditions in Apple's supply chain are to fundamentally change, it is critical that the institutions and stakeholders that are currently absent, uncoordinated or underrepresented assume an increasingly active and concerted role. One way to achieve this is by bringing institutions and stakeholders together in a forum that allows them to engage in debate and collaborate to achieve reforms.

The use of multi-stakeholder initiatives, a practice that involves bringing together private, public and third sector institutions, as well as a range of stakeholders, has proliferated in recent times (Vachani and Post 2012). Many of these initiatives aim to increase global value chain sustainability by improving working conditions and reducing

Table 7 Management systems

Category	Management systems compliance (%)
Commitment	79
Management accountability and responsibility	60
Management systems	100
Documentation and records	85
Training and communication	79
Worker feedback and participation	92
Corrective action process	79
Overall compliance	75

Source adapted from apple supplier responsibility 2015 progress report

environmental impact in export-oriented sectors in developing countries and emerging markets (Martens 2007). The development of these initiatives is the direct result of a landscape that is characterised by international trade, economic deregulation, and the ascent of global value chains (Utting and Zammit 2009). Multi-stakeholder initiatives attempt to fill the governance gap by formulating co-regulatory measures, regarded as an alternative to corporate self-regulation. Empirical studies suggest that establishing partnerships between companies and NGOs can improve stakeholder integration, assist in formulating sustainable standards, and stimulate cooperative behaviour amongst stakeholders throughout global value chains (Dahan et al. 2010; Perez-Aleman and Sandilands 2008) Multi-stakeholder initiatives are often portrayed as more legitimate, compared to industry-led initiatives such as the EICC, as they include civil society actors. They can establish and implement social and environmental standards and are perceived as initiatives that can address governance challenges in global value chains (Dolan and Opondo 2005; Lund-Thomsen and Nadvi 2010). But recent studies show that multi-stakeholder initiatives do not always fulfil their potential, as independent monitoring of associated social and environmental standards can be inadequate, while not all stakeholders may be included in ways that satisfy their concerns (Fuchs et al. 2011).

Conclusion

The assessment of institutional and stakeholder pressures has shown that the actors in Apple's supply chain—including the company itself—have become trapped in a pattern of minimal reform and frequent denial, causing an impasse that has inhibited fundamental changes from occurring. Apple readily reaffirms its legitimacy with consumers, while Foxconn convinces Apple that the reform process is working. The shortfalls of Apple and Foxconn's self-regulatory initiatives—which take the shape of patches

to a fundamentally flawed production system—allow problems at manufacturing plants to persist, which continue to be exposed by civil society actors, who can do little more than raise awareness, while any awareness of the problems by the wider public is short lived and the absence of any Chinese government involvement prohibits the formulation of stricter labour laws.

Significant and effective changes in Apple's supply can only be achieved if this impasse is broken, which means stakeholders and institutions campaigns require better direction and coordination. Consumers and civil society organisations are generally a powerful tandem in achieving social and economic change, and pressure by civil society organisations harnessing consumer power is one of the driving forces behind changes in social and environmental practices. However, in this instance, the consciousness raising moments that consumers experience through the work of civil society organisations have been effectively countered by Apple and Foxconn's immense marketing efforts focused on the products themselves. This allows exploitative practices to continue, perhaps indefinitely. If authorities fail to improve regulation and enforcement, workers are best served by co-regulatory efforts coming out of multi-stakeholder initiatives voicing all stakeholder concerns, instead of relying on the current corporate self-regulatory social and environmental regime.

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