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# Hub and Spokes Cartel

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## ABSTRACT

*The research paper discusses the concept of Hub and Spoke Cartel, which is not so familiarized and well-known concept under the Indian Competition Law, until now after its recognition by the Competition Amendment Act, 2023. This is particularly a form of collusion scheme which includes agreement both at the vertical and horizontal level that leads into producing anti-competitive effect on the market. As a distinctive feature from a normal or conventional form of cartelization, it includes a 'hub' the vertical level who deals with the major aspects of cartelization and act as a facilitator in effecting a tacit horizontal agreement, the connecting 'rim', among the competitors at the horizontal level acting as 'spokes'. This research paper discusses about the major characteristics and elements of a Hub and Spokes Cartel (H&S Cartel) and how it differs from a normal cartel. It also gives a brief mention about the objective of an H&S Cartel and what purpose do they serve. The paper also deals with distinguishing H&S Cartel from RPM (resale price maintenance). Further it discusses about the scheme of functioning of H&S Cartel in the digital sector through online platform operators and price algorithms. Finally the paper discusses about some major case laws in other jurisdictions analyzing the concept of such cartels.*

***Keywords:*** *Cartelization, Hub & Spoke, Horizontal Agreement, Anti-Competitive, Pricing Algorithms.*

## I. INTRODUCTION

According to the antitrust law of the United States, 'hub & spokes conspiracy' is described as a type of horizontal conspiracies whose participants also include people/entity at the vertical level i.e. either upstream or downstream along with the competitors at the horizontal level by virtue of vertical agreements with each horizontal competitor. In this type of conspiracy, one level of supply chain either acting as a buyer (at downstream) or supplier (at upstream) acts like that of a 'hub' in a wheel. The vertical relationships in this type of conspiracies assume the role of 'spokes' in a wheel while the connecting part for the spokes i.e. the 'rim' is the horizontal agreement among them. Participation of a vertically placed entity in the conspiracy as the co-conspirator with other horizontally placed competitors makes it distinguished from that of a normal cartel.[2] Along the similar lines, the EU Competition Law Policy defines Hub & Spokes

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[2] Hub and Spoke Arrangements – Note by the United States, 4 December, 2019. Page 2.

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(H&S) arrangement as the one which consists of economic players from both vertical and horizontal level.[3] This type of cartel is attributed to reducing or eliminating the competition among the horizontal participants acting as spokes. In US, the hub and spoke (H&S) conspiracy existed in principle even before it was first mentioned expressly.[4] Under the US antitrust law, collusion among horizontal competitors for allocating markets, setting of prices, rigging bids either themselves or via intermediary is per se illegal. Such collusion results in restraint of trade making all the participants liable for the conspiracy.[5] However hub and spoke conspiracy (h&s) are specifically mentioned in the context of information exchange in the Horizontal Guidelines under the EU competition law.[6] Horizontal Guidelines, in its Para 55, states:

"*information exchange can take various forms. Firstly, data can be directly shared between competitors. Secondly, data can be shared indirectly through a common agency (for example, a trade association) or a third party such as a market research organization or through the companies' suppliers or retailers*."

As per the above mentioned abstract of The Horizontal Guidelines, indirect information exchange happens in two scenarios, (1) when the hub either a third party or is a common agency for the spokes (2) when the hub is a supplier in upstream or a customer in downstream for the spokes. The Vertical Guidelines under the EU Competition Law also briefly mentions about Hub and Spoke arrangements. The Vertical Guidelines in its Paragraph 224, which is related to RPM (retail price maintenance), states:

*"by eliminating intra-brand price competition, RPM may also facilitate collusion between the buyers, that is, at the distribution level. Strong or well organized distributors may be able to force or convince one or more suppliers to fix their resale price above the competitive level and thereby help them to reach or stabilize a collusive equilibrium".*[7]

Thus the Vertical Guidelines refers to an upstream scenario when a supplier acts like the in which the 'hub'.

### (A) Elements or Considerations while assessing a Hub and Spokes Conspiracy

The liability in a H&S Conspiracy arises not because of a mere vertical arrangement between the buyer and the supplier but when, along with it, there is also a horizontal agreement between

[3] Hub and Spoke Arrangements – Note by the European Union, 4 December 2019. Page 2.
[4] Interstate Circuit v. U.S, 306 U.S. 208 (1939).
[5] United States v. Apple, 791 F.3d 290, 322 (2d Cir. 2015).
[6] Guidelines on the applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements Text with EEA relevance, OJ C 11, 14.1.2011, p. 1– 72, paragraph 55.
[7] Guidelines on Vertical Restraints, OJ C 130, 19.5.2010, p. 1–46.

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the competitors.[8] The important consideration is the agreement among the horizontal competitors regarding restraint of trade irrespective of the fact as to who (the vertical supplier) or any of the competitors (a spoke) is the source of the idea of such collusion.[9] It is this horizontal level agreement among the spokes which is central to the H&S conspiracy. Therefore it is highly necessary to prove the horizontal agreement among the spokes since it acts as the 'rim' of the wheel of Hub & Spokes Conspiracy. In the absence of rim there is no such cartel as there cannot be a 'Rimless' wheel.[10] [11] The existence of such horizontal agreement can be proved with the help of direct or circumstantial evidence.[12]

In hub-and-spoke arrangements, hub acts as a facilitator for collusion and the horizontal anti-competitive behavior among the spokes. It can be that the 'hub' is a common supplier in the upstream channel acting as the facilitator between the retailers (buyers) and it can also be that the buyer i.e the retailer in the downstream channel act as the 'hub' and facilitates collusion among various suppliers or manufacturers in the upstream level position.[13] However it would not be appropriate in a sense to term hub and spoke conspiracy as an agreement as the behavior among the spokes i.e the horizontal competitors is the result of indirect information exchange through a 'hub' and there is no such agreement among them per se for their anti-competitive conduct. It is more in the nature of a concerted practice where they coordinate their behavior to reduce the competition and risks associated with it, resulting into anti-competitive effect, without entering into an actual agreement.[14] In the absence of a direct evidence of their anti-competitive conduct, it is difficult to prove the 'rim' connecting the horizontal competitors. The court then resorts to circumstantial evidence or some 'plus factors' to infer existence of a horizontal agreement. Some of these factors include spokes involved in bid rigging[15], abrupt changes in normal business practices by spokes[16], spokes behaving against their own self – inerest[17], communication of intention of other spokes to a spoke by the hub communications from hubs to spokes regarding other spokes' intentions[18] , communication among the spokes themselves[19] , etc. These factors are used only when there is lack of sufficient direct evidence

[8] NYNEX Corp. v. Discon Inc., 525 U.S. 128, 136 (1998).
[9] Theatre Enters Inc. v. Paramount Film Distrib. Corp., 346 U.S. 537, 541 (1954).
[10] Guitar Center, 798 F. 3d 1186, 1192 n.3 (9th Cir. 2015).
[11] Dickson v. Microsoft Corp., 309 F.3d 193 (4th Cir. 2002).
[12] Monsanto Co. v. Spray-Rite Serv. Corp., 465 U.S. 752, 768 (1984).
[13] *Supra* note 3, at 2.
[14] Case C-49/92 P, Commission v Anic Partecipazioni, ECLI:EU:C:1999:356, paragraph 132.
[15] *In re* Insurance Brokerage Antitrust Litigation, 618 F.3d 300, 336 (3d Cir. 2010).
[16] *Supra* note 4.
[17] Toys "R" Us Inc. v. FTC, 221 F. 3d 928 (7th Cir. 2000).
[18] *Id.*
[19] United States v. General Motors Corp., 384 U.S. 127 (1966).

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showing the existence of an horizontal agreement forming 'rim' among the spokes.

### (B) Objective of Hub and Spokes Cartel

From the perspective of the economic players participating in the H&S Cartel, it helps in the reduction of the monitoring and coordinating cost since in this type of cartel it is entrusted upon the 'hub'. The centralization of the cartel functions with the hub reduces the need for coordination by the horizontal competitors as the major aspects of collusion are dealt with by the vertical arrangements between the hub and the spokes. It therefore improves the efficiency of the collusion of the cartel. Moreover, effectuating a horizontal agreement in the guise of vertical arrangements becomes difficult to be detected by the authorities.[20] This is because the hub and the spoke are in a legitimate business relation by the virtue of their vertical agreement and thus are not likely to be under the radar of an anti-trust scrutiny. The spokes rely on the hub to enforce the vertical agreements between them by punishing the defiant spokes for not following the terms of the cartel.[21]

## II. RPM AND HUB & SPOKES CARTEL

The element that makes the arrangement under the H&S cartel anti-competitive is the strategic information being exchanged between the spokes which makes the market lose one of its basic feature which is unpredictability and uncertainty. The information exchange by collusion gives a certainty about the course of action of the competitors and thus eliminates competition from the market.[22] The H&S Cartel resulting into a restriction is dependent upon as to what type of information has been exchanged and the context, legally and economically, in which it was exchanged and not on the source of collusion or the information exchange i.e. via a third party or not. Therefore the method of assessment would not be much different from when there is collusion due to direct exchange of information in other cartels. The Horizontal Guidelines under EU Competition law states certain principles with regards to such assessment.[23] However despite these principles for assessment, the characteristic of indirect information exchange with the assistance of a hub will inevitably lead to identification and assessment issues. The restriction caused by the indirect exchange of information between the spokes is the distinguishing factor and separates it from vertical restriction such as resale price maintenance

[20] Joseph E. Harrington, *How do Hub- and-Spoke Cartels Operate? Lessons from Nine Case Studies*, UNIVERSITY OF PENNSYLVANIA (Aug. 24, 2018), https://joeharrington5201922.github.io/pdf/Harrington_Hub%20and%20Spoke%20Collusion_18.08.24.pdf.
[21] Barak Orbach, *Hub-and-Spoke Conspiracies*, AMERICAN BAR ASSOCIATION (Apr. 2, 2016), https://www.americanbar.org/content/dam/aba/publishing/antitrust_source/apr16_orbach_4_11f.au thcheckdam.pdf.
[22] *Supra* note 3, at 3.
[23] *Supra* note 6, at paragraph 72-94.

(RPM), in which the source of the restriction is the vertical agreement between supplier and buyer (retailer). Price fixing interventions by the suppliers to restrict/control intra-band competition or to effectuate a harmonized level of pricing in the market will make such agreement in the nature of RPM. On the other hand if price fixing is driven by the retailers (through a hub) i.e. competitors aligned horizontally then it will fall in the nature of Hub and Spoke Cartel. Though due to lack of direct contacts between the horizontal competitors due to the presence of hub will make proving of the horizontal agreement i.e the 'rim', a challenge for the anti-trust authorities.[24]

### (A) Assessing Hub & Spokes Cartel

The assessment of concerted coordination practices among the spokes will vary from case to case based on facts of each case since as already known that the behavior pattern among the spokes would be less explicit than how is in an agreement. By the very nature of the hub and spokes cartel, the role of the hub along with the role of spokes to know the driving force of the anti-competitive conduct is an important factor. The other significant consideration is to know the reason behind the conduct of the spokes and ascertain if it can reasonably only stem from the collusion between them.[25] In a Hub and Spoke Cartel, information exchange between the participants happens at least in two scenarios. One exchange happens between one spoke and the hub and the second exchange happens between the hub and the other spokes. It is important to bear in mind that exchange of even strategic information under separate vertical agreement by hub with each spoke is legitimate in normal circumstances. However the same can sometimes lead to concerted practices and anti-competitive horizontal agreement. The same can be assessed by ascertaining the context in which the information exchange happens between the hub and the each spoke. The level of knowledge and awareness (of each spoke) regarding the information exchanges of the hub with the other spokes and their subsequent behavior as to whether to reciprocate it or distance from the conduct of the hub will also be equally decisive factor. According to the decisions of the ECJ (The European Court of Justice), complete knowledge of the collusion is not necessary to prove participation in the anti-competitive conduct. The ECJ in the case of VM Remonts[26] held that a business entity can be held guilty of involvement in concerted practice even when it is majorly effected by an independent service provider and other competitors if that entity had the knowledge of the illegal objectives resulting into anti-competitive effect in the market and decided to pursue the same by reciprocity in its

[24] *Supra* note 3, at 4.
[25] Harrington, s*upra* note 20, at p. 4.
[26] Case C-542/14, SIA 'VM Remonts' & Others v. Konkurences padome, ECLI:EU:C:2016:578.

conduct or that entity could reasonably foresee the anti-competitive nature of the acts of the service provider and its competitors and prepared itself to confront the competition related risks arising from it.[27]

The other important factor for the assessment of the hub and spoke conspiracy is the relation between the exchange of information and the subsequent behavior of the alleged participants in the market. It is a presumption that the one who remain active in the market also base their market conduct on the information exchanges happening with and among their competitors and are the part of the concerted practice arising out of such information exchanges.[28] In Eturas Judgment, ECJ reiterated that this is a rebuttable presumption and the entity can rebut the presumption of its participation in the concerted act if it can show the non-reciprocity in its conduct, that it distanced itself publically from the practice or has reported about the same to the appropriate authorities or rebut it in any other reasonable way.[29] Thus, the concerted conduct includes the presence of a causal relation between concerting with each other via indirect information exchange in this case and the subsequent market conduct. To rebut the same, the alleged parties need to show the non-existence of such cause and effect relation in their business conduct.[30]

## III. HUB AND SPOKES CARTEL ON AN ONLINE PLATFORM

In the case of an online platform, the platform itself acts as the facilitator of the concerted practice among the suppliers and retailers operating their businesses through such platform by coordinating their practices. In the online context, there can be two possible hub and spokes cartel scenarios namely: (1) horizontal coordination effectuated and facilitated by the online platform operators (2) horizontal agreement achieved by using third-party algorithms.[31]

### *(A) Online Operators Facilitating Horizontal Coordination*

With AI (Artificial Intelligence) developing rapidly, increase in price transparency and large scale availability of mass data, anti-competitive trends are on a rise in the digital sector. As per Article 101 TEFU (Treaty on the Functioning of European Union) the online platform act as a digital environment which facilitates interactions among the business users operating on the platform without the need of any direct contact between them by the virtue of easy and effective coordination between the business entities facilitated by the online platform operators. One

[27] *Supra* note 3, at 5.
[28] *Supra* note 14, at Para. 121.
[29] Case C-74/14 Eturas, Para. 46.
[30] *Id.* at Para. 42.
[31] *Supra* note 5, at 6.

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scenario can be the platform operators providing their pricing software available to the suppliers and retailers operating on their platform and providing their products and services in order to attain certain price level at their online market platform. This enables the merchants and retailers to align their pricing with the pricing of their respective competitors at that platform thus avoiding the competitive pricing market for all such business entities. The use of common pricing software via online platform operators can possibly lead to anti-competitive effects on the market.[32] [33]

*(B) Horizontal Collusion through third- party Algorithms*

Use of automated pricing algorithms and software by the specialized third party, who are hired for the purpose of outsourcing IT services, often lead to creating hub and spoke conspiracies due to either use of the same algorithm by their competitors or by exchange of commercial information by the competitors through a common third party (algorithm provider).[34] AI, mass data availability along with the reduced costs of processing such data has together made frequent use of algorithm pricing in the online markets. Particularly, the concerns of horizontal collusion have risen due to increasing use of the pricing algorithm as they enable business undertakings to make adjustments in pricing based on automatic pricing software and hence help them to adapt to these otherwise unpredictable market scenarios.[35] As per the final report on inquiry on E-Commerce sector,"*53% of the respondent retailers track the online prices of competitors, out of which 67% use automatic software programs for that purpose. Larger companies have a tendency to track online prices of competitors more than smaller ones. The majority of those retailers that use software to track prices subsequently adjust their own prices to those of their competitors*".[36] Thus the use of algorithm is possibly creating anti-competitive effects on the market. Their use increases the instances of parallel behavior arising out of collusion by enabling the business entities to monitor each other price changes in nearly real time automatically.[37]

## IV. UNDERSTANDING THROUGH CASE LAWS

### 1. Interstate Circuit v. United States

*Facts*: In this case, a well-established movie theatre operator in a dominant position had sent

[32] *Supra* note 3, at 7.
[33] *Supra* note 3, at 8.
[34] *Supra* note 3, at 6.
[35] *Supra* note 3, at 6.
[36] *Commission Staff Working Document* (accompanying the Final Report on the E-commerce Sector Inquiry), Para. 608, EUROPEAN COMMISSION (May 10, 2017), https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=SWD:2017:154:FIN.
[37] Algorithms and Collusion- Note from the European Union, 14 June 2017. Page 7.

demand letters to the 8 first run movie distributors in order to set a minimum price and prohibit evening double charges for first run movies. The agreement was entered into to protect the interest of the movie theatre from the competition posed by the second run theatres whose prices were usually lower. Although there was lack of direct evidence regarding any direct communication among those 8 first run movie distributors however all of their names were mentioned on the demand letter sent to each one of them.

*Judgment*: It was pointed out by the Supreme Court that the fact that names of all the distributors were copied on the demand draft and unanimity in the behavior of the distributors by complying with the restrictions as demanded in that demand draft shows the presence of a tacit common agreement among the distributors and thus effectuating this concerted practice.[38] There was substantial knowledge among the distributors that default or deviance by any competitor will make him lose while making others profit from its loss. The court, though, in this case did not mention 'hub & spokes' explicitly however it is considered as a landmark case for the interpretation in H&S Cartel cases.[39]

**2. United States v. General Motors Corporation[40]**

*Facts*: The vertical upstream firm (hub) facilitated a collusion with rival dealers among horizontal competitors on the request of the dealers who was at horizontal level (one of the spokes) to restrict them from engaging in business with discounters. The dealers did a letter writing campaign to the hub (GM – General Motors) to discuss the problem of discounters for which they together met also. The General Motors (hub) entered into vertical agreements with each dealer along with a RPM, which it facilitated in enforcing among the spokes against the price cutters.

*Judgment*- Though the defendants contended that there were only sets of independent vertical agreements; the court rejected the same by pointing to the coordinated behavior among the dealers to seek assistance of the GM. It was further emphasized by the Court that the hub (GM) did not confine its conduct within the boundaries of its contractual vertical agreements[41] but was involved to the extent of advising dealers to hold meeting with other dealers to discuss the concerned issue and convince them to comply and threatened the dealers who would refuse. The regional manager of GM informed dealers "*I can tell them to stop something. If they don't do it . . . I can knock their teeth down their throats.*"[42] The dealers even waited for each other

[38] *Supra* note 4, at 225.
[39] *Supra* note 5.
[40] United States v. General Motors Corporation, 384 U.S. 127 (1966).
[41] *Id*. at 143.
[42] *Supra* note 40, at 136.

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to comply before changing their own business activities and entering into vertical agreement with GM. The dealers' conduct clearly implied a rim arising out of the vertical relationships with GM. Though, free riders were also supposedly a problem that the conspiracy purportedly solved. Franchise dealers were compelled to repair new cars, irrespective of wherever they were acquired, while discounters did not. Thus the only possible good effect it had on the market. However the case emphasized that even if the vertical agreement implemented to carry out the horizontal agreement had any potential precompetitive consequences, they were irrelevant because the horizontal agreement was illegal in and of itself.[43]

**3. Supermarkets case[44]**

*Facts*: The National Economic Prosecutor ("FNE") filed a complaint against the three major supermarket chains in Chile (Walmart, Cencosud, and SMU), in which it accused them of accepting a uniform minimum resale price for fresh poultry meat between the time period of 2008 and 2011. The case began in 2016 under the tribunal established under Chilean Competition Law. Each upstream supplier determined the pricing through separate vertical agreements with each store. However, it is said that the supermarkets had an unspoken and implied agreement that each would abide by the price.[45]

*Judgment*: According to the FNE, there were two major elements in the case:

(1) Vertical component- The existence of a mode of or rule regarding the behavior of the supermarkets. That was the vertical agreement of each producer with each supermarket which imposed a common vertical restraint on each producers separately i.e. the minimum selling price (which could not be lower than the wholesale price) for the fresh poultry meat.

(2) Horizontal Component- The compliance of the terms of the vertical agreement about the common vertical restraint by each supermarket subject to the similar compliance by other supermarket chains points to the implied horizontal agreement among them.

The three defendants were found guilty based on the evidence presented at trial, which was primarily emails sent between each supermarket and each producer urging that other supermarkets adhere to the regulation and threatening punishments. It was established that the regulation existed and that reciprocal compliance was a need for its implementation. The judgment further notes that no other explanation could have justified the pattern of conduct

[43] *Supra* note 40, at 148.
[44] Judgment No. 167/2019
[45] Hub and Spoke Arrangements – Note by Chile, 4 December, 2019. Page 2.

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demonstrated by the corporations.[46]

**4. United States v. Apple[47]**

*Facts*: The market for e-books grew quickly after Amazon's Kindle, which was a portable electronic device that enables the purchase, download, and reading of e-books, was released in the year 2007. 90% of all sales of e-book were made on Amazon by 2009. To the dismay of the Big Six, Amazon broke with the publishers' conventional business model generally followed for the new releases and best sellers by New York Times by setting the price at $9.99 rather than charging more when the book first came out in the traditional way. The Big Six executives met around once every three months to examine ways to increase wholesale pricing by Amazon since they saw this as a threat to the conventional business model of publishers.[48] Apple created the iBook store, an e-book marketplace for the iPad, in 2009 after realizing there was a market opportunity. Seeing that the Big Six were eager to increase Amazon's prices and after meeting with industry executives, Apple approached the Big Six and convinced five of them to sign agency distribution contracts with a most-favorable-nation (MFN) condition. One of the advantages of switching Amazon to an agency model was that the publishers would be able to get back control over the retail pricing which was earlier with Amazon and be able to set a higher price.[49] A publisher would be legally obligated, under the MFN Clause, to reduce the price of an e-book at the iBook store to the same level if it offered a lower price for it at Amazon (perhaps under Amazon's insistence). An MFN requirement would reduce Amazon's incentive to negotiate for a lower retail price because it would prevent it from having a price advantage over Apple.[50] Publishers were drawn to Apple's pricing strategy for a number of reasons. First, because hardcover books have a bigger margin, increased e-book prices (due to Amazon again adopting the conventional agency business model) would increase their sales. Second, if Apple would also raise the price caps, which would be very possible after the e-book market got more established, then reclaiming control over retail prices might end up being more practical and profitable in the long term. Third, it would enable Apple to effectively enter the market, weakening Amazon's negotiating position with publishers.[51]

The e-book "industry" also required to switch to the agency model i.e. the conventional business

[46] *Id.*
[47] *Supra* note 5.
[48] *Supra* note 5, at 299.
[49] Harrington, s*upra* note 20, at 41.
[50] *Supra* note 5, at 304.
[51] Harrington, s*upra* note 20, at 42.

model, which would give Publishers control over pricing and usher in what Apple euphemistically referred to as "some level of reasonable pricing." Second, the margin on e-books sold by Apple would have to be 30%. Third, he suggested making New Release e-book pricing $12.99, which was $3 more than Amazon's $9.99 price. The Publishers would be required to implement the agency model across all of their e-retailers if they wanted to completely eliminate retail pricing competition.[52]

*Judgment*: As can be inferred from the facts of the case, the acceptance of the Apple Agency Agreements would result in higher retail prices for other retailers (in particular, Amazon), as they would adopt the agency model and the MFN clause would make sure that the price caps would not be lower than those set by Apple. This would increase the price of e-books by removing retail pricing authority from the retailers, having e-book prices set according to the Apple price caps, and having e-book prices set according to the Apple price caps. The proposal was discriminatory in addition to having an anti-competitive effect because it aimed to leverage the collective authority of the publishers in the market to persuade Amazon to transition to agency model from wholesale pricing model. The fact that Amazon dominated the e-book retail industry adds an interesting fold, and in that situation, the publishers' concerted activities may be seen as Amazon's balancing influence. Indeed, curtailing Amazon's market domination was in both the publishers' and Apple's mutual interests.[53] The Big Six publishers were each able to recruit the others to join the program thanks to Apple's close ties with them. After the agreement, the cost of e-books rose by 23.9%.[54] The DOJ claimed that the pricing caps were actually horizontally agreed-upon rates among the publishers which were made possible by Apple's vertical contracts with the publishers. The evidence and the connections between the publishers, according to the court, unmistakably showed that Apple deliberately engineered a conspiracy among the publishers to establish prices. The court determined that Apple assisted in organizing the collusion among the publishers. The agreements were "useful evidence" to demonstrate a horizontal cartel, as were the publishers' and Apple's intention of using them to increase e-book costs.[55]

## V. CONCLUSION

Hub-and-spoke cooperation is a frequent strategy employed by businesses to stifle competition in retail sectors. The hub is typically the one who starts collusion. The conspiracy's

[52] *Supra* note 5, at 660.
[53] *Supra* note 5, at 91.
[54] Harrington, s*upra* note 20, at 43.
[55] *Id*. at 324.

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fundamentals are well known. A central hub is necessary for the conspiracy because it must participate in or direct the horizontal agreement between the spokes (the rim), frequently by coordinating vertical constraints to upstream or downstream spokes. The horizontal agreement must be evidenced in order to apply the antitrust laws to a hub and spoke conspiracy.[56] For the spokes to arrive at to an agreement, it may take numerous exchanges and bilateral discussions between the hub and each spoke, as opposed to one meeting among all firms being sufficient to reach a "meeting of minds" in a conventional cartel. [57] Numerous difficulties arise with enforcing laws prohibiting hub-and-spoke networks. It is more difficult to demonstrate horizontal collusion because of the spokes' indirect interactions. It is also necessary to demonstrate that the spokes knew or perhaps reasonably predicted that other spokes would receive their commercially sensitive and strategic information. Furthermore, the inclusion of a vertical component and the evolving responsibilities of retailers and suppliers may create circumstances in which it becomes challenging to determine horizontal collusion apart from RPM. Finally, if algorithms, software and online platforms are used more often, it's possible that new forms of anticompetitive behavior will emerge in the digital sphere. This evaluation will unavoidably be based on the specifics of each case, paying close attention to the larger context of the information flows. [58]

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[56] *Supra* note 2, at 9.
[57] Harrington, s*upra* note 20, at 58.
[58] *Supra* note 3, at 10.

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