**Executive Summary | The War on Document Format Standards in the EU**

In this master’s thesis, I have investigated the war on document format standards in the EU that took place between 2003 and 2010. This has been done to understand why IBM and Sun Microsystems (now Oracle) engaged Microsoft in a decade-long war on document format standards when they had no direct financial incentive to do so. Microsoft had a massive stake in the war as roughly 30% of the firm’s historic annual revenue is derived by the sale of Microsoft Office.

To understand the effect document format standards have on the market for office suites an analytical framework was developed based on the theories of the godfather of institutional economics, Thorstein Veblen. It was a risky choice to use Veblen because such foundational institutional economics have to my knowledge never been used before to understand business strategy.

The analytical framework provided an understanding of the role standards can potentially play in shaping a competitive environment. When applied to the case, the use of standards as a business strategy instrument became apparent, as a significant cause behind Microsoft being able to maintain a virtual monopoly in the market for office suites, was its control over the dominant document format standard.

In 2003 the EU requested a new type of standard that would in essence deprive Microsoft of control over the dominant document format by being open source and easy to incorporate support for. IBM and Sun Microsystems jumped at the opportunity and introduced a candidate to the EU that met this request. Microsoft responded by submitting a competing candidate. Although it eventually gained support from the EU on equal terms with the standard presented by IBM and Sun Microsystems, it was in essence not open source and not easy to incorporate support for.

The analytical framework facilitated an understanding of this as a purposeful retardation of the standard’s specifications to ensure that Microsoft would not loose control over the market for office suites in the EU by allowing others to easily incorporate support for their standard.

IBM and Sun Microsystems lobbied the EU to launch an anti-trust investigation into Microsoft’s specifications of the standard in addition to the tactics employed in acquiring the EU’s initial support. Microsoft conceded and subsequently implemented full support for the standard backed by IBM and Sun Microsystems.

The application of the analytical framework has facilitated the following key insight into the war on document format standards in the EU and the use of standards as a business strategy instrument:

1. Document format standards have a significant effect on not only the market for office suites, but also software and services that provide input to be used in those office suites
2. Microsoft used this trait to maintain a virtual monopoly by ensuring that their document format standards excluded others from successfully competing in the market for office suites
3. IBM’s and Sun Microsystems success in forcing Microsoft to include full support for their standard meant that they no longer would be dependant on Microsoft’s standards when their software and services were to deliver input to be used in Microsoft Office
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Chapter 1.0 | Introduction and Field of Research

During the first decade of the new millennium, a war was waged in the EU on which document format standard to adopt for national and international government entities. The EU expressed interest in 2003 for a new document format standard that should utilise Extended Mark-up Language (XML) to increase the modularity of document formats for the purpose of making it easier for multiple office suite vendors to incorporate support for the same standard. This would decrease the degree of vendor lock-in that previous document format standards had facilitated. To compliment this, the EU also requested the document format standard to be open source.

Two groupings within the IT sector responded to the EU’s expression of interest; IBM and Sun Microsystems advocated for their document format standard, Open Document Format (ODF), and Microsoft for their Open Office XML (OOXML). The two opposing sides then waged a war against each other to gain EU favouritism for their respective document format standard.

Microsoft had and still has a massive financial stake in the market for office suites and thus in document format standards. Roughly 30% of Microsoft’s historic annual revenue has been derived from the sale of office suites and the EU wanting to depart from Microsoft’s proprietary document format standards towards a vendor neutral alternative represented a serious challenge as vendor lock-in facilitates repeat business.

The opposing side, IBM and Sun Microsystems, had and still have no direct financial stake in the market for office suites.

The question then arises why would Sun Microsystems and IBM engage Microsoft in a decade-long war on document format standards if they had no direct financial incentive to do so?

Answering this question can be done in a myriad of ways. Understanding the technical application of document format standards is found in information and communications technology journals. Understanding the market for office suites and market incumbents’ strategic considerations is found in business strategy journals. Understanding the EU’s request for a modularized and open source document format standard pertains to the democratisation of standards and is found in political economy journals.

This master’s thesis is an answer to the aforementioned question, but rather than attempting to perceive the question in the optics of either a political economist, business strategist or software engineer the aim is to provide an integrated answer. This master’s thesis is a culmination of my bachelor degree in predominantly political science, a master’s degree in international business, and employment in the IT sector. The objective is to investigate the war on document format standards in the EU on a holistic level that accounts for all three spheres.
Chapter 1.1 | Research Objective

1. **What is the interrelationship between the technical application of document format standards and their effect on the market for office suites?**

2. **What is IBM’s and Sun Microsystems’ incentive to engage Microsoft in a war on document format standards in the EU?**

Understanding any standard’s technical application and its effect on the market in which it operates is often too complex to incorporate in a discussion of business strategy. In my case of document format standards, very little has been written in business strategy literature, as it is difficult to dismantle the technical nature of the subject into components that suit contemporary academic business strategy discourse. In part, this is due to business strategy being an academic field occupied with firm centric positioning and standards often course through entire markets.

To answer the question of what is the interrelationship between the technical application of document format standards and their effect on the market for office suites, I require a theoretical understanding of a given market as a whole. This is required to decipher not only how a given firm is affected, but also how it can affect the market through its control of standards and how it is affected by other’s control of standards.

For the purpose of acquiring this theoretical understanding, I have chosen to employ the theories of the late 19th century and early 20th century Norwegian-American economist Thorstein Veblen who is the godfather of institutional economics. A primary advantage to employing Veblen’s theories is that he uses a very clear taxonomy for a firm’s operational considerations; those that relate to technological application and efficiency are industrial considerations and those that relate to financial gains on the basis of the firm’s industrial capabilities are business considerations. Throughout the remainder of this master’s thesis I will use these definitions of business and industry in this precise way.

Veblen uses this taxonomy to accurately depict the interrelationship between business and industry and how this is shaped by the competitive situation within not only a single market, but also on a sector level. In addition, his theories account for the role standards and standardization plays in the interrelationship between business and industry on the basis of the competitive situation.

These characteristics facilitate the possibility of developing an analytical framework capable of capturing the effect a standard can have on a market on the basis of the standard’s industrial application (read: technical application).

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1 Where industry is normally used in business strategy literature to describe a collection of related markets, I use the term sector to avoid confusion with Veblen’s definition of industry.
The aim is to develop an analytical framework that provides an understanding of the industrial application of standards, how they affect a market and how business considerations (read: pertaining to financial gain) can alter an industrial consideration with competitive gains in mind. Having developed such an analytical framework and having applied it to my case of the war on document format standards in the EU, thus answering my first research question, I aim to be in a position where I can also provide a theoretically substantiated answer to what could mobilise IBM and Sun Microsystems to challenge Microsoft with no direct financial incentive to do so.

Chapter 1.2 | Research Design

To develop the analytical framework, my theoretical point of departure will be to accurately capture Veblen’s theories on the interrelationship between business and industry by isolating these from his overarching narrative that is aimed towards depicting this relationship’s impact on society. Veblen published his theories on the interrelationship between business and industry in the period 1884 to 1927. He based them upon observations of contemporary America’s ecosystem of business enterprises and sought to explain its impact on society. His observations on this interrelationship were never intended to be framed as a unified theory of business strategy, but many of his theories on the interrelationship between business and industry have later been further developed by others and are today taught at business schools as time tested-business strategies, albeit without Veblen’s name being mentioned. One likely reason for his name being omitted in contemporary business strategy literature is that his writings are not firm centric in nature. During the development of the analytical framework, Veblen’s observations will be contextualised with contemporary business strategy literature to enrich the framework with intra-firm operational considerations to increase the applicability upon my case of the war on document standards in the EU.

Before turning to the actual development of the analytical framework, I will in Chapter 2 provide a literature review and an explanation of my employed research paradigm. The literature review will be on the works that inspired Veblen, and contemporary business strategy. This will serve as both a contextualisation for my intended contribution to business strategy literature and a frame of reference for my research paradigm that will be explained in extension of the literature review. With a notion of where my contribution fits into contemporary business strategy literature and a clearly defined research paradigm I will turn to developing my analytical framework in Chapter 3.

In Chapter 3, the first step will be to introduce Veblen’s taxonomy of business and industry, the interrelationship between them and what role standards play in this; second, I will build upon this taxonomy by explaining how business considerations affect industry considerations in relation to standards with competitive gains in mind; and third, I will enrich the theoretical insight from the two preceding steps by drawing on Veblen’s observations on how large firms are not solely occupied with financial gains in a competitive environment, but also very much so with the evolutionary relationship between them and their competitors in a market or sector, and how standards can play a role in shaping that relationship.
In the second part of this master’s thesis, Chapters 4 and 5, I turn to the war on document format standards in the EU.

I will begin in Chapter 4 with developing an understanding of XML. Then, I will apply this knowledge to understand how it is advantageous to use XML in document format standards and how this manifested itself in the two competing candidates. This will serve as my foundation for understanding the industrial considerations that guide the development of document format standards.

I will then introduce the circumstances that led the EU to request an open source XML based document format standard from the IT sector in 2003. From here I will depict the course of the war chronologically, over the three distinct phases it can be divided into; first, I look at how the competing standards were developed to meet the requirements of the EU; second, how the proponents of each standard fought to gain approval for their candidate at the expense of the other; and third, how the competing factions fought to have their standard adopted as the preferred choice for the EU's national and international government entities.

With knowledge of both the industrial application of XML based document format standards and the actions of the two factions during the war I will then apply the analytical framework in Chapter 5. The first task will be to frame my knowledge of the industrial application and industrial considerations that guided the development of standards with my analytical frameworks explanation of how standards play into the interrelationship between business and industry. This will serve as an answer to my first research question of what is the interrelationship between the technical application of document format standards and their effect on the market for office suites. The second task will be to contextualise this with the evolution of the competitive environment from 2003 to 2010 by referencing the analytical framework’s predictions for large firm's interests in said evolutionary development. This will serve as an answer to my second research question of what is IBM's and Sun Microsystems' incentive to engage Microsoft in a war on document format standards in the EU.
Chapter 2 | Literature Review and Research Paradigm
Chapter 2.0 | Literature Review and Research Paradigm

Before developing the analytical framework I will first work towards an understanding of the academic context Veblen’s theories and contemporary business strategy literature stem from. I begin with Veblen and the economics zeitgeist of his day. This will not only place Veblen, to those new to his writings, in reference to the other seminal economists of his day, but also indicate his particular research paradigm to which I subscribe in this master’s thesis. Following section 2.1 Veblen in Context is 2.2 Business Strategy Literature in Context where some of the major directions within contemporary business strategy literature will be reviewed to provide readers with a frame of reference to where I aim to contribute.

With these in place, I turn to 2.3 Research Paradigm where my employed research paradigm will be explained on the basis of my source of inspiration, Veblen, and where I wish to contribute, contemporary business strategy literature.

Chapter 2.1 | Thorstein Veblen in Context

In Veblen’s time, there were two competing schools of economic thought; the marginalist school then lead by English economist Alfred Marshall\(^2\) and American economist John Bates Clark\(^3\); and the Austrian school founded and lead by the Austrian economist Carl Menger\(^4\).

Marshall is also considered one of the founders of neoclassical economics and his seminal work in *Principles of Economics* (1890) is one of the earliest publications that mathematically explain the relationship between supply and demand, price elasticity of demand, marginal utility, and the costs of production\(^5\). Moreover, it explains the equilibrium between these elements and thus constitutes the foundation of modern microeconomics.

Veblen was the first to use the term neoclassical economics, though his theories are not considered a part of this school of economic thought. He first used the term neoclassical economics to distinguish the marginalists from the Austrian school, but it was later used by people such as the English economist John Hicks\(^6\), and is today used, as an umbrella for a host of unified economic theory that combines selected aspects of both the marginalist and Austrian schools of thought\(^7\).

Marginalist and Austrian economics, unified under the label of neoclassical economics, represent a departure from classic economics, as championed by the likes of the English political economists Adam Smith, David Ricardo and John Stuart Mill\(^8\). This departure is not represented solely by the further development of the theoretical predictions and understanding of the economy, but also in

\(^3\) Clark, John Bates “*The Distribution of Wealth: A Theory of Wages, Interests and Profits*” New York: Cosimo 2005(1899)
\(^8\) Ibid.
the increasing use of mathematics to deduct and illustrate said theoretical predictions and understanding.

That notwithstanding, the common denominator from the works of and works influenced by 18th century Smith to 19th century Marshall was an underlying belief in the efficiency of the free market and its ability to optimize the utility of an economy’s resources. This belief rests on the assumption that individuals operating within this commercial system are inherently rational and will act in their own self-interest and thus in the interest of the commercial system. Smith wrote in The Wealth of Nations (1776):

- “It is not from the benevolence of the butcher, the brewer, or the baker that we expect our dinner, but from their regard to their own interest”

Mill wrote years later on this assumption’s role in the academic field of political economy:

- “Political economy does not treat the whole of man’s nature as modified by the social state, nor of the whole conduct of man in society. It is concerned with him solely as a being who desires to possess wealth, and who is capable of judging the comparative efficacy of means for obtaining that end”

This assumption that human beings are fundamentally rational and thus focused on optimizing their own wealth with the minimum amount of effort has later been dubbed homo economicus by its critics; the economic man.

One of these critics was Veblen, who firmly contested the existence of the economic man. More specifically, he contested the implicit notion of rationality. In Veblen’s perception, rationality implies that an individual possesses all available information and the cognitive capability to process them before making an informed choice. He did not believe that such conditions would arise often during the course of the economic man’s life. Instead, Veblen assumed the notion that man acts to the best of his cognitive capabilities based on the information available to him. This notion would later be named bounded rationality by the American sociologist Herbert A Simon.

From Veblen’s perspective, the mythical economic man’s degree of rationality was not a static state, but one of constant change based on preceding conditions. In The Place of Science in Modern Civilization and other Essays (1919), Veblen wrote:

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10 The isolated concept of economics did not arise until the late 19th century when marginalists started to use it instead of political economy when discussing economic matters on a mathematical and axiomatic basis. For more details, I recommend Backhouse’s The Penguin History of Economics.
“The economic life history of the individual is a cumulative process of adaptation of means to ends that cumulatively change as the process goes on, both the agent and his environment being at any point the outcome of the last process”13

This sentence is a very clear representation of why Veblen’s perception of economics as an academic field was incompatible with the mainstream neoclassical economics of his time. By rejecting the validity of the foundations of his time’s dominating and practised school of economic thought, he forced himself to observe the externalities and implications of running such a system14.

In one of his earliest publications, Why is Economics not an Evolutionary Science (1898), Veblen explained his reservations on neoclassical economics and emphasised the need for an academic approach that would encompass the notions of evolution, bounded rationality and learning as opposed to his perception of neoclassical economics’ focus on rationality and the mathematical equilibrium of elements pertaining to the economy15. Throughout Veblen’s works, his inspiration from the English biologist Charles Darwin is evident and he sought to encompass the aforementioned notions in a unified theory of the evolutionary interrelationship between business and industry. He never did accomplish such a thing, but he laid a strong foundation and has arguably conducted the most successful attempt at constructing such a theory.

The theoretic foundation laid by Veblen is the academic discipline of institutional economics16, the study of the social construction and evolutionary development of institutions and their ability to shape economic behaviour. In Veblen’s works and for the purpose of this master’s thesis, these institutions are simply business and industry.

While Veblen never accomplished a unified theory of institutional economics for his field of research, his seminal works greatly inspired other economists to pursue the academic field of institutional economics. Of the more notable is the American economist John R. Commons17.

Chapter 2.2 | Business Strategy Literature in Context
The generic business strategy textbook used in a business strategy course today contains selected theories from three primary overarching academic fields: microeconomics, industrial organisation and, to some degree, institutional economics. Microeconomics serves the purpose of presenting the intra-firm managerial considerations. Industrial organisation is taught to contextualise the firm’s position in the market and institutional economics to

14 I will return to these observations and subsequent theories in Chapter 3.0 Developing the Analytical Framework.
15 Veblen, Thorstein "Why is Economics not an Evolutionary Science" The Quarterly Journal of Economics, Volume 12, 1898
17 Ibid.
teach business students how to incorporate the notion of causality and interdependence between firms in the market\textsuperscript{18}. It is important to note that while the firm centric teachings in microeconomics and industrial organisation are usually taught at relative great length, as a prerequisite for understanding the academic field of business strategy, institutional economics is taught on a very selective basis.

The microeconomics used in business strategy springs from neoclassical economics\textsuperscript{19}. More accurately, it stems from Marshall who was the first to propose the study of specific, individual markets and firms, as a means of understanding the dynamics of economics, thereby his development of concepts such as the relationship between supply and demand, price elasticity of demand, marginal utility and the costs of production. That being said, contemporary microeconomics and business strategy literature also entail several basic economic rationalities that predate Marshall, such as Smith’s theory of efficiency through specialisation\textsuperscript{20} or Mill’s theories of resource allocation, production and pricing issues.

Industrial organisation dates back to the start of the 1930s. It builds upon neoclassical economics and Marshall’s aforementioned notion. Its focus lies on the study of the strategic behaviour of firms, the structure of the market in which they operate and its interactions with its competitors. Moreover, it studies the conditions that cause an otherwise perfectly competitive market to move into an oligopoly or monopoly market structure. Vice versa, it studies the conditions and strategies that allow firms to uphold oligopoly or monopoly market structures from turning into a situation of perfect competition\textsuperscript{21}.

Two of the earliest and more renowned industrial organisation economists are the Americans Edward Chamberlain\textsuperscript{22}, father of the theory of monopolistic competition, and Joe S. Bain who, among other things, studied how firms deterred entry into their markets.

While the academic fields of industrial organisation and neoclassical economics carry a significant insight into the intra-firm considerations through its emphasis on the firm and the causality of its choices, economists made empirical observations on the behaviour within a given market that neither of the two disciplines could readily explain.

English institutional economist Ronald Coase’s transaction cost theory from 1937 is an example of an institutional economist’s explanation of conditions that were not readily explainable by neither of the two other disciplines\textsuperscript{23}. It explains why some firms choose to form partnerships rather than trading


\textsuperscript{19} Note that neoclassical economics continued to evolve long after Veblen died in 1929. It fully matured with Hick’s neoclassical synthesis that represented a combination of Marshall’s theories and John Maynard Keynes’ theories on macroeconomics. For more details, I recommend Backhouse, Roger E. “The Penguin History of Economics” Penguin Economics, 2002


\textsuperscript{22} Chamberlain, Edward “Theory of Monopolistic Competition” Boston: Harvard University Press, 1933

\textsuperscript{23} Coase, Ronald “Theory of the Firm” Economica, Volume 4 Number 16, 1937
bilateral. This was perhaps the first deliberate business strategy input from an institutional economist and this particular theory has since then been further developed by others and is widely used by industrial organisation economists to explain the dynamics within markets. This use of institutional economics is indicative of its general use in the academic field of business strategy. It is employed when microeconomic and industrial organisation theories fall short of explaining intra-market relationships.

Another industrial organisation complementary theory arose in 1944 with Austrian mathematician John von Neumann and Austrian-American economist Oskar Morgenstern’s *Theory of Games and Economic Behaviour*\(^4\) (game theory) that provides an analytical framework for understanding the intra-market causality of a firm’s strategic choices that involves or impacts an external agent or competitor.

While transaction cost theory and the business operationalisation\(^5\) of game theory both represent an increased focus on the firm as an entity to be studied apart from the economy, as advocated by Marshall, and more in relation to its competitors, the advent of business strategy as an independent academic field did occur until the 1970s. It was only then that economists, such as American institutional economist Oliver Williamson, revisited Coase’s transaction cost theory\(^6\). It is arguably here, at a point in history where there were significantly increasing differences in how markets and sectors were organised, that the study of inter-firm positioning and inter-firm strategies gave rise to the isolated academic field of business strategy\(^7\).

This academic field matured throughout the 1980s. The most prominent and arguably most influential contributor to the academic field of business strategy is American industrial organisation economist Michael Porter\(^8\). He is renowned for his concept of competitive advantage\(^9\), an evolution of Ricardo’s concept of comparative advantage between nations\(^10\), and his business strategy framework, Porter’s Five Forces\(^11\).

The latter is a descriptive framework of the five external forces that must be considered and accounted for in order to understand the competitive rivalry in a market of interest in order to formulate and follow a sound business strategy. In addition, Porter has also contributed to my academic field of interest with a set of generic business strategies and contingencies based on competitor actions.

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\(^5\) Von Neumann, John “Zur Theorie der Gesellschaftsspiele” Mathematische Annalen, Volume 100 Number 1, 1922


\(^10\) Ricardo, David “On the Principles of Political Economy and Taxation”, London: John Murray - Albemarle Street, 1817

He built his theory of the five forces by incorporating management tools already in practical use with microeconomics and by modifying Bain’s theories on industrial organisation. Porter substantiated the theoretical validity of his five forces and subsequent generic strategies through rigorous use of case examples\(^{32}\).

The five forces are outlined in Figure I and will give readers an idea of the multitude of aspects a business strategy has to account for\(^{33}\).

Many consider Porter’s Five Forces to be the embodiment of business strategy\(^{34}\). However, while Porter is attributed to the short-term success of business strategy as an academic field, he is in the minds of many also its greatest enemy because of his success. While his theory of competitive advantage is widely acclaimed, many economists occupied with business strategy are highly sceptical of Porter’s scientific approach. While the charges are many, the most persistent is his selective use of case studies and subsequent adjustment of his theories to match the chosen case studies. It is not Porter’s academic credentials that are in question, but rather the motive of trying to contribute to the academic field of business strategy with theories that are readily applicable and relevant to the private sector at all cost.

In an article containing an accumulation of 20 years of critique of Porter and reflection on the implications for the academic field, American economist Alexander T. Nicolai wrote in 2004:

- “Strategy development is a responsible task. Charging undoubtedly useful management tools with scientific authority mystifies these concepts unnecessarily. The belief that, ideally, the strategic management of companies can be conducted as applied science creates the attitude of a ‘pseudo-professional’ manager. This type of manager thinks, independently of the respective industry (read: sector) that he can execute the laws of strategic success.”\(^{35}\)

The critique of Porter is symptomatic for the academic field of business strategy. As it is an amalgamation of 100 years of microeconomics and industrial organisation, with the use of other academic disciplines when the need arise, it becomes increasingly hard to produce unified theory with a rigorous syntax.

I will in the following chapter discuss the ontological and epistemological considerations that arise from these challenges together with my existing understanding of Veblen’s assumptions of these to outline the opportunities and pitfalls that must be navigated in order to develop my suggestion for an institutional economic analytical framework.

\(^{32}\) Ibid.

\(^{33}\) Note that Porter uses the term industry where I use sector.

\(^{34}\) Nicolai, Alexander T “The Bridge to the ‘Real World’: Applied Science or a ‘Schizophrenic Tour de Force’?” Journal of Management Studies, Volume 41 Number 6, 2004

\(^{35}\) Nicolai, Alexander T “The Bridge to the ‘Real World’: Applied Science or a ‘Schizophrenic Tour de Force’?” Journal of Management Studies, Volume 41 Number 6, 2004, p20
Chapter 2.3 | **Research Paradigm**

When using Veblen’s theories as a foundation for my analytical framework, I consider it important to understand his ontological (what we can see) and epistemological (what and how we can know about it) assumptions that gave rise to his theories and constitute his research paradigm. This is not

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only important to further my own understanding of Veblen’s theories, but also vital to help readers understand my employed research paradigm.

As explained in 2.1 Veblen in Context, Veblen strongly contested the existence of the economic man and the neoclassical assumption of this phenomenon as the foundation for economic theory. It is notably in this difference between neoclassical and institutional economics that one can identify the incongruence in research paradigms between the two.

Neoclassical economics and derived academic fields such as industrial organisation assume the existence of the economic man as the building block of economic theory. If you understand the rationales of the economic man, you can build theory on this understanding. This is referred to as an atomistic ontology. An atomistic ontology assumes that by reducing your field of study to the lowest common denominator and understanding the motives and functions of this common denominator, you can build theory upon this understanding. In economic theory, you can reduce the theory of the firm to the theory of the economic man, as firms are constellations of economic men.\(^{37}\)

In continuation of Veblen’s inspiration from Darwin, he rejected the validity of atomism in economics and sought to instil the notion of evolution as a result of interdependence and interactions between the units of analysis. This is referred to as organicist ontology. The contemporary British institutional economist Geoffrey M. Hodgson has provided a very accurate definition of organicist ontology in his 2004 publication, The Return of Institutional Economics: Agency, Structure and Darwinism in American Institutionalism:

- “In an organicist ontology, relations between entities are internal rather than external, and the essential characteristics of any element are seen as outcomes of relations with other entities.”\(^{38}\)

Where neoclassical economics utilises an atomistic ontology to build theories that rest on the assumption of mathematical predictability in the study of economics, Veblen and institutional economics as an academic field subscribe to an ontology that assumes a relationship between its units of analysis that is far too rapidly changing so as to capture theory with the use of mathematical logic. If you reduce your unit of analysis to the lowest common denominator, you will likely miss the relationship between these as they combine to create layers of institutions. To draw on a (simplified) example from natural science, if you reduce your unit of analysis to atoms you will be able to understand why throwing hydrogen or oxygen on a fire will cause an explosion, but you will not be able to understand why when combined in the right quantities in the form of water they put out the fire.

Organicist ontology equips you with a perception of what you see is causal relationships between your units of analysis and their characteristics are outcomes of that causal relationship.


Neoclassical economics can in general be labelled as subscribing to a positivist research paradigm. A positivist research paradigm forces the researcher to look for the observable so as make theories that captures its functions. It is in the nature of this tradition to direct its research and subsequent theories towards law like generalisations.

Veblen would not be able to subscribe to the positivist tradition because he rejects the notion of observable phenomena in economics as being static and predictable occurrences. It is arguable that Veblen would identify with realism as his research paradigm. Similar to positivism, the epistemology of realism assumes the possibility of a scientific approach to the development of knowledge, but as opposed to positivism assumes that law like generalisations are often impossible given the continuous development of the causal relationship that exists between the units of analysis. Where a positivist research paradigm facilitates the generation of law like generalisation, the realist perspective assumes that your findings should change over time due to the evolutionary nature of the causal relationship between your units of analysis.

I identify with both Veblen’s organicist ontology and realist research paradigm as a whole for the purpose of this master’s thesis. Considering my field of research, I have chosen a research paradigm that allows me to perceive the evolutionary relationship between competitors in a given sector and the dynamics of this relationship rather than the characteristics of the respective competitors in isolation.

Also, my intention of coupling Veblen’s theories with selections from Porter’s contemporary business strategy theories is eased by the fact that Porter’s research paradigm for those selected theories are very well aligned with those of Veblen. While Porter does not explicitly state his choice in research paradigm as I have done above, he does provide his readers with a definition of his general research approach in his 1985 publication *Competitive Advantage: Creating and Sustaining Superior Performance*:

- “My own frameworks embody the notion of optimization, but no equilibrium in the normal sense of the word. Instead there is a continually evolving environment in which a perpetual competitive interaction between rivals takes place”39.

I aim to contribute to contemporary business strategy literature with an analytical framework developed for the express purpose of understanding the causal relationship or interrelationship between my units of analysis, business and industry, and how this affects standards.

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Chapter 3 | Developing the Analytical Framework
Chapter 3.0  |  Developing the Analytical Framework

Upon having set the point of departure in my research paradigm, I will develop my analytical framework over three sequential steps. During this I will compliment and build on those of Veblen’s observations and theories that carry a meaningful parallel to contemporary business strategy theories.

1. In 3.1 The Interrelationship between Business and Industry I will introduce Veblen’s taxonomy of business and industry, the interrelationship between them and how standards can be affected by this.
2. In 3.2 The Role of the Businessman I will build upon this taxonomy by depicting how business considerations affect industry considerations in relation to standards with gains in competitiveness in mind.
3. In 3.3 Absentee Ownership and Strategic Behaviour I will enrich the theoretical insight from the two preceding steps by drawing on Veblen’s observations on how large firms are not solely occupied with financial gains in a competitive environment, but also very much so with the evolutionary relationship between them and their competitors, and how standards can play a role in shaping that relationship.

I will round up the three steps in 3.4 Defining the Analytical Framework by reiterating the key definitions and observations.

The primary source of Veblen’s theories will be from three of his publications; Theory of the Business Enterprise (1904); The Engineers and the Price System (1921); and Absentee Ownership and Business Enterprise in Recent Times: the case of America (1923). While these three publications do not represent an exhaustive depiction of Veblen’s theory on the interrelationship between business and industry, they are arguably his most seminal works and the most relevant to this master’s thesis.

Chapter 3.1  |  The Interrelationship between business and industry

The very basic foundation of Veblen’s distinction between business and industry lies in his observation of the industrial economy in the America of his day and how he perceived it to be made up of mechanical processes. He defines these as a device of the civil engineer, electrician, inventor etc. who employ their individual manual or intellectual dexterity to create or increase the value of something that previously had little to none. As an example, consider an engineer who creates an ingenious brake disc for a car. He has thought out the design, crafted it himself and sells it to a manufacturer of brake systems. The value of the piece of material he has used has increased in value by his manual and intellectual dexterity.
Once the mechanical process is supplanted by a formalised and systemic approach to creating or increasing the value of the object in question, Veblen considers it as being organised into an industrial process. He defines the workings of an industrial process by two primary characteristics:

- “The running maintenance of interstitial adjustment between several sub-processes or branches of industry, where in their working touch one another in the sequence of industrial elaboration”.

- “An unremitting requirement of quantitative precision, accuracy in point of time and sequence, in the proper inclusion or exclusion of forces affecting the outcome in the magnitude of the various physical characteristics of the materials handles and to a thorough standardizing of tools and units of measurement”.

To continue on my example of a mechanical process, when demand increases, the engineer may hire personnel to perform the various tasks involved in making the brake discs; one employee moulds the material, a second polishes the outcome of the moulding, and a third packs it for shipment. The entire process, from moulding to packaging, now constitutes an industrial process as each step has been formalised.

Albeit a very simple description, it is a very useful one as it facilitates an understanding of how industrial processes are comprised and how they combine to create value out of individual components or materials that were worth less on their own.

Returning to my example of the entrepreneurial engineer’s brake discs, one crucial parameter of success for his industrial process is, as stated above by the second Veblen quote, the unremitting requirement of quantitative precision, accuracy in point of time, and sequence. Veblen observed that commerce requires uniformity in weight and measurements, the standardisation of inputs and outputs. He also observed that this standardisation would likely occur even without a systemic industrial process in place.

In an industrial process, non-standardized inputs retard the industrial process and the sub-vendor of a given input in the process will soon adhere to the required standards or loose his contract. As an example, each employee down the line is dependant on the preceding step to be done with unremitting quantitative precision and accuracy in point of time and sequence. If the moulder provides an imprecise product, the polisher will not be able to finish the brake disc within his usual

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42 Ibid.
43 Ibid.
44 Ibid.
timeframe, the person packaging will have to wait for the polisher to finish, and the entrepreneurial engineer will not be able to make his delivery. The same would apply if the moulding of the brake disc was outsourced and the supplier delivered a standard-deviating input or delivered it late. Standardization of the quantitative precision of the inputs and the accuracy in point of time and sequence at delivery are pivotal to the efficiency of the industrial process. The standardization, design and sequential timing of the inputs in the industrial process are in fact Veblen’s definition of what pertains to the realm of industry and the occupation of the industrial engineer.

The actual enforcement or encouragement to comply with the designs of the industrial engineer belongs to the realm of the business engineer. Furthermore, it is the business engineer’s purpose to ensure the profitability of the industrial process. While the industrial engineer may be disheartened by the delay of his industrial process’ output, the ability to discourage what caused the delay lie beyond his realm of responsibility.

The business engineer would in the case of non-compliance with the established standard reject the input and deny payment for the unsatisfactory based on what contractual relationship he has established between the sub-processes that constitute the industrial process.

In essence, the realm of business and the responsibility of the business engineer are the design, maintenance and enforcement of the pecuniary (pecuniary: relating to, or consisting of money) relationships held between sub-processes as to increase the pecuniary gains for the industrial process as a whole.

In my examples so far, an industrial process has been described as an ecosystem of a supplier supplying an input to a manufacturer that combines them into a finalised product. As Veblen noted, this particular view of how an industrial process is organised and what constitutes an industrial process is also applicable to the scenario where the entrepreneurial engineer buys the supplier. The same division of responsibility between the business engineer and industrial engineer exists, as do the exigency for the accurate execution of those responsibilities when joined into a single firm. The industrial engineer is in principle indifferent to whether the industrial process is made up of a plethora of suppliers or a single firm and the business engineer would in the case of a single firm occupy himself with pecuniary relationships between the firm and its employees rather than its suppliers.

Another important application of this descriptive framework on the interrelationship between business and industry is that it applies to services as well as production. Consider for instance telecommunications at the turn of the 20th century. You have an industrial process that consists of the manufacture of telephone wiring, telephone poles, switch boards and telephones, but it also entails

Ibid.


the placement of the telephone poles, the fitting of the wiring, maintenance of the installed telephone poles, instalment of the switchboards and administration of the switchboards.

Veblen noted that in applying to services, his descriptive framework also applies to the consumption of both goods and services. In the example of telecommunications, the consumer has to adapt his needs to the exigencies of the industrial process that make up the service by buying a phone that is compatible with the quantitative precisions that enable the functionality of the industrial process. If your phone does not comply with the service provider’s standards, it is likely that it will not work. The service is standardized and hence the use of it is standardized48.

Chapter 3.2 | The Role of the Businessman

In his day, Veblen observed an increased degree of solidarity between the administrations of both interdependent and fully integrated industrial processes as a result of the proliferation of standards shared between firms joined in industrial processes, and consumers of the outcome of those industrial processes.

The reason behind this solidarity lies in the fact that any disturbance or non-compliances with established standards ripples through the entire industrial process49 50. If the engineer delivers standard-deviating brake discs to the brake system manufacturer, a batch is lost, delivery of brake systems to mechanics and service stations is delayed, and drivers cannot get new brakes fitted.

As a natural extension of the increased sense of solidarity, a large number of industrial processes were fused together into larger firms and subsequently caused the industrial processes to be tied closer together. The closer knit the industrial process is the greater effect the business engineer’s pecuniary designs have on the efficiency of the industrial process.

If the entrepreneurial engineer were to buy up the sub-processes to obtain full ownership of the entire industrial process, from the supplier of moulded brake discs to the brake system manufacturer, he would be in a position where his business engineers would be able to capture what future pecuniary gains that would otherwise be distributed to the owners of each sub-process.

Now imagine another industrial process solely occupied with assembling cars from purchased components. If the two firms were to agree on a standard for brake systems, they would likely be better off. The two firms with their interdependent industrial processes are then joined in what Veblen calls an industrial community.

To constellate an industrial community, the output of the underlying industrial processes need not be complimentary as they could be outputs of similar use, but targeted at different consumer

segments or direct rivals for the same segment. An industrial community could for instance be our brake system firm who produces the same standardized product for two different car assembly firms. The definition of an industrial community is that of a range of industrial processes that are interrelated through a contact surface at some point either through a shared link in their sub-processes or consumer base.\footnote{Ibid.}

Veblen observed that the new era of large firms, and increasing degree of industrial communities in his time was not as much the result of technological advances, the mechanisation of production, but more of consolidated industrial processes with sub-processes closely governed by enforced standards and pecuniary transactions. As an example, the assembly line is in essence a conveyer belt, but the standardization of tasks and output along the line is the cause of efficiency.

With an understanding of what constellates an industrial community and how standards affect the relationship between different stages of production up to the consumers’ consumption of the production’s output it becomes plausible why the industrial specifications of the governing standards would no longer be the sole concern of the industrial engineer, but also of the business engineer. At this stage, it is appropriate to introduce Veblen’s definition of a businessman. The businessman is the person who’s task it is to direct the designs of the industrial engineer according to the potentials that exist for profitability within the industrial community in which the businessman’s firm resides. Recall the example of the industrial community with our brake system firm supplying the same standardized product to two car assembly firms. One of the two may order a new brake system that does not adhere to the existing standard. In this example, the businessman at the brake system firm could be in a position where it would be lucrative to shift his entire industrial process towards the new standard and thus discontinuing his contract with the other car assembly firm. As a result, the other car assembly firm may be forced to shift his production to adhere to the new standard if no other brake system provider can provide input in the old standard.\footnote{Ibid.}

By being applicable to both services and the consumption of the industrial process’ output, the mechanics of the industrial community and importance of the businessman’s understanding of these, a parallel opens to a contemporary business strategy and managerial concept: value chain economics and more importantly the underlying concept of value streams. Value chain economics was first introduced by Michael Porter in his seminal book \textit{Competitive Advantage: Creating and Sustaining Superior Performance}, published in 1985.\footnote{Porter, Michael E. “Competitive Advantage: Creating and Sustaining Superior Performance” New York: Free Press, first edition, 1998(1985) The underlying principle of value chain economics is the identification of specific activities that generate a relative greater increase in value in a firm’s entire chain of activities so as to increase profit margins. The
activities performed by a firm are divided into primary and support activities. The former covers inbound logistics, operations, outbound logistics, marketing and sales, and services and the latter covers firm infrastructure, human resource management, technology development and procurement.

Value chains are not confined to single firms. The value chains of competitors and suppliers are also of interest to this field of study as are the value chains of consumers. While the primary activities for a consumer may not necessarily combine to generate economic profit, they do provide or enable a function that the consumer values. Where a firm would evaluate the individual activities in its value chain to identify relative increases in profit margin, a consumer would weigh the individual activities of the purchased product or service in terms of relative increases in its day-to-day utilisation.

In the example of the brake system firm, one driver may prefer a particular brand of brakes because of its reliability, another its low cost-to-quality ratio and a third the number of service stations where new brakes of a particular brand can be fitted. Each of these activities give rise to a relative increase in day-to-day utilisation, but could easily be valued differently from one consumer to the next.

The analytical contribution of value chains is the ability to identify the particular activity that gives rise to increased profit margin or marginal increase in day-to-day utilisation so as to understand where product differentiation may give a firm a competitive advantage for particular consumer segments. This analysis should be conducted both for the firm in question and its consumers as well as the firm’s suppliers and potential resellers. When you study coexisting value chains throughout what I have defined as an industrial community you occupy yourself with value streams.

By analysing the sequential layering of value chains as a value stream you enrich your understanding of your firm’s individual activities’ contribution to marginal profitability by identifying consumers’ valuation of their individual activities with the supplied product or service. This allows you to identify possibilities for product differentiation that facilitate the potential capture of market share in specific consumer segments.

The most important contribution of value chain economics to my analytical framework is the understanding of how firm centric activities are influenced by the individual valuation of activities undertaken by suppliers, resellers and consumers through value streams. Coupled with my current understanding of industrial communities and how standards affect them, a picture starts to draw of how a businessman can strategically use standards to affect the value streams of competitors, their ability to cater to specific consumer segments, and their subsequent profit margin.

54 Ibid.
55 Ibid.
56 Ibid.
57 Ibid.
Chapter 3.3 | Absentee Ownership and Strategic Behaviour

Veblen observed that large businessmen do not necessarily have fortunes bound up in the efficiency or profitability of entire industrial communities, but can also increase their pecuniary gains by shocks to the underlying processes of an industrial community. The businessman’s interest lies in pecuniary gains and not the efficiency of the underlying processes of an industrial community, whose interstitial adjustments fall within the jurisdiction of the industrial engineer.

In his day, he noted that some large businessmen took the role of a *captain of industry*, which he defined as, one who directs his efforts into gaining control of some large portion of an industrial community. Veblen argued that in the case of the captain of industry, the efficiency and profitability of the industrial community is principally restored as the primary concern.\(^{58}\)

However, this concern for the efficiency of the portion of the industrial community under his control can be factitious in character as any businessman’s responsibility is that of pecuniary gains. This goal may best be achieved by excluding competitors from utilising a process or asset that is strategically important to them, but perhaps serves no immediate purpose in terms of increasing the efficiency or profitability of the businessman’s portion of the industrial community.

The reason why this type of industrial sabotage takes place is that the large businessman is not necessarily occupied with the efficiency of industrial processes. Although he may have started his climb to power from a position as an industrial engineer, the scope of his control over his industrial community of interest requires his full attention. Veblen noted on the subject:

- “…the mechanical industry has progressively shifted to a footing of applied science, and (...) the immediate designing and conduct of the work has progressively been taken over by the technicians. At the same time and by force of the same drift of circumstances the captain of industry, the owner, employer, business manager, has progressively been shifted to one side, - to the business side, the “financial end”\(^{59}\)

- “…the business man has perforce become an absentee, an outsider so far as concerns any creative work. Though he is an outsider with a deciding vote on what goes on inside”\(^{60}\)

Veblen observed that businessmen occupy themselves with putting other businessmen at a disadvantage so as to incur less severe pecuniary losses than the opposition in order to win market share at a later stage:


\(^{60}\) Veblen, Thorstein “Absentee Ownership – Business Enterprise in Recent Times: The Case of America” New Brunswick: Transaction Publishers, 2006(1923), page 259
...in a large proportion of these transactions the businessmen’s endeavours are directed to a temporary control of the properties in order to close out at an advance or to gain some indirect advantage; that is to say, the transactions have a strategic purpose."61

...his efforts are directed, not to maintaining the permanent efficiency of the industrial equipment (read: industrial process), but to influencing the tone of the market for the time being, the apprehensions of other large operators, or the transient faith of investors. His interest in the particular block of industrial equipment is, then, altogether transient, and while it lasts it is of a factitious character."62

Apart from the acquisition and direction of existing strategic processes, the invention of new and more efficient industrial processes are in essence of no interest and perhaps even a liability to the businessman’s goal of pecuniary gains if it does not bring increased ownership or competitiveness.

The implication of the aforementioned behaviour and inherent stance on innovation is that the captain of industry both furthers and inhibits the efficiency of the industrial community. Veblen concludes on this behaviour that the profit maximising businessman is in essence not concerned with the isolated efficiency of the industrial community under his control, but solely with business expediency63. Coupling this particular insight with the understanding of how businessmen have assumed the control of the interstitial adjustments (read: standards) between adjoining processes in an industrial community, one can begin to understand how standards can be used as an instrument in business strategy.

Chapter 2.4 | Defining the Analytical Framework

During the three preceding steps I have developed an understanding of what pertains to the realm of business and what to the realm of industry. The latter is the running maintenance of interstitial adjustment, e.g. standards, between several sub-processes, where in their working touch one another in the sequence of industrial elaboration to create a product or service. The former is the design, maintenance and enforcement of the pecuniary relationships held between the sub-processes.

In extension, I have developed an insight into how processes are organised and how adjoining industrial processes constitute an industrial community. Also, it has been explained how standards are incremental to the success of an industrial process by alleviating the risk of retarding the sequence of industrial elaboration due to non-standardized inputs. The existence of this risk causes

62 Ibid.
standardization between the underlying components of an industrial process to be a naturally occurring phenomenon in an efficiency seeking community.

I have also defined the respective roles of the business and industrial engineer in accordance with the aforementioned distinction between the two realms. The archetypical division of responsibility between the two would land standards in the hands of the industrial engineer and the enforcement of those standards in the hands of the business engineer. However, the ability of standards to dictate not only the interstitial adjustments of the industrial process under control of the business engineer, but possibly also adjoining industrial processes makes it an obvious source of competitive control. By influencing the specifications of a standard that course throughout an industrial community in a direction that possibly affects adjoining industrial processes in a negative way, the business engineer can enforce some degree of competitive control.

An important implication of this incentive for the business engineer to influence the considerations of the industrial engineer lies in my developed understanding of what can occur when the industrial processes under the control of the business engineer reach a scope where they represent a significant proportion of the industrial community. At this stage the business engineer, or captain of industry in Veblen's terms, whose sole occupation is that of pecuniary gains, can obtain a degree of control over the remainder of the industrial community through standards. As standardization is a naturally occurring phenomenon because non-standardized inputs retard an industrial process (or inputs of an incompatible standard), the adjoining industrial processes in an industrial community will likely converge on a single standard. If one of several incumbents controls the prevailing standard they are in a position where they can influence their competitors in a negative way by directing the specifications of the standard to be incompatible with the competitors sub-processes. In other words, the business engineer can manipulate the interstitial adjustments between the sub-processes of suppliers, resellers and competitors by being in control of the industrial community's dominant standard.

Coupled with an understanding of competition between incumbents in an industrial community as not being solely on who can maintain the most efficient industrial processes, but also to relative disadvantages, one ends up with a picture of how standards can play a role as a business strategy instrument.

So what actual elements do I require, in my case of the war on document format standards in the EU, to make an assessment of the interrelationship between business and industry and the role of standards as a business strategy instrument? The key component will be an accurate understanding of our business and industry taxonomy in context with the subject the analytical framework is to be applied upon.

The first task will be to understand the industrial application of the type of standard and the industrial process it was designed to affect.
This foundational unit of analysis, the industrial application of the standard, will then be explained in relation to the adjoining industrial processes of the overarching industrial community. This will provide a clear understanding of what the standard does and where it does so.

The second task will be to understand how consumers are related to the industrial processes the standard affects. Do they consume the products or services of the overarching industrial community or do they employ them in their own industrial processes? This will be an important distinction because if they employ them in their own industrial processes we have to understand their valuation of the functionalities. This is required because in the case of multiple available standards, one needs to understand how the industrial application of each affects the products or services each standard is employed in.

I will use the theory of value streams to identify the consumers’ activities with the products or services that are provided by the industrial community. This will enable me to contextualise the consumers’ valuations with what the standards do and where they do so. The insight derived from this will be how the standards affect the functionalities appreciated by the consumer and the industrial processes they employ them in.

Having obtained this insight, I will have a firm grasp of our foundational unit of analysis, the industrial application of a given standard.

The next task will be to introduce my second unit of analysis, the business application of the standard, to what was understood of the industrial application. This will be done on the basis of what I have learned of the behaviour of the business engineer, businessman and captain of industry.

Recall that the goal of pecuniary gains can be obtained through not only the industrial engineers efficient designs, but also through a rise in competitiveness by instilling a relative disadvantage to competitors through control of dominant standards in the industrial community (read: sector). This means that in developing an understanding of the interrelationship between business and industry, I have to be aware of the competitive gains that can be acquired by a sector incumbent if they control a dominant standard. If the sector incumbent can influence the industrial considerations behind the designs of a dominant standard in a direction that puts other sector incumbents at a disadvantage, it would be advantageous to do so.

In addition, when analysing the interrelationship between the industrial and business application of a standard, one needs to be mindful of the fact that industrial innovations or optimal industrial designs manifested in standards are not necessarily in the best interest of a dominant sector incumbent. If an innovative new standard or optimization of an existing one leads to relatively greater industrial application for competitors also dependent on it, it would be disadvantageous to introduce the standard into the industrial community.

This insight into the potential strategic use of a standard has to be understood in extension of what the standard does and where it does so. In other words, I use the detailed insight into my
foundational unit of analysis, the industrial application, to identify where my second unit of analysis, the business application, can create opportunities for gains in competitiveness by influencing a standard's specifications.

Note that this process is iterative. The influence of a business consideration over an industrial consideration in relation to standards that negatively affect competitors reliant on it creates a new competitive environment. This cycle repeats itself as competitors react over time, industrial processes are altered and new standards are developed to meet the new requirements for the alterations. Subsequently, new opportunities for using standards as a business strategy instrument are opened and old are closed.

My analytical framework with its emphasis on the evolutionary interrelationship between business and industry will now be applied to the case of the war on document format standards in the EU to answer my two posed research questions.

1. What is the interrelationship between the technical application of document format standards and their effect on the market for office suites?
2. What is IBM’s and Sun Microsystems’ incentive to engage Microsoft in a war on document format standards in the EU?
Chapter 4 | The War on Document Format Standards in the EU
Chapter 4.0 | The War on Document Format Standards in the European Union

A document format exists as a vessel for conveying or receiving information, no matter your office suite of choice. Document formats are standardized to facilitate interoperability between information structured via applications enclosed in an office suite and to facilitate interoperability between users of that office suite. This applies to private consumers as well as commercial sectors and government entities.

A document format allows the sender of information, be it an IT application, private consumer, business professional or government official, to dictate the exigency of their office suite of choice and the document format standard it adheres to by potentially disallowing recipients of documents to view and process the enclosed information should they use an office suite non-compliant with the document format standard used by the sender.

This crisis of compatibility can be exemplified by a consumer who cannot read an invitation received in a given text format, a potential buyer who cannot review a sales pitch received from a seller in a given presentation format or a government official who cannot process the data received from a statistics bank because of the spreadsheet format.

The existence of this crisis of compatibility aided Microsoft in sustaining a virtual monopoly in the market for office suites because of the popularity of their proprietary document format standards up until the early 2000s. This monopoly was self-reinforcing as new entrants in the market for office suites were challenged by the inevitable fact that if the native document format standard for their product was non-compliant with Microsoft’s office suite or their office suite non-compliant with Microsoft’s proprietary document format standards, then their potential customers would be at a disadvantage because of the aforementioned crisis of compatibility.

In the late 1990s, industrial engineers discovered that this long running problem can potentially be alleviated by utilising extended mark-up language (XML) to modularise a given document format in an effort to increase transparency of the underlying design and thus help developers of all office suites to incorporate support for such a standard.

Upon discovering this, it was government entities that first expressed an interest in a document format standard modularised through the use of XML. The EU in particular aggressively pressured the IT sector to develop such a document format standard with the added criteria that it had to be open source; under control of more than a single firm, ideally a sector consortia and accredited by the formal international standardization body, the International Organisation for Standardization (ISO).

Sun Microsystems (now Oracle) enthusiastically heeded the call as they had already begun development of an XML based document format standard and had an early version implemented as the native standard in its open source and free office suite, OpenOffice.org. IBM together with Open Source Europe, a European private sector group for the advancement of open source software, also strongly supported the development of Sun Microsystems’ standard whose future development was soon after the EU’s expression of interest moved to the IT sector standardization body, OASIS.

This obviously constituted a significant threat to Microsoft that a cornerstone of their business in the EU, the government customers, were actively seeking a replacement for the proprietary Microsoft document format standard then commonly used. If the replacement was made, then the aforementioned crisis of compatibility, that had worked out advantageously for Microsoft as the
dominant sector incumbent, would be alleviated and open up for competition in the market for office suites where there previously had been little to none.

Microsoft started to develop their own XML based document format standard upon an existing design that had already to some extent utilised XML, although for the purpose of reducing the size of the document files themselves and not for the sake of modularity as an enabler for transparency. They introduced this standard to the EU as an alternative to be considered to the standard proposed by Sun Microsystems, IBM and their supporters. Since the EU expressed interest in 2003, a war has been waged in the EU on which standard to adopt.

By 2008, both competing standards had achieved the EU’s requested ISO accreditation and both were recognized as acceptable standards for the EU public sector with the choice between the two left to the individual national government entities. Despite a widespread historic dependency on Microsoft’s document format standards, many EU national government entities have since 2008 opted for Sun Microsystems’ candidate.

Looking back from the year 2010, Microsoft was and still is the supremely largest supplier of office suites in the EU and the world as a whole. Microsoft Office is a product under Microsoft Business Division and accounts for 90% of all revenue generated by this business unit. This business unit had revenue of $18.9 billion in 2009, making Microsoft Office’s contribution to the company’s total revenue of $58.4 billion in 2009 nearly 30%.

While the sale of Microsoft Office and the subsequent earnings of the Microsoft Business Division decreased by a few percent in 2009 compared to 2008 for the first time in the history of the company, it is likely attributable to the ongoing financial crisis and relatively low size of investments being made in all manners of IT in 2009.

As late as 2006, Microsoft Office accounted for over 90% of all installed office suites on PCs used in the private, public or business domain in the EU. Today, this number is estimated to be around 80-85% in the EU with many of the member states who have opted for Sun Microsystems’ document format standard still to conduct the full-scale implementation of a compatible office suite.

That being said, it is still too soon to make any quantitative assessment of the impact this has made on Microsoft’s control of the market for office suites in the EU public sector. In the nature of any study of business strategy the short-term direct effect is not easy to identify. Any study of the effect of a business strategy in a time frame as confined ours, circa 2008 to 2010, will inherently be a study of behaviour, incentive and intent rather than measureable impact.

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65 Ibid.
66 The actual number of Microsoft Office installations in the EU is not publicly available.
The focus of interest in this master thesis is thus what incentive could mobilize IBM and Sun Microsystems to engage Microsoft in a war on document format standards in the EU.

IBM had discontinued development of its commercial office suite applications by 2003 and instead started development of a free office suite based on open source technology and Sun Microsystems already offered its OpenOffice.org free of charge.
What strategic imperative could mobilise Sun Microsystems and IBM to engage Microsoft in a costly race to develop an open source XML based document format standard that could potentially increase competition in the market for office suites in which they have no direct financial interest? How can one understand their behaviour, what is their incentive to embattle Microsoft and what intent lies behind their expressed behaviour based on this incentive?
While any first year business student would be able to make a qualified guess, my interest lies in developing theoretically substantiated insight into the interrelationship between business and industry to understand the strategic imperatives that have guided the actions of the two competing sides during the course of the war.

In my search for a meaningful answer to stated research questions I start out with developing an understanding of XML in 4.1 Extended MarK-up Language. Upon this I will in 4.2 Open Source XML Based Document Format Standards investigate why it is advantageous to employ XML in document format standards and contextualise this with the two competing candidates by detailing how they came into being and from where.

With sufficient insight into the industrial application of XML in document format standards and an introduction of the two competing standards, I turn to 4.3 Rise of the War on Standards. Here I will depict the initial setting for the war between the proponents of the two competing standards and how the EU drew the battlefield.
From here I will turn to the three distinct phases of the war. In 4.4 Development I follow up on the preceding section by investigating how proponents of the two competing document format standards took to developing their respective candidate in the period from 2003 to 2005, so as to meet the requirements set by the EU. In 4.5 Approval I will depict the period of 2005 to 2008, where the opposing sides fought for their own and against the other’s ISO accreditation. In 4.6 Adoption I will investigate the outcome of the development and approval phases as manifested in the period of 2008 to 2010.

With a chronological depiction of the war on standards in place and a sufficient understanding of the two competing document format standards, I will employ my analytical framework in Chapter 5. In 5.0 Business and Industry Analysis I will develop a notion of the interrelationship between the business and industry considerations taken during the development of the two competing document format standards. In 5.1 Evolutionary Relationship between the Sector Incumbents I will contextualise the insight developed in the preceding section with what I have discovered about the opposing sides’ behaviour in regards to fighting for ISO approval and adoption of their standard.
This will allow me to identify the strategic imperatives that have guided the development of the two and depict the evolutionary relationship between the involved sector incumbents and thus potentially be in a position to understand why parties with no financial stake in the matter have chosen to involve themselves so rigorously.

Chapter 4.1 | Extended Mark-up Language (XML)

Extended Mark-up Language (XML) is an approach to electronic data modelling. While XML itself was introduced in the late 1990s, the interest in a uniform approach to structuring data, so as to increase the interoperability and compatibility between different data sources, dates as far back as the 1960s68.

The need for data integration standards precedes both XML and the Internet because firms have always required conformity and mutual understanding of terms in their dealings with one another. The advent of the Internet economy in the 1990s, and subsequent potential for new business, further increased the demand for a shared approach to data modelling.

To meet this demand, a coalition of sector actors formed a working group in 1995 within the sector standardization body World Wide Web Consortium69 (W3C) to develop such an approach. In 1998, the W3C introduced XML and sector incumbents such as IBM, Microsoft, Oracle and Sun Microsystems quickly supported it. It is today in its fourth version and is the most commonly used approach to data modelling70.

Exhibit I | Example of an XML based CD Catalogue

```xml
<CATALOGUE>
  <CD>
    <TITLE>Exile on Main St.</TITLE>
    <ARTIST>The Rolling Stones</ARTIST>
    <COUNTRY>England</COUNTRY>
    <COMPANY>Rolling Stones Records</COMPANY>
    <PRICE>10.90</PRICE>
    <YEAR>1972</YEAR>
  </CD>
  <CD>
    <TITLE>Harvest</TITLE>
    <ARTIST>Neil Young</ARTIST>
    <COUNTRY>USA</COUNTRY>
    <COMPANY>Reprise</COMPANY>
    <PRICE>9.90</PRICE>
    <YEAR>1972</YEAR>
  </CD>
</CATALOGUE>
```


69 The World Wide Web Consortium is a sector driven standards organisation. For more information, visit (cited November 12, 2010): http://www.w3.org/

70 Lampathaki, Fenareti et. al. “Business to business interoperability: A current review of XML data integration standards” Computer Standards & Interfaces, Volume 31 Number 6, 2009
The attentive reader will note that I do not refer to XML as a standard, but as an approach. The reason for this is that writing up a set of data in XML does not guarantee any form of interoperability with other XML data sources unless they recognize your structure and use of words; syntax, vocabulary and semantics. Consider the example of a CD catalogue in Exhibit I.

In this example, the data has been structured according to the rules defined by XML, but the content and its parameters have been set arbitrarily. Another author may have chosen to structure the CD catalogue different, but with the same parameters or he may use another currency for the price parameter or by company refer to the parent company of the label or the distributing label. If this were the case, then the example above would be incompatible with the work of the other author. This is the reason why XML in itself does not constitute a standard, but an approach to creating standards.

As interoperability was the original intent of the sector actors that commissioned the development of XML, there are a wide variety of XML interoperability standards that facilitate the use of XML in business-to-business, business-to-consumer and consumer-to-consumer data transactions. These standards can be considered as dictionaries that provide a uniform understanding of the content's intended message by defining structure, syntax, vocabulary and semantics.

To illustrate, I can draw on one of the intended uses of XML, which was developed with business applicability in mind. During the development of XML it was believed that by providing a standardized business vocabulary, XML structured information would be inherently interoperable between applications as long as it adhered to this vocabulary. As explained in the example of the CD catalogue, vocabulary on its own does not guarantee that XML structured information will be understood identically across a range of applications because the semantics of a shared vocabulary may be different and the data may be structured in an alternative way.

During the course of daily business operations, a firm may send a multitude of XML structured information to a vendor regarding stock, invoicing, product catalogue content etc. emanating and processing at different IT applications at the firm and vendor respectively. The interoperability between the sent data and assurance that the embedded content is understood identically is pivotal to the cooperation between the two. To enable and ensure this cooperation, standards have been developed since the launch of XML to provide structure, syntax, vocabulary and semantics vendors of IT applications can adhere to. These are referred to as XML Data Integration Standards, e-Business Frameworks or XML Schemas.

In Exhibit II, you will find an abstract of the OAGIS xml data integration standard specification.

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71 Ibid.
72 Ibid.
74 Lampathaki, Fenareti et. al. “Business to business interoperability: A current review of XML data integration standards” Computer Standards & Interfaces, Volume 31 Number 6, 2009
This particular example describes in detail how the OAGIS XML data integration standard should be applied if a vendor is to receive or issue an order for a commodity labelled as hazardous material. It is in this abstract and this particular standard identified by name, category, type, a description in English, serial number, parent serial number and a sub set of parameters for the commodity to define the hazardous material by listing the name of the agency that has issued a code for the hazardous material followed by a description of the material in English.

This particular example represents only 10 lines of a 32-page specification of a business document for a purchase order, which is only a fraction of the entire OAGIS XML data integration standard that in its 9th and current version covers 190 business document specifications. Consequently, there are an endless number of possibilities for other standards to employ different structure, syntax, vocabulary and semantics in its specifications that impedes interoperability.

There are numerous alternatives to the OAGIS standard with new alternatives being developed and existing standards constantly being updated by a myriad of sector organisations, individual firms and national and international standardization bodies. OAGIS, as an example, is developed and maintained by the Open Applications Group’s (OAG); a cross sector organisation that holds members from the IT sector such as IBM, Microsoft and Oracle.

The example of XML data integration standards highlights the complexity and difficulty of having two applications interact should they be built for different standards. While the intended application of XML is in essence to provide a uniform approach to data modelling through modularisation and specifying this modularisation, the actual standards that provide such specification are many and far from compatible.

While I have exemplified this through XML data integration standards, this scenario echoes through many applications of XML in standards making. One of these being the subject of the following section, XML based document format standards.

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Exhibit II | OAGIS 8.1 Hazardous Materials Specification

```xml
<Commodity>String</Commodity>
<ItemCategoryId>String</ItemCategoryId>
<ItemType>String</ItemType>
<Definition lang="en-us" owner="String">String</Definition>
<SerialNumber>String</SerialNumber>
<HazardousMaterial>
  <Code issuingAgency="String">String</Code>
  <Description lang="en-us" owner="String">String</Description>
</HazardousMaterial>
```

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75 OAGIS 8.1 Specification. Available at (cited November 12, 2010):

76 Nurmilaakso, Juha-Mikka "XML-based e-business frameworks and standardization" Computer Standards & Interfaces, Volume 28 Pages 585-599, 2005

77 Nurmilaakso, Juha-Mikka "XML-based e-business frameworks and standardization" Computer Standards & Interfaces, Volume 28 Pages 585-599, 2005
Chapter 4.2 | Open Source XML Document Format Standards

Document format standards govern who can access what information and how. This characteristic has traditionally made this particular type of standard an immensely important aspect of the success of office suites throughout history. One factor that has facilitated this is that up until the turn of the 20th century, document format standards were designed to be binary and the sole intellectual property of the originator. During the 2000s, attentive users of office suites will have noticed that the default save format have changed from binary and proprietary document formats to open source XML based document formats. Were you an average user of Microsoft's office suites in the 1990s, you would likely have saved your text documents in the .DOC format, your spreadsheets in .XLS, your visual presentations in .PPT and never thought of choosing an alternative. All of these formats are binary in the sense that all enclosed data is compiled into a single inseparable file. All of these formats are proprietary because Microsoft holds the exclusive right to develop and license them.

During the golden age of the Internet in the late 1990s, there was an ever-increasing interest for a departure from proprietary standards towards an open sourced foundation for cooperation through the Internet. One example of this was organisations around the world that expressed interest in an open source document format that would allow them to reduce their degree of vendor lock-in with their chosen developer of office suite. The rationale behind this interest is twofold. First, there is the organisation centric rationale of being able to discontinue the use of one vendor's office suite in favour of another with no loss of compatibility between legacy documents and the new vendor's office suite. The second rationale lies in the ability to cooperate and share documents with other organisations that use other office suites without any compatibility issues.

It was governmental organisations that initially voiced their interest in open source XML based document format standards. Where most existing document formats were binary in the sense that all content was embedded in the file, an XML based document format would in essence be a compiled folder with underlying files for the various components that make up your average document (pictures, tables, text, formatting etc.). The purpose of this is to depart from the aforementioned binary and inseparable file type to a modularised type that ideally increases transparency and interoperability.

Today, there are two competing document formats, the sector driven Organization for the Advancement of Structured Information Standards' (OASIS) ODF and Microsoft's OOXML.

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The Open Document Format (ODF) was the first to accommodate the demand for an open source XML-based document format standard. The OASIS technical committee that designed the standard worked according to the following six criteria stated in its charter:

1. “It must be suitable for office documents containing text, spreadsheets, charts, and graphical documents
2. It must be compatible with the W3C Extensible Mark-up Language (XML) v1.0 and W3C Namespaces in XML v1.0 specifications
3. It must retain high-level information suitable for editing the document
4. It must be friendly to transformations using XSLT or similar XML-based languages or tools
5. It should keep the document’s content and layout information separate such that they can be processed independently of each other
6. It should ‘borrow’ from similar, existing standards wherever possible and permitted”

This translates to an ODF file being comprised of separate sub files that each specify document content such as formatting, text, pictures, formulas, tables etc. Where possible and allowed, existing standards are used rather than new specifications being made. As an example, ODF relies on ISO’s HTML standard, ISO/IEC 15445, to specify colours.

The result is a document format standard that is modularized through the use of XML and compatible with relevant existing standards so as to ease the development of applications able to edit and produce documents that are compatible with other applications adhering to the standard.

The ODF standard dates back to 1999 when the maker of StarOffice, StarDivision, started developing an XML based document format standard. StarDivision was later bought by Sun Microsystems and StarOffice became the foundation for Sun Microsystems’ OpenOffice.org 1.0 office suite. In 2002, a coalition of open source oriented companies, under the lead of Sun Microsystems, sought to accommodate the demand for an open source XML based document format standard and formed a working committee within OASIS to develop ODF upon the existing XML document format supported in OpenOffice.org.

Microsoft’s take on an XML based document format standard, Open Office XML (OOXML), is very similar to ODF in its overall design, by being a compiled folder of files that dictate formatting, text, pictures, formulas, tables etc., but differs from ODF through its specification of these components because it was built on the functionalities of the Microsoft Office application as opposed to OpenOffice.org.

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The foundation for OOXML dates back to 1998 when its originator, Microsoft, first used XML to more efficiently store data in their used document format standards of the day. They since then further increased the integration of XML in their document format standards and the earliest version of OOXML was incorporated in Microsoft Office 2003 as an alternative to its existing document formats. At this point in time, OOXML was still a proprietary format in that its development was entirely undertaken by Microsoft.\(^{83}\)

In 2003 the two document format standards were not competing as of such. Microsoft’s OOXML was not implemented as the default document format in its 2003 Microsoft Office and Sun Microsystems’ ODF was fresh of the drawing board. The speed of development of both standards increased tremendously in 2003 as government and private entities started to express serious interest in an open source XML based document format standard to replace the existing binary and proprietary formats of the day, most notably by the EU.

Chapter 4.3 | Rise of the War on Standards

The interest in an open source XML based document format standard was first voiced by government organisations, with the first significant step towards the adaptation of such a standard being made by the European Union in 2003. There are however many examples of non-European government entities demanding such a standard.

Of the notable and more influential examples of this is the Commonwealth of Massachusetts who was the first in the US to pursue an open source XML based document format standard for their internal needs. They announced in 2005 that they would no longer procure licenses for office suites that did not support document formats that were XML based, void of legal restrictions, published to peer review and subject to joint stewardship.\(^{84}\) At the time, they were Microsoft Office users and had an extensive host of legacy documents in Microsoft’s older formats. Although Microsoft had developed an XML based document format standard at the time, OOXML, it did not live up to Massachusetts’ demands and they opted for the ODF standard and the freeware, open source office suites that support it.\(^{85}\)

Immediately after the announcement, Microsoft challenged the aforementioned rationales behind Massachusetts’ announcement and voiced their concern that the Commonwealth’s demands to an open source document format standard posed a challenge to private firms’ intellectual property rights; the source of revenue for technology firms. Massachusetts’ then Secretary of Administration and Finance, Eric Kriss, rebutted:\(^{86}\)

\(^{83}\) Ibid.


\(^{85}\) Ibid.

“Intellectual property is extremely important. But when it comes to this specific issue and the definition of a file format, you can always make the claim of intellectual property to the definition of a file format. That is any corporation’s or any individual’s rights to do so... It’s just that that doesn’t serve the needs of a sovereign state. Here we have a true conflict between the notion of intellectual property and the notion of sovereignty. I would say 100 percent of the time in a democracy, sovereignty trumps intellectual property”

This particular quote goes straight to the very core of the problem that any sovereign entity faces when relying on products or services whose underlying standards are proprietary. As mentioned, the result was a substitution of Microsoft Office and the formats it supports with ODF and OpenOffice.org.

In the US, this particular example is far from localised to Massachusetts, as several other states in the US have changed to an open source document format. Nor is it localised to the US and the EU as government agencies in South Africa, Brazil, Uruguay, Venezuela, Japan, Malaysia, India and South Korea have also shifted to the use of ODF. China has also moved to an XML based document format, but has developed its own standard, the Uniform Office Format (OUF), that is specifically designed for Mandarin and Cantonese.

Chapter 4.4 | Development (2003 to 2005)

While the Massachusetts case accentuated the need for Microsoft to direct the development of OOXML towards becoming an open source standard, the most significant pressure for such a change in direction came years earlier from the European Union who commissioned a report in 2003, the Valoris Report, on the possibility of changing from a dependency on binary and proprietary- to open source XML based document format standards. IBM, Microsoft, Sun Microsystems and Open Source Europe, a European private sector group for the advancement of open source software, were invited to participate in the ensuing process concurrently with the commissioning of the Valoris Report. All responded with enthusiasm for the project.

The Valoris Report came out later that year, which concluded that the technology was mature enough for the EU to pursue the implementation of an open source XML based document format standard. The Valoris Report overwhelmingly favoured the more mature ODF standard as it had made more steps towards the criteria issued by the EU; criteria that closely resembles those stated in

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89 Open Forum Europe is today primarily sponsored by IBM, Oracle (who has now bought Sun Microsystems), Google and Red Hat. For more information, visit (cited November 12, 2010): http://www.openforumeurope.org/
the Massachusetts case of being XML based, void of legal restrictions, published to peer review and subject to joint stewardship\textsuperscript{90}.

Microsoft submitted their comments to the report and strongly contested the argument that OOXML was not suitable due to its then proprietary nature by counter-arguing that its \textit{de facto} status as a sector standard should be a testament to its industrial efficiency and the matter of making it \textit{de jure} via an internationally recognised standardisation body should naturally follow\textsuperscript{91}.

Upon having reviewed the feedback received from the sector, the responsible agency within the European Commission who ordered the Valoris Report, Telematics between Administrations Committee (TAC), approved the following as an agenda for the subject in 2004:

- "recognising the special responsibility of the European public sector to ensure the accessibility of its information… with a view to rationalising and improving the interactions with citizens and enterprises… and taking into account the importance of the public sector as buyer of IT services and products"\textsuperscript{92}

In addition to the agenda, TAC issued several recommendations. A selection of these can be seen below:

1. "Industry (read: sector) actors not currently involved with the OASIS Open Document Format (ODF) consider participating in the standardisation process in order to encourage a wider industry consensus around the format
2. Submission of the emerging OASIS Open Document Format (ODF) to an official standardisation organisation such as ISO is considered
3. Microsoft should consider the merits of submitting XML formats to an international standards body of their choice
4. The public sector is encouraged to provide its information through several formats. Where by choice or circumstance only a single revisable document format can be used this should be for a format around which there is industry consensus, as demonstrated by the format’s adoption as a standard"\textsuperscript{93}

Chapter 4.5 | Approval (2005 to 2008)

The aftermath of the TAC sector recommendations was that Sun Microsystems submitted ODF for standardisation in OASIS who adopted ODF 1.0 as a standard in 2005. Later that year it was submitted to ISO and the International Electrotechnical Commission Joint Technical Committee 1 (IEC/JTC1) for international and intergovernmental recognition. Shortly after the standard was submitted, Sun Microsystems launched OpenOffice.org 2.0 that supported ODF as the default format. Just under a year after the standard was submitted to ISO and IEC/JTC1, it was accepted as the ISO/IEC 26300 standard. It has since then won significant support among the open source community and large sector incumbents such as Google who use it as the default format in their free GoogleDocs online office suite, and IBM, who use it in their freeware alternative to OpenOffice.org, Lotus Symphony. IBM, Google and Sun Microsystems (now Oracle) all participate in the OASIS working committee devoted to the future development of the ODF standard. The interests of the ODF standard are organized through the sector organization ODF Alliance.

As the necessity for providing an open source XML based document format standard became evident through the increased demand for such a standard and the positive reception of ODF, Microsoft rapidly sought to make OOXML an internationally recognized standard. This was done by submitting their latest version of OOXML format to the European Computer Manufacturers Association (ECMA), a long-standing member of both ISO and IEC/JTC1. Just over a year after being submitted, the standard was approved and immediately submitted to ISO and IEC/JTC1 for a special procedure fast-track approval. A year later in 2007, the members of ISO and IEC/JTC1 voted against approving OOXML as an open source XML based document format standard. Microsoft, via ECMA, took it back to the drawing board to incorporate the record setting 1.027 technical changes the members of ISO and IEC/JTC1 proposed to make the standard compliant with their demands for being labelled open source.

The most repeated proposed technical revision was the OOXML standard specification’s lack of compliance with ISO and IEC/JTC1 standards language and the lack of use of existing ISO standards for underlying specifications such as colour codes, date and time formats. Also, the 6,546 page standard specification for OOXML was deemed excessive compared to the ODF standard specification that was only 867 pages and achieved the same. Particularly the length of the OOXML

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94 ODF Alliance. For information, visit [cited November 25]: http://www.odfalliance.org/
96 The organisation’s name is no longer considered an acronym for European Computer Manufacturers Association, but is simply referred to as ECMA International. For more information, visit [cited November 25, 2010]: [http://www.ecma-international.org/](http://www.ecma-international.org/)
standard specification gave rise to many ISO members being concerned that Microsoft’s submission was not open source as it was not vendor-neutral considering that it would be extremely costly for others to implement support for OOXML in their office suites.

In 2008 OOXML was resubmitted at a ballot resolution meeting and approved by the ISO and IEC/JTC1 members and ratified as the ISO/IEC 26500 standard. Microsoft and ECMA had implemented 873 of the proposed 1,027 changes, leaving 154 proposed changes not implemented. The 5 day ballot resolution meeting of February 2008 has since then been labelled as symptomatic for an extraordinarily controversial display of corporate influence over the decisions of national standardization bodies, the bodies whose representatives vote in ISO.

During the period between the OOXML standard specification being rejected in 2007 and then approved in 2008, Microsoft was accused by proponents of ODF of anti-trust violations in their dealings with the national standardization bodies. In Portugal, Microsoft attempted to exclude Sun Microsystems from participating in the national standardization body’s assembly due to a physical lack of chairs in the meeting room. In Norway, the number of members in the technical committee responsible for the ISO vote on the approval of OOXML rose from 7 members to 30 shortly before the final vote in late 2007. All 7 pre-OOXML vote members were against approving the standard and following the ISO ratification in 2008, 13 of the 30 members of the technical committee, including the original 7, resigned. In Sweden, two Microsoft partners were encouraged by a now fired Microsoft official to join the national standardization body at the last minute in return for undisclosed “marketing contributions”.

The list of countries in which Microsoft has been accused of anti-trust violations based on their dealings with national standardization bodies prior to the ISO ballot resolution meeting in February 2008 is extensive. While the result may have been favourable for Microsoft considering that the representatives of the national standardization bodies approved the OOXML standard specification for ISO accreditation in 2008, both proponents of ODF and the press have discredited both ISO and many of the national standardization bodies as a response to the proceedings. ISO’s Secretary General Alan Brydon has had to publicly defend his organisation’s processes as a response to the critique voiced on Microsoft’s ability to influence the voting procedure.

103 Goldberg, Daniel “Microsoft pressade partners att rösta ja”. Available at (cited December 28, 2010): http://www.ida.se/2.1085/1.118337
104 Brydon, Alan “Full text of interview of ISO Secretary-General by Reuters on ISO/IEC 29500”. Available at (cited January 3, 2011): http://www.iso.org/iso/interview_iso_secretary-general_iso29500
Chapter 4.6 | Adoption (2008 to 2010)

While Microsoft achieved what it wanted in the short term, the proponents of ODF successfully lobbied the EU to launch an anti-trust investigation in 2008 into the revised, and approved, 2008 OOXML standard specification as well as Microsoft’s dealings with the national standardization bodies.

Microsoft took two steps towards ending the investigation. The first came shortly after the announcement of the investigation with the promise to provide ODF support for Microsoft Office 2007 in a scheduled upgrade\textsuperscript{105}. The EU cautiously recognised this first step towards ameliorating the situation and responded in an official memo in May 2008:

“The European Commission has taken note of Microsoft’s announcement on 21st May concerning supporting ODF in Office. The Commission would welcome any step that Microsoft took towards genuine interoperability, more consumer choice and less vendor lock-in. In its ongoing antitrust investigation concerning interoperability with Microsoft Office (…), the Commission will investigate whether the announced support of ODF (OpenDocument format) in Office leads to better interoperability and allows consumers to process and exchange their documents with the software product of their choice.”\textsuperscript{106}

The nature of this cautious recognition of effort lead Microsoft to concede and subsequently announce in August 2009 the implementation of a Europe-only file format ballot in addition to native ODF support in Microsoft Office 2010 in return for the EU to end the anti-trust investigation. The file format ballot would be presented when opening Microsoft Office 2010 for the first time to provide the user with a choice of default document format. As of December 2010, the EU has not closed the anti-trust investigation\textsuperscript{107,108}.

A significant contribution to the resilience of the anti-trust investigation is the relentless stream of accusations presented against Microsoft by proponents of ODF, including Sun Microsystems (now Oracle), Google and most vociferously IBM.

\textsuperscript{105} Keizer, Gregg "EU will probe Microsoft’s ODF move". Available at (cited January 8, 2011): http://www.computerworld.com/s/article/9088220/EU_will_probe_Microsoft_s_ODF_move


\textsuperscript{107} European Comission "Microsoft Antitrust Investigation Depository". Available at (cited December 18, 2010): http://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=1_39530

\textsuperscript{108} Keizer, Gregg "Microsoft Offers Office 2010 File Format ‘Ballot’ to Stop EU Antitrust Probe". Available at (cited December 18, 2010): http://www.pcworld.com/article/169733/microsoft_offers_office_2010_file_format_ballot_to_stop_eu_antitrust_prob e.html
Where the press and ODF proponents strongly contest the democratic process in the national standardization bodies, the vanguard for technical criticism of OOXML is represented by sector incumbents, again most vociferously by IBM. IBM representatives constantly reiterate the extensiveness of the OOXML standard specification and subsequent lack of vendor-neutrality, its lack of reliance on existing ISO standards and that it is in essence not open source as while ECMA may be the formal developer of OOXML it is in effect done solely by Microsoft. As a response to OOXML achieving ISO accreditation in 2008, IBM released the following statement:

- “IBM will continue to be an active supporter of ODF. We look forward to being part of the community that works to harmonize ODF and OOXML for the sake of consumers, companies and governments, when OOXML control and maintenance is fully transferred to JTC1 (ISO/IEC)”\(^{109}\).

Particularly the latter part of the statement shows how vehement IBM is on moving control of OOXML into the hands of the sector. The post-2008 war on standards however has not solely been confined to influencing national EU decision makers directly, by public statements or blog entries by pro- and opponents of OOXML. Both sides have constantly accused each other of waging covert smear campaigns via control of articles on Wikipedia and similar information depositories on the events of the war via proxy authors\(^{110}\). The extent of the clandestine post-2008 war on standards is that very little information on strictly industrial aspects of the differences between the competing standards, apart from official submissions to the national standardization bodies and ISO, can be verified as void of business spin.

This further complicates the fact the EU member states and the government entities they are comprised of have to choose between the two ISO accredited document format standards or ideally support both if possible, as stated by the 4\(^{th}\) recommendation of the TAC commission:

- “The public sector is encouraged to provide its information through several formats. Where by choice or circumstance only a single revisable document format can be used this should be for a format around which there is industry consensus, as demonstrated by the format’s adoption as a standard”\(^{111}\)


While the structure of the two document format standards is similar, the interoperability between the two is far from optimal even with significant steps being made to facilitate this\textsuperscript{112}. While the TAC recommendation listed above does specifically encourage the use of multiple formats, it would not be very feasible, as it would require an equal number of office suites to facilitate this.

In 2008 when most EU member states started to deliberate on the choice between the two, the ODF format was not supported by Microsoft Office and OOXML did not translate well into open source based office suites such as Sun Microsystems’ OpenOffice.org or IBM’s Lotus Symphony.

Perhaps the most important difference between the two standards lie in their respective choice of which existing ISO standards to employ when working towards the goal of modularity. Where ODF was the first to be developed and explicitly towards modularity in this sense, it exceeds OOXML in the number of existing ISO standards it employs to define elements such as colours or formulas.

While OOXML also relies on a host of existing ISO standards to define certain specifications, it does so often in different areas or different ISO standards for the same area. As an example, OOXML uses the ISO/IEC 10918, JPEG, standard for thumbnails while ODF relies on the ISO/IEC 15948, PNG, standard\textsuperscript{113}.

The result in 2008 was two incompatible document format standards that did not translate well, if at all, when opened in an office suite not native to the document format in question.

Returning to the 4\textsuperscript{th} TAC recommendation, it thus becomes evident that it was not easy for government entities to comply with the recommendation without operating out of both Microsoft Office and an ODF native office suite.

The TAC commission’s agenda and recommendations for the EU’s national and international governmental entities are not mandatory, but have been followed by many members. When Microsoft’s OOXML standard achieved ISO accreditation in 2008, numerous member states had been discussing for several years their respective document format choices. While this type of discussion took place within the same national standardization bodies that Microsoft has been accused of infiltrating, a growing number of EU member state national government entities have opted for the alternative.

\begin{table}[h]
\centering
\begin{tabular}{|l|}
\hline
| List of Countries with ODF Adoption\textsuperscript{114} | \\
\hline
| Belgium | \\
| Denmark | \\
| Germany | \\
| Hungary | \\
| France | \\
| Italy | \\
| Netherlands | \\
| Poland | \\
| Slovakia | \\
| Sweden | \\
| United Kingdom | \\
\hline
\end{tabular}
\end{table}


\textsuperscript{114} Eionet depository for information on ODF in the EU. Available at (cited December 28, 2010): http://www.eionet.europa.eu/software/opendocument
Table I contains the list of EU member states with government entities that adopted ODF as their document format standard of choice as of December 2010.

Of the 27 states that are a member of the EU as of 2010, 12 have government entities that have pursued ODF with the rest still deliberating which of the two document format standards to pursue. No one to this author’s knowledge would contest Microsoft’s still dominant position in the market for office suites, but it is very interesting that despite Microsoft’s extensive efforts in swaying the opinions of national standardization bodies in favour of OOXML, numerous government entities whose final decision it is to choose between the two have opted for ODF. Arguably, this is attributable to the equally extensive lobbying efforts conducted by proponents of ODF.

At a sector conference in June 2008, Microsoft’s national (US) technology officer Stuart McKee was asked during a panel debate who he thought had won the war on document format standards, to which he replied:

- “We found ourselves so far down the path of the standardisation process with no knowledge. We don’t have a standards office. We didn’t have a standards department in the company… I think the one thing that we would acknowledge and that we were frustrated with is that, by the time we realised what was going on and the competitive environment that was underway, we were late and there was a lot of catch-up”

Contextualised with the 2010 scenario, Microsoft had to make two large concessions to the ODF community who achieved support for their document format standard in Microsoft Office 2007 and Microsoft Office 2010 with no reciprocal support for OOXML in ODF native office suites and growing favouritism towards ODF in the EU public sector.

This highlights the interest in answering why large sector incumbents such as IBM and Sun Microsystems (now Oracle) with no direct financial stake in the market for office suites have such an immense interest in ODF becoming the dominant standard for open source XML based document formats? Both IBM and Oracle would arguably be indifferent to the outcome of the battle between ODF and OOXML from a financial point of view.

I will now employ my developed analytical framework on what has been learned on both the industrial application of XML based document format standards and the actions of the two opposing sides during the war on document format standards in the EU.

The first task will be understand the industrial application in relation to the predictions of the analytical framework, how business considerations affect industrial considerations in relation to standards and competitive gains, and then contextualise this understanding with the evolutionary change in the relationship between the primary involved sector incumbents, IBM, Sun Microsystems (now Oracle) and Microsoft.

115 Ibid.
116 Donaghue, Andrew “Microsoft admits to standards ignorance pre-OOXML”. Available at (cited December 28, 2010): http://tinyurl.com/6yyb454
Chapter 5 | Business and Industry Analysis
Chapter 5.0  Business and Industry Analysis

From an industrial perspective, the purpose of a document format standard is to facilitate the exact conveyance of content between the author of a document and its recipients. The document format standard governs what an office suite must be able to read, edit and save so as to facilitate interaction between users of different office suites.

The industrial engineer is tasked with the development of the industrial design that fulfils this purpose. If the industrial engineer purposefully directs the industrial design of a document format standard in a direction that leaves one vendor of an office suite worse off compared to another in terms of the ability to read, edit and save, the industrial engineer is no longer solely occupied with industrial design, as a business agenda is taken into account and represents a purposeful retardation of optimal industrial application from a consumer perspective.

A consumer chooses its document format standard based on the relative marginal increase in day-to-day utilisation gained by one document format standard compared to another. In more practical terms, the ability of the document format standard to accurately transport an intended message with no loss of ability to read, edit and save for the recipient. In my case, the consumer and the recipient are an interlaced structure of EU and national government agencies and the citizens and companies it services and the contractors it employs.

With an understanding of exactly how crucial a document format standard is to accurate communication and interaction in this interlaced structure, it is evident why the industrial design of a document format is so important for the competition between vendors of office suites and why the industrial engineer so easily becomes influenced by its employers business agenda.

It is important to reiterate that OOXML was born out of the functionalities of Microsoft Office as a means for reducing document size by utilising the inherent benefits of modularity offered by an XML approach. Similarly, ODF was based on the functionalities of OpenOffice.org, but without an immediate financial agenda in mind. These different origins are the root cause of why OOXML and ODF are incompatible and neither fulfils the optimal industrial application of accurately conveying a document written in OOXML via Microsoft Office and opened in Open Office or vice versa with an ODF document written in Open Office and opened in Microsoft Office117.

With this in mind, the question remains of why the industrial design of the two standards adhere to different underlying specifications. Reference for instance the difference in choice of colour specification.

In my search of a greater understanding of the business considerations that affect the industrial design of a document format standard, I start with the consumer as determined in my analytical framework. I first turn to the consumer so as to understand the industrial application that the

document format standards govern. This allows us to identify the value streams that business considerations are fundamentally founded on.

Recall that in 3.1 The Interrelationship between Business and Industry depicted three general characteristics for standards:

1. Standardization is a naturally occurring process in an efficiency seeking community
2. Standardization, as a naturally occurring process, also applies to services
3. Standardization, as a naturally occurring process, also applies to consumption

On the subject of standardization being a naturally occurring process, remember how non-standardized inputs retard the industrial process. While the author in my case may send a document in OOXML, the recipients may all be OpenOffice.org users and open the document to see a deviation from what the author intended. In this case, the sender not adhering to the recipients’ choice of standard has retarded the industrial process. The author would likely choose to adhere to the recipients’ choice of standard by acquiring a compliant office suite. If it were a single recipient, the person in question would either complain to the sender on the sent document format standard or re-evaluate its choice in office suite based on the relative number of occurrences where incompatibility has been an issue. As warranted, the recipient may potentially change office suite to one that most often provides the optimal industrial application in terms of the ability to read, edit and save.

This situation where the choice of document format standard for either the sender or recipient impedes the ability to interact with others is a clear parallel to the theory and study of network effects; a discipline within the academic field of industrial organisation. The study of network effects focuses on the increased positive gains received by users of a given product or service the more users there are. While there are many sub-divisions and types of network effects identified by the academic community, the most important aspect of this theory to this master’s thesis is the aforementioned assertion that an increase in users can leave the community of users better off. The classic contemporary example of this is that of social media. Consider the current 2010 scenario where multiple Facebook competitors have entered the market for social media. A new entrant in the market may possibly offer a superior site with greater functionality, it may provide an almost identical site or a slightly inferior site but without the advertisements. In all three examples, the new entrant would be hard pressed to steal users from Facebook without a massive marketing effort and a stroke of luck as the value for users of Facebook is the number of users. The number of people users can connect to via the service determines the relative marginal increase in day-to-day utilisation.

The same rationale applies to document format standards as one office suite built for ODF may suit your needs and tastes better than Microsoft Office, but if the people with whom you make up an industrial process with are all Microsoft Office and OOXML users then you would likely adhere to the collective choice in document format standard to avoid retarding the industrial process. Hence the existence of adverse network effects by adhering to a document format standard other than the
majority of the industrial process you participate in. This underscores the identified characteristic of standardization being a naturally occurring phenomenon in an efficiency seeking community.

On the subject of the two remaining characteristics, recall Veblen’s argument that consumers must adhere to the existing standards used by the services they employ. For instance, a government employee, that must provide statistical analysis based on data extracted from a database, is forced to employ an office suite compatible with the document format standard the data is extracted in. Conversely, the service provider behind the database must cater to the exigencies of the service’s consumers by developing the service to be compliant with the preferred document format standard of the majority of its consumer base. For instance, IBM has to develop its DB2 9 database tools to enable the extraction of data in the appropriate OOXML format if a significant proportion of their consumer base use Microsoft Office.

Subsequently, as a result of network effects and the natural occurrence of adherence to a single document format standard, software and service vendors are also forced to develop their offerings to be compliant with the dominant document format standard or risk losing competitiveness as their offerings retard their consumers’ industrial processes.

These three characteristics are why a dominant document format standard will only increase its dominance over time if it is non-compliant with office suites that natively support competing document format standard. These three characteristics are why a dominant standard within one industrial process spills over into adjoining industrial processes and ultimately ripple through an entire industrial community; from one industrial process to consumers of the outcome of that industrial process and back down to service and software vendors that also cater to industrial processes within the industrial community.

It is with this insight in place that I can begin to develop an understanding of why firms with no financial stake in the market for office suites are interested in the development and interests of document format standards. By being affected by the decisions of other firms through a shared consumer base, the firms with no direct financial stake in the market for office suites are at the mercy of the those who do have a financial stake and who decide which direction development of the document format standard is to take.

It is easy to imagine a situation where a document format standard is developed in an unfavourable direction for service and software vendors or possibly in a favourable direction, but one that requires extensive and costly re-development of recently released software that until corrected for the updated document format standard will leave the software undesirable as it potentially retards the industrial processes of its consumer base.

Consequently, it becomes apparent why software and service vendors such as IBM and Sun Microsystems (now Oracle) have an interest in breaking the stranglehold historically held by Microsoft on the dominant document format standard. It would be strategically beneficial to move the decision making process for the development of dominant document format standards away from a single firm and into the hands of the sector in the form of standardization bodies such as ECMA and OASIS.
Chapter 5.1 | Evolutionary Relationship between the Sector Incumbents

Understanding why Sun Microsystems and IBM have been so vehement in challenging Microsoft on the basis of what was learned from the effect document format standards have on the market for office suites, starts with the competitive scenario as it looked in 2003.

In 2003, Microsoft’s virtual monopoly in the market for office suites was testified by Sun Microsystems offering their office suite free of charge, to ensure some measure of adoption, and IBM had discontinued development of its commercial office suite and support of the native document format standard they had developed for it in favour of developing an open source based freeware alternative. For IBM, this also came in light of the company abandoning the market for consumer software and computers all together. It had begun licensing all its technology for personal computers to Lenovo and shifted all software development towards governments and enterprises.

A key reason to why both IBM and Sun Microsystems could not compete in the market for office suites lie in the nature of the industrial application of document format standards and the adverse network effects that arise if a user, who is part of an industrial process, chooses an office suite incapable of interoperability with Microsoft’s dominant standard. The success of trying to incorporate support for Microsoft standard at the time, .DOC etc, would be entirely at the mercy of Microsoft considering the binary and proprietary nature of their standard.

Even if IBM were to develop their commercial office suite and its native document format standard beyond the capabilities of Microsoft Office, they would still be hard pressed to sway potential customers because of the customer’s potential loss of interoperability with Microsoft Office users in their industrial community. Also, the crisis of compatibility not only exists in regards to interoperability with others in the industrial community, but also, whatever host of legacy documents held by the potential customer would have to undergo a costly process of being converted to the new standard with no guarantee of no loss of intended conveyance of message due to formatting issues.

Vice versa, Microsoft had a great competitive advantage from being in control of the dominant document format standard as potential IBM or Sun Microsystems office suite customers were deterred by the crisis of compatibility both in relation to legacy documents and interoperability with others in their industrial community.

To exemplify, a given national government entity in any EU member state would impede their ability to interact via documents with other government entities or citizens, who predominantly used Microsoft Office, if they were to change standards, and incur a significant rise in their total cost of ownership in relation to converting legacy documents and re-educating personnel to the functionalities of the new office suite.

When the Valoris Report became public proponents of ODF identified an opening for changing the competitive situation in the market for office suites. As the advisory industrial engineers who contributed to the Valoris Report had highlighted ODF as the most suitable candidate for the EU’s requirements for an open source XML based document format standard, an opening had presented itself to break the effect Microsoft’s binary and proprietary standards had had on the market for office suites.
The utilisation of XML would increase modularity and subsequently transparency of a document format standard and thus allow all office suite developers to incorporate support. Ensuring that the document format standard would be open source, which is subject to peer-review and joint stewardship via an international standardization body, would ensure that Microsoft’s control over the market for office suites via its proprietary standards would be broken in the EU. IBM and Sun Microsystems as the two most vehement proponents for ODF managed to build on the momentum created by the Valoris Report and acquired broad sector support for its future development towards becoming the dominant standard for document formats in the EU. This was done by submitting ODF to be under peer-review and joint stewardship of the members of OASIS.

Microsoft, acknowledging the threat from the momentum building for ODF, found ECMA suitable for acquiring the sector endorsement requested by the EU and quickly had OOXML adopted as an open source XML based document format standard according to ECMA requirements.

In 2006, the two opposing factions then raced to acquire the EU’s request of ISO accreditation in addition to endorsement from a sector consortium. The actions of particularly Microsoft in regards to acquiring ISO accreditation can be seen as a result of the threat from ODF that had acquired ISO accreditation by going through the usual reviews in early 2006. Microsoft was falling behind at this stage and first submitted OOXML to ISO via ECMA in 2007, albeit by a fast-track approval process. When OOXML was rejected by ISO that same year, the overwhelmingly large number of revisions proposed by the ISO members and the nature of these highlighted an interesting display of how business considerations can effect otherwise industrial considerations in relation to how standards can affect a market. The vast majority of proposed changes related to OOXML ignoring the purpose of applying XML in document format standards. This was manifested by OOXML refraining from using existing ISO standards for various sub-specifications and excessive length of the standard specification in its entirety.

From a business perspective, Microsoft would have little interest in a document format standard that would meet the exact request made by the EU. While Microsoft would have to provide an open source XML based document format standard to avoid losing the market for office suites to EU government entities, the extent to which it could limit the degree of modularity, transparency and thus the ability of other office suite developers to incorporate support would simply be good business. As stated before, vendor lock-in enables repeat business and any increase in competition would obviously be disadvantageous.

The members of ISO rejected OOXML on the basis of it not fulfilling their requirements for an open source XML based standard, but the revised submission they approved in 2008 still showed a similar lack of modularity and transparency. As depicted in 4.5 Approval, Microsoft effectively swayed the deciding vote of enough national standardization bodies to gain approval for OOXML during the ISO ballot resolution meeting of 2008. Microsoft having achieved ISO accreditation then led to the EU accepting OOXML alongside ODF as a suitable candidate for national and international government entities.
While the proponents of ODF fought vigorously against Microsoft in the national standardization bodies and through the press, the results was not what could have been considering the initial momentum of the ODF movement.

From being in a position where the EU was favouring ODF at the expense of OOXML due to its early compliance with the stated requirements, the scenario was now that Microsoft had gained equal approval, but with a document format standard that to some extent fulfilled the same purpose of binary and proprietary standards.

In addition, where significant costs had always been expected from changing to one document format standard to another, Microsoft was in a relatively favourable position as their bid alleviated parts of this cost by their line of OOXML native office suites facilitating direct compatibility with legacy documents stored in older Microsoft document formats. Also, no rise in total cost of ownership would occur, as no re-education of personnel would be needed if government entities were to continue using Microsoft Office. In part, this landed IBM, Sun Microsystems and the other proponents of ODF back at square one.

Discrediting the democratic processes of ISO and its members from the national standardization bodies could not change this fact, but by lobbying the EU, proponents of ODF managed to land Microsoft in an arguably justified anti-trust investigation.

The anti-trust investigation forced Microsoft to make two large concessions to the ODF community by patching support for ODF in their 2007 version of Microsoft Office and full support in the 2010 version including an unbiased Europe-only file format ballot that would require users to choose the default document format.

From a situation in 2008 where Microsoft achieved ISO accreditation and EU acknowledgement for a version of OOXML that achieved the same as their binary and proprietary document format standards had done before, IBM and Oracle, who had taken over Sun Microsystems at this stage, were in 2010 in a situation where Microsoft had incorporated full support for their candidate with no reciprocal support in their ODF native office suites.

So what does this tell us of document format standards as a business strategy instrument in the market for office suites? We have discovered that those not in control of the dominant document format standard are unavoidably at a disadvantage. Put in the taxonomy and definitions of our analytical framework, those not in control of the dominant standard are affected by it because it governs the interoperability of not only the consumers’ industrial processes and thus their proclivity to converging on the same standard, but also those not in control’s adjoining industrial processes’ ability to interoperate with those of the consumers.

Not only are they at the mercy of the proprietor of the dominant standard if they wish to compete in the market for office suites, but also if their software and services are dependent on the dominant standard to provide output interoperable with their users’ office suite of choice.
In 2003, those who provided software or services that had to deliver input to an industrial process governed by Microsoft’s binary and proprietary document format standards, were at the mercy of Microsoft.

If Microsoft were to deploy an update to their standard of the day, the other software and service providers were at the risk of retarding the industrial processes of their customers by adhering to an outdated version of the dominant standard until they themselves could deploy an update. In addition, they had no voice in the matter of the future directions of the dominant standard.

By leaping at the opportunity presented when the EU requested an open source XML based document format standard in 2003, they could potentially break Microsoft’s control by ensuring that the dominant standard in the future would be under peer-review and joint stewardship of a sector consortium. This would mean that both the future directions and updates to the standard would be foreseeable and under control of the sector. They presented ODF to ensure this would be the case in the future.

The risk of losing control over the dominant document format standard in the EU caused Microsoft to submit OOXML to ECMA for sector approval, but retaining the control over its future development. In light of my analytical frameworks understanding of the interrelationship between business and industry, Microsoft purposefully retarded the optimal industrial application of OOXML as an XML based document format standard. By ensuring that the industrial designs of OOXML did not facilitate a sufficient degree of modularity and subsequent transparency for the standard to be incorporated in non-Microsoft office suites, Microsoft placed a business application on the standard. While ISO rejected the initial submission on the account of sub-optimal industrial application as an XML based document format standard, Microsoft successfully managed to influence enough deciding votes through national standardization bodies to ensure the business application of OOXML was not lost when it was ISO accredited in 2008.

The concessions Microsoft had to make due to the EU’s anti-trust investigation were the manifestation of IBM and Oracle successfully having taken the first significant step towards breaking Microsoft’s control over document format standards in the EU. That is not to say that the ODF proponents landed a decisive victory. While numerous EU national government entities have adopted ODF and many still to implement the shift, Microsoft still accounts for 80-85% of all installed office suites in the EU as a whole. While this number is estimated to be 5-10 percentage points lower than as late as 2006, it is still the overwhelming majority.

The fact remains that the industrial application of document format standards can deter shifts to new standards if this causes a substantial rise in total cost of ownership. If the rise in total cost of ownership is acceptable, a shift in standard still potentially causes a crisis of compatibility with adjoining industrial processes. If the industrial community does not change standard as one, their adjoining industrial processes may be retarded.

This all relates to the market for office suites and given the potential rise in total cost of ownership by changing office suites and document format standard, it is unlikely that Microsoft’s monopoly will be broken. The real victory for IBM and Oracle, who do not have a direct financial stake in the market for
office suites at the moment, is that ODF has become the common denominator for most office suites. Where OOXML does not work well, if at all, with ODF native office suites, the two most recent and all future versions of Microsoft Office will support both competing standards. For IBM and Oracle, whose most direct stake in the market for office suites is the ability of outputs from their software and services to be optimally interoperable with Microsoft Office, the 2010 situation is a significant improvement to 2003.

Where Microsoft instilled a business application to both their binary and proprietary document format standards and OOXML through a degree of industrial retardation, IBM and Sun Microsystems (now Oracle) envisioned a business application for ODF as an optimal industrial application of an XML based document format standard. While the technical community may contest my statement of ODF as being an optimal industrial application, it is so in my optics because it fulfils the EU's requirements of an open source XML based document format standard to the letter. Had the EU not perceived this to be true, they would arguably not have backed ODF at the expense of OOXML to the extent they did. Had they not done this, ODF support in Microsoft Office would have been less likely thus devolving IBM and Oracle back to a situation where they were at the mercy of Microsoft.

For Microsoft, there is value behind their dominant document format standards' ability to affect the software and services of IBM and Sun Microsystems (now Oracle) because they compete with them directly in that market. If Microsoft did not, but competed with them in a third market, the effect on them through document format standards would still have value as it puts them at a relative disadvantage by being at the mercy of Microsoft.

On the other side of the aisle, the same holds true. If we assume that being at the mercy of Microsoft's updates and revisions to its standards is no real problem for IBM and Sun Microsystems, then it would still have value for them to put Microsoft in a relative disposition by having lost control over a key facilitator for maintaining a monopoly in the market for office suites. This is not unheard of. As an example, IBM has previously on several occasions open sourced technology and standards that compete with those of particularly Sun Microsystems\(^\text{118}\). In the case of this master's thesis, open sourcing ODF served the partial purpose of harassing Microsoft's control over the market for office suites which accounts for roughly 30% of its historical annual revenue.

As a final comment on the evolutionary relationship between the sector incumbents it is worth mentioning that the war on document format standards took place in the EU. It was the EU's anti-trust investigation that coerced Microsoft into incorporating ODF support. The file format ballot that was the concession Microsoft made in addition to native ODF support in their 2010 office suite is a Europe-only phenomenon. The native support for ODF is for all licenses of Microsoft Office 2007 and 2010, regardless of country or region.

Chapter 6 | Conclusion
Chapter 6.0 | Conclusion

The objective of my master's thesis has been to investigate the war on document format standards in the EU because it was not evident to me why IBM and Sun Microsystems would engage Microsoft in a decade-long war with no direct financial incentive to do so.

In looking for an approach to investigating this, a decision was made to make it an amalgamation of my bachelor degree in predominantly political economy, a master in international business and employment in the IT sector. Such an amalgamation of these three unique spheres is not often combined into academic inquiry, but it was and still is my firm belief that the combined perspective of a political economist, business strategist and engineer is preferred to any of these in isolation.

I chose to operationalise the theories of the godfather of institutional economics, Thorstein Veblen, to develop an analytical framework capable of incorporating all three spheres. The envisioned advantage of using Veblen was his clear taxonomy on business and industry and the interrelationship between them including how this affects standards. This distinction would allow me to instil the perspective of the engineer on the technical aspects of the case and contextualise it with a business perspective all within an analytical framework inspired from theory belonging to political economy.

Looking back, the understanding of industry has permitted me to obtain a firm grasp of the industrial application of document format standards as an exact conveyer of information between users of an office suite. In addition, I have developed insight into how specifications of a standard can constrict the ability of a document format to interact with an office suite non-native to the standard. The analytical framework has depicted how standards are pivotal to the efficiency of a range of adjoining industrial processes that combine to create an industrial community.

Through the coupling of Michael Porter's theory of value streams with the analytical framework, efficiency in terms of the exact conveyance of information between a sender and recipient of a document was identified as a deciding factor in consumers' valuation of a document format. This gave rise to the observation that adjoining industrial processes will likely converge on a single document format standard because incompatibility between standards impedes the efficiency of the industrial community as a whole. This characteristic is what we have identified as the contemporary business strategy theory of network effects. Where the study of network effects is usually about positive gains from the more users there are of a product or service, our observations showed that adverse network effects arise the fewer users there are of a document format compared to another in an industrial community. The existence of adverse network effects for document format standards other than the dominant one is in part answer to my first research question.

1. What is the interrelationship between the technical application of document format standards and their effect on the market for office suites?

By being the facilitator for exact conveyance of information between the author of a document and the recipient, the industrial (read: technical) application of a document format standard can dictate the exigency of author's office suite of choice to the recipient and vice versa. If there are multiple
recipients who use an office suite incompatible with the document format used by the author, the industrial process comprised between the parties is retarded. The author will likely change his office suite of choice to one compliant with the document format standard adhered to by the recipients to avoid bringing down the efficiency of the industrial process. If the author and all but one recipient use the same document format, the one recipient would likely change to a compliant office suite.

Microsoft's control over the dominant document format standard up until 2003 had allowed it to maintain a virtual monopoly in the market for office suites because the standard was proprietary. In addition, the standard was binary in its design and thus inherently difficult to dissect making it equally difficult for Microsoft's competitors to incorporate support for it in their office suites.

When the EU requested an ISO accredited open source XML based document format standard in 2003, IBM and Sun Microsystems heeded the call and introduced ODF despite having no direct financial stake in the market for office suites. Microsoft reacted to this challenge by submitting OOXML.

The EU commissioned the Valoris Report as an enquiry into the suitability of the document format standards for the EU's requirements. The report favoured ODF as it lived up to the requirements of XML utilisation and being open source, and commented that Microsoft's OOXML had to undergo revisions to meet these requirements. XML utilisation would ideally increase modularity and thus transparency of a standard so as to facilitate multi office suite support and subsequent vendor neutrality. The requirement of being open source would mean that the control of the standard would be in the hands of a sector and not a single firm.

Based in how a dominant document format standard affects the market for office suites by creating adverse network effects for users of other standards and their native office suites, Microsoft had no incentive to give up its control over the dominant standard or allowing it to become supported by office suites other than Microsoft Office. Their response was the achievement of ISO accreditation, via their ability to influence the decisions of the national standardization body representatives that vote in ISO, for a standard that had a limited degree of modularity and thus would be difficult for other office suites to incorporate support for.

IBM and Sun Microsystems effectively lobbied the EU to launch an anti-trust investigation against Microsoft based on the limited degree of modularity of OOXML and their methods for obtaining the ISO accreditation. Microsoft conceded and the result of this was that both the 2007 and 2010 versions of Microsoft Office had ODF support with no reciprocal support for OOXML in other office suites.

2. What is IBM’s and Sun Microsystems’ incentive to engage Microsoft in a war on document format standards in the EU?

My answer to the second stated research question was found in Microsoft’s implementation of native ODF support in their most recent office suite versions. Recall the analytical frameworks explanation of how a standard is also able to affect adjoining industrial processes. IBM and Sun Microsystems (now Oracle) were reliant on Microsoft’s document format standards when providing input from their
software and services to customers who had to employ it in their industrial processes that were likely governed by Microsoft's document format standard.

What I have identified as one primary incentive for IBM's and Sun Microsystems' involvement was the potential for breaking Microsoft's effect on their software and services' ability to provide input for their consumers' industrial processes. This was achieved not by supplanting Microsoft's dominant document format standard with their candidate as the most commonly adhered to. Although this appeared to be possible in 2007 when OOXML was denied ISO accreditation, Microsoft's comeback in 2008 made it highly unlikely.

The effect on their software and services was broken when IBM and Sun Microsystems effectively lobbied the EU to launch the anti-trust investigation that led Microsoft to concede and implement full support for ODF, making it the common denominator for most office suites. This meant that IBM and Sun Microsystems (now Oracle) would now be in a position where their software and services could provide input to their costumers' industrial processes in ODF, even if the customer was a Microsoft Office user, without the risk of retarding the industrial processes.

The value of this being that ODF was subject to peer-review and joint stewardship of the sector via OASIS and ISO. If IBM and Sun Microsystems (now Oracle) chose to do so, they could provide software and services to their consumers as an adjoining industrial process without being at the mercy of Microsoft's dominant document format standard.

A second primary incentive for IBM's and Sun Microsystems' involvement was that depriving Microsoft of control over the dominant document format standard, as an instrument for maintaining its virtual monopoly in the market for office suites, would put it at a relative disadvantage. Not with the purpose of direct financial gains for IBM or Sun Microsystems in mind, but as a method for harassing Microsoft in a cornerstone of its business.

While the case of this master's thesis has been the war on document format standards in the EU, Microsoft's concession to facilitate full ODF support for all implementations of Microsoft Office 2007 and 2010, made ODF the common denominator for office suites across the globe. IBM' and Sun Microsystems' focus on the war in the EU has from the perspective of my analytical framework paid off.

In conclusion, the risky and innovative operationalisation of Veblen's theories to create an analytical framework capable of depicting the interrelationship between business and industry has provided insight into how standards can be and are used as a business strategy instrument. In my opinion this contributes significantly to the academic field of business strategy as the analytical framework proved capable of fusing the perspective of the engineer, business strategist and political scientist into a detailed holistic understanding of the subject.
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Acronyms

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