

Supply chain resilience in the European football industry: the impact of Covid-19

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Abstract: As the celebrations of the New Lunar Year began toward the end of January 2020, China made the fastest and most extreme decisions about factory shutdowns. The Country extended holidays to further reduce the spread of coronavirus within China. Covid-19 outbreak was a shock that has disrupted entire industrial supply chains throughout globe in few months, thus affecting most companies. To prevent from the spread of airborne disease, several countries imposed various small to large-scale travel restrictions, including the stoppage of commercial and sport activities. From top upstream to the end customer, each layer of the supply chain went through a considerable shock. The topic of the paper is related to the supply chain management in the European football industry and to the impacts that Covid-19 has had on it. There are some research gaps to be addressed, like the operative and financial interdependencies in this industry. Therefore, this manuscript aims to cover these gaps and proposes to identify major vulnerabilities and key factors in supply chain management, working on a balanced resilience, flexible and efficient network.

Keywords: supply chain management, Covid-19, football

I. INTRODUCTION

The outbreak of Covid-19 in Wuhan (China) in late 2019 sparked a global crisis along the entire Supply Chain (SC) network in almost all the sectors. Considerable disruptions in the SC caused major economic losses to all types of industries (Guan et al. 2020). Resilience, which should have been a key segment in such a scenario, sadly was lacking in many SCs (Scholten et al. 2020).

While there are several companies that recognize the importance of resilience, they have never gotten to the practical part of implementing it primarily because their networks have never been tested to this limit in a lifetime. Eventually, the global crisis raised the demand for a better and resilient SC system, traditional techniques proved obsolete for the current scenario, requiring a better, efficient, and resilient network for global supply chains (Branski et al. 2021).

The Covid restrictions meant that many SCs and factories were halted, leading to significant production delays and product shortages (Frederico 2021, Pozzi et al. 2019, Cigolini et al. 2021a). More mandatory lockdowns and home-stay orders followed in February and March across many continents, most of them in Europe. With extended factory closures taking place in China and Europe, delays in manufacturing and disruptions in supply were inevitable.

Meanwhile, consumers feared supermarket closures and demand for necessities like toilet paper and paper towels skyrocketed. Amid rapid and unexpected market changes and the closure of numerous manufacturing plants, out-of-stock sales were unavoidable for retailers (Agrawal et

al. 2021). After the outbreak, corporate landscapes have radically changed globally, and their breadth and depth cannot be fully understood yet. Covid-19 has urged companies to rewrite their predictions, cut their budgets and their operating modes (Hannibal et al. 2021).

As some geographies experienced waves of the pandemic, it was important to remember that the SCs require long term solutions rather than short term improvisations. While the responsibilities of SC teams did not change during the Covid-19 crisis, the urgency and speed at which they had to work increased dramatically (Agrawal et al. 2021, Cannas et al. 2020).

To complicate matters further, leaders had to make tough decisions about when to reopen their businesses. If the facilities were opened too early or failed to take proper measures, the problems could escalate. In many ways, the pandemic has forced leaders to reassess how they analyze the different layers of their SC (Remko 2020, Cigolini et al. 2021b). Bringing now the focus to the European football industry – a billion-dollar industry – things were much worse given the pandemic spread in Europe and proved deadly. The industry was closed indefinitely until the experts knew more about the virus. Later the governments started allowing the matches to be held, behind closed doors and under regular virus tests for all the personnel involved. The industry might run out of business with mounting debts for most clubs. Forced to play behind closed doors or events postponed indefinitely was the new normal. The industry is heavily dependent on its matchday revenue (Agrawal et al. 2021, Pero et al. 2020). The access of the SC for footballing clubs towards their downstream customers are very limited at this

moment. For a better health of the football industry SC, smart solutions must be found (Fűrész and Havran 2021). This paper discusses the shocks and aftermaths of the global SCs amid the pandemic and how resilience can bring back them stronger. The current approaches are discussed regarding the preparation in terms of resilience firms had before the outbreak of the pandemic. The major vulnerabilities are assessed as well key factors in SCs of today and how they can be improved to a more resilient, flexible, and efficient network. In the later part of the research, we discuss a Supply chain perspective of the European football industry and the application of the resilience methodologies onto the structure to have a more balanced Supply chain than of today.

The paper is structured as follows. Section 2 discusses the impact the pandemic has had over the global supply chains and the various sectors that were affected. Section 2 treats also the ways constant uncertainty is clouding businesses from late 2019 and describes the importance of resilience in supply chains and the need for a better integration to get a better result. Section 3 shows the requisites and structures needed to craft a resilient supply chain and the most important factors to consider while designing it. Sections 4 and 5 illustrate the supply chain perspective of the football industry and analyze the vulnerabilities in the existing system, by discussing viable solutions in creating a resilient supply chain. Finally, section 6 concludes the discussion and summarizes the key aspects of the work.

II. BACKGROUND

Covid-19 paralyzed the entire global SC in the first half of 2020: from sub-tiers at the extreme upstream end of the SC to final consumers downstream, each segment of the SC experienced uncertainty and disruptions (Aluko et al. 2021). Firms hit hard by Covid-19 lost a significant market share. Different companies undergone inability to pay their liabilities, thus they become forced to fire employees, resulting a major job loss in several sectors. Firms have different network suppliers, some of them tied to different countries for supplying different components and there have been observed a shortage of critical components for many products (Lirn et al. 2020, Cigolini et al. 2020). On other hand, due to imbalanced and uncertain demand and supply, some goods like face masks, hand sanitizers, and ventilators seem to be hiked on the demand side, thus saturating manufacturing plants which resulted as bottlenecks in the chain (Lonsdale 2004). Loss of store and customer loyalty was also observed in different brands. A strong SC can perform better with disruption scenarios, it also decreases costs, and most importantly resilient chains gain customer reliability (Brito et al. 2020). Covid-19 impacted businesses in various directions, as late responses from suppliers and delays in logistics slow down business activities in retail channels.

In the era of advanced technology and high competition inside markets, companies of almost every sector have already started working on resilience segment in their

SCs (Laguir et al. 2021). Resilience should be monitored in all the three layers of the SC: source (or supplier side) that is upstream, the core production phase (or the ‘make’), and the delivery end, (the logistic side). A controlled supplier insight gives the visibility to the central control room for calculating the percentage of raw materials a specific source provides, the location of each supplier, the distance and time taken by each supplier to the production points, emergency or backup suppliers, sub tiers of suppliers, and information about inventory level at first point. Proper communication with suppliers has been proved to a very useful tool in the recovery actions for quick shift and finding alternatives (Sarkis 2021). Resilience at production points can be achieved through calculated action plans as well. The variables and parameters to consider for a SC evaluation and set-up could be: known production capacity, number of outsourced components, and location and number of plants that are abroad (Memari et al. 2021). Therefore, companies now are more concerned in investing into SC, but it needs a strategy. Deep insights and flexible SCs are taking priority in recent days. Flexibly SC provide options for firms to switch their processing modes, supplier relations, better communication to downstream management (Cruz et al. 2021).

According to Procter & Gamble, some advantages (out of 100%) coming from implementing resilient SCs are: (i) order rate 30%; (ii) customer satisfaction 30%; (iii) cost cut by flexibility 25%; (iv) distortion reduction by building buffers 15%.

Given below are some recommendations for companies to for a more resilient SC (Lopes de Sousa et al. 2020).

(i) Alertness in SC. Activeness or being very reactive in SC means being very agile to shift production modes accordingly during any potential disruption but it requires active management staff that is updated for each moment. It requires very clear view throughout the entire chain, and it needs rich visibility from suppliers to distributors.

Agility can improve performance and reduces any unexpected cost. It requires very sharp sight upstream; it deals with suppliers and their sub-tiers. An active communication within and outside plants is almost obliged.

(ii) Technology deployment. Technology is catching attention of risk managers, since the world is shifting to more and more digital platforms, cloud-based data sharing is a very secure and feasible way of communication. Companies with broad goals in mind are going to invest in robots, bring more automation in their chain. This is how the prime of goal of resilience can be easily availed.

(iii) Visibility. Enhanced visibility throughout SC generates very accurate forecasts and predictions of events with high likelihood.

With proactive strategy, companies can avoid disruptions: 5G technology, artificial intelligence and

digitized mechanism inside SC can boost communication signals from plants to forecasted or real-time demand.

(iv) Deep insights. Data is the key resource in calculating performance.

Machine learning, internet of things, artificial intelligence, and other monitoring tools are key equipment for digging deeper into insights. Insight propagates warning signals to the central control tower for any possible uncertainty, create a scenario for potential hazards, and automatically develop planned responses to events.

(v) Group collaboration. Decision making power has to be split into lower level. Empowered individuals or teams can quickly react to unwanted scenarios highlighted by analytics on insights sheets. Then the team quickly comes in action and navigate the situation and take actions accordingly.

Looking into recent past pandemic scenarios and studying bullwhip and ripple effects, the issue of resilience and viability of SC has come to surface (Gunasekaran et al. 2019).

Besides, pandemics are century-events and increasing resilience stronger pay off in many cases. On the other hand, in some scenarios the managers even let it as it is, because the cost of pandemic might result to be cheaper than building resilience. The issues arisen are not limited to pandemic timeframe itself but post disruption effects. Consequently, it takes long time for SCs and companies itself to recover (Memari et al. 2021).

Most of sports industry highly rely on fan attendance, and this cut off to public caused huge finance losses to different segment of sports SC. The European football industry has experienced unprecedented shocks of Covid-19. The pandemic has halted the key downstream (audience), resulting in a sudden disruption in the show.

Elite clubs are likely to survive the outbreak financially but the teams below that level depend on ticket revenues. Tokyo Olympic games were postponed due to Covid-19 and rescheduled in July 2021 (Ivanov 2020). According to United Nations Department of Economics and Social Affairs, disruptions in sports events have aftershocks, involving various sectors including tourism, training clubs, players, and club owners (Cruz et al. 2021). Outdoor sports need physical activities, mostly with crowd: Covid-19 has disrupted the entire ecosystem of the sports industry.

III. RESEARCH FRAMEWORK

SC resilience should be about managing and evolving into the unknown across the spectrum of risk factors ranging from everyday operational risks to catastrophic SC disruptions (Sarkis 2021). Indeed, in the long term, there is a greater consequence of underestimating the result of potential instability than overestimating it.

Where the expense of overestimation is incurred in advance, the cost of underestimation shall be incurred afterwards.

Avoiding damages is cheaper in the short run, but it would incur in additional costs. A company should be able to spend more to create resilient SC without reaping any gains before the next crisis hits (Ehsani et al. 2021).

The primary initiative in enhancing the resilience lies in getting a better understanding of the SC risks at the level of organization, market unit or commodity, based on the level at which the enterprise will operate (Ramanathan et al. 2021).

Businesses needs to find several approaches to create further durability in their production and supply networks, even if the resilience contributes to additional costs.

With massive value at stake, multinational companies aim to reduce risk and ensure better access to suppliers and markets. They explore strategies to diversify and regionalize their production and supply networks, incorporating emergency production and storage capacities and re-optimizing inventories. Companies are now looking to strengthen their supply chain stability, risk-monitoring capability, and ability to adapt quickly to new shocks.

Main measures for measuring the resilience of a company’s supply ecosystem include the extent to which products are shipped, the number of vendors clustered in some nations, the proportion of materials sourced regionally and close to end users, the amount of backup suppliers for essential items, and the volume of inventory of key inputs (Pereira et al. 2020)

Companies should measure their manufacturing resilience by looking at the proportion of resources concentrated in some areas, the volume of output outsourced, and whether they have contingency production capacity at their current sites in the event of disruptions or qualified backup facilities at various locations (Van Donk et al. 2020). Metrics for measuring the resilience of downstream networks that proved goods to consumers include the share of sales from countries that may be impacted by sharp tariff hikes, the portion of the delivery network served by a single partner, the total lead time for transporting a product from a producer to a consumer, and the amount of inventories on the end market (Scholten et al. 2020). There are also several ways in which organizations can enhance their resilience in each dimension of the SC. In terms of sourcing, they may reduce the possibility of regional overconcentration of their supply base by reallocating procurement processes to their current multinational provider networks to be closer to the end markets.

They may also persuade sellers to transfer all or part of their supply to alternate locations.

While being an important topic in other fields, SC management has been almost ignored by sport

management experts, although there are many examples of SC management projects in the field of sports (Memari et al. 2021).

SC Management is a broad term that will aid in the football industry’s synergistic management, including revenue generation (Lopes de Sousa Jabbour et al. 2020). Football is part of the entertainment market, where clubs contend for consumers interest with other sports, newspapers, and recreational activities. The football SC model is illustrated in figure 1 (at the end of the text body).

The football clubs’ SC concept consists in three primary components: suppliers, manufacturing firms, and customers.

There are five main sources of supply in the football industry, as it is showed in the figure 1: academies, training centers, administration, leagues, and equipment suppliers. Schools, football academies, and talent transfer agencies help clubs retain talents. Club coaches’ requirements are met by the Association of Football Coaches.

There are also certain relationships and dependencies between these vendors and clubs as manufacturers. This reliance must be aligned or providers such as football institutions, coaching schools, the administration, and the football federation can be too reliant on clubs, and vice versa.

The government’s position as a provider of sports is more influential in developing Countries, while it is positive and participative in developed Countries. The government plays a critical role in supplying hardware, equipment, training, and legal security.

The manufacturing firms – i.e., clubs – in this situation are driven by the flow of players and their requisite growth and advancement as the financial heartbeat of the football industry. Sponsors, supporters, spectators, the media, and culture all influence them at tonce. In addition, clubs enter mutually beneficial sponsorship arrangements with advertisers.

Sporting event management is critical in supporting promotional opportunities. Clubs, as consumers, have more leverage and are less reliant on suppliers and, as a result, they strive to have their own academies and arenas.

In the downstream area an interdependent and cohesive SC Management strategy helps avoid mistakes that could harm the industry’s growth. Events, fans, and players are the best ways for clubs to communicate, and the outcome of this interaction influences the unique meaning of club brands.

IV. THE NEW MODEL

This paper investigates various player acquisition models adopted by football clubs to tackle the Covid-19 financial crisis. A specific interview was conducted to better understand the practical implication of the

implementation of resilience in the SC of football industry.

An in-person interview was conducted with one of the directors of SC logistics in the governing body of European football, the Union of European Football Associations (UEFA). He was asked questions that would lead to understand the reasons for the researched and compiled the answers to create this section of the research.

Three main solutions have been considered for the sake of resilience:

First, SC inventory visibility. Many companies heavily rely on inventory. The ability to successfully understand and manage inventory is one of the essential competencies for shipping and logistics. If an organization does not have detailed, real-time insight into available inventory at a given location, it can influence revenue and customer loyalty. Furthermore, SC is often required to monitor and handle inventory from various warehouses, stores, or locations, which is a challenge, especially if the business processes are not centrally controlled.

Second, Artificial Intelligence (AI). To reduce transportation costs, the logistics industry has begun to integrate autonomous monitoring and AI into vehicles to map future real-time data with routes as well as possible alternate routes. These digital technologies provided advantages to SC and logistics operations, such as cost savings via reduced redundancy and risk avoidance, increased planning capabilities, quicker deliveries, and better customer support. Legacy players, on the other hand, face many significant barriers to implementing and reaping the rewards of AI programs, including data usability and workforce issues.

Third, offering segmented blockchain- based services. SC depends on the potential of segmented and personalized technologies to distribute a common platform of information through a channel of departments. Data exchange across the SC allows greater degree of accountability, enabling shoppers to make smarter decisions on the goods they purchase and establishing a layer of trust between the brand and the customer. Blockchain technology could be used to trace a product’s life cycle and ownership transition from the source to the store shelf, even when it passes through the hands of manufacturers, suppliers, and customers. As an easily transferrable monitoring system, blockchain technology also enables the SC to migrate where inventory and other business needs are located in the enterprise. Companies have begun to integrate blockchain technologies into their online retail pages, enabling shoppers to see the path of their shipment as well as the desired arrival time as soon as they place their order. Blockchain technology establishes a decentralized network in which peers can connect and transact without the requirement for a centralized authority. The decentralized design offers various advantages, such as immutability, openness, and security. Furthermore, it is

ideal for the logistics processes since the most powerful approach for blockchain to assist logistics is to eliminate inefficiencies. According to KPMG, the main results of a survey about blockchain adaptation are as follows: (i) very likely: 48%; (ii) neutral: 24%; (iii) not likely: 28%.

SC Management is a comprehensive concept that can help in the synergistic management of the football industry, including revenue generation. Football is part of a larger entertainment industry in which teams compete for public attention with other sports, media, and leisure events. Upstream manufacturers, distribution agencies clubs, and downstream clients include the football business market.

Venue management, club management, assets and equipment management, customer relationship management, supplier relationship management, cash flow management, and experience and information flow management are the seven sections we proposed for the managerial processes of football SC management.

This model will be used to configure, coordinate, and overhaul company processes, as well as to create models for evaluating the efficiency of the football SC.

The interconnection of the chain’s links is the secret to success in this SC management approach. Clubs must be in touch with event support providers to keep track of resource and equipment management.

Customer service management, combined with membership and supporter interactions, are vital aspects of club management both before and after operations.

Furthermore, club success is based on and market share to sell more products and services in overseas markets, as well as on a SC management approach. During this process, the flow of knowledge and information should be established in the three sectors of vendors, clubs, and customers.

Business cycles are highly volatile. Transport and logistics firms are unsure if today's political and economic risks would be enough to delay the economy, or how severe and lengthy any resulting recession will be. What is obvious, though, is that successfully reacting to the next downturn would necessitate a different solution.

Getting beyond the shortcomings of conventional performance-improvement methodologies based on head count and expense would necessitate new approaches to increasing efficiency.

V. RESULTS

Through one of the main impact studies on the effect of Covid-19 on football industry and it is tracked down that the players and the coaches adjust their conduct because of the more sterile environment wherein they are performing. It sees ways for the keeping the connections between referees, players, and coaches in soccer through the decrease in negative conduct. Another ramification could be that the home game eliminates without acoustic

help from the local crowd. The most concerning factor to mind when playing behind doors.

From a monetary perspective, the clubs now need to renounce the payments from ticket deals and catering. Given that this is completed all alone. Be that as it may, there is no uncertainty that, as well as contemplations, the continuation of the game was fundamentally embraced with the end goal of producing incomes of any sort, specifically from TV advertising and the related sponsorship cash. The way that particularly the large soccer associations were attempting to restart as fast as could really be expected (not normal for groups in different games like hockey or handball) presumably chiefly because of the way that pay from ticket deals in soccer is of auxiliary significance according to pay from TV promoting.

According to Deutsche Ausgabe, Table I shows the wellsprings of income by class for head soccer alliances in Europe (Revenues in top European Soccer Leagues by category). Media income (a), going from 35 % (German Bundesliga) to 55 % (English Premier Class). (b) is related to Sponsoring, (c) Matchday, (d) Others.

TABLE I
WELLSPRINGS OF INCOME FOR HEAD SOCCER ALLIANCES IN EUROPE

Country	a	b	c	d
England	55%	30%	15%	0%
Germany	35%	25%	20%	20%
Spain	35%	25%	20%	20%
Italy	40%	20%	20%	20%
France	35%	25%	25%	15%

The European football industry has experienced a remarkable stun Covid-19. In part below, we further extend the depth of our thought to know how the club’s managers reacted to the underlying episodes of Covid-19 and what exercises can be realized. We likewise look forward to what football in the post-Covid-19 time could resemble. It is a great opportunity for the industry to recognize their weaknesses and vulnerabilities. Upcoming years will raise this question, whether the football industry invest in more resilience to monetary values will dominate.

During the interview that was conducted for the research, in the specific case of the logistic SC of the UEFA, it was possible to identify the vulnerabilities in the SC during the pandemic impact. It was possible to take new measure that made the SC more resilient later: (i) the major vulnerability was counting on a single supplier for logistic operations, this found as a vulnerability, and they found as solution for it by approving more partners for logistics and mostly from the small and medium enterprises category; (ii) the next redundancy was cleared by possibility of additional storage capacity in the

warehouse to have flexible operations and it was useful when the event of EURO 2020 was postponed for around a year; (iii) they also implemented sustainable practices amid the impact of pandemic by avoiding wastage of branded resources in the EURO 2020 campaign by keeping the same brand for another year.

Understanding the logistics SC of the events division of UEFA, the paper comes across different suggestion to improve the existing structure, to make it more resilient adapting to futuristic technologies and be able to withstand unknown pressure like that of a pandemic.

Applications that allow businesses to track and handle incidents across the SC to better schedule their operations and anticipate issues. SC inventory visibility programs enable businesses to not only monitor and trace inventory on a global scale on a line-item basis, but also send plans and collect alerts when incidents deviate from standards. This real-time insight into orders and exports provides businesses with accurate advance knowledge of when supplies will arrive. Companies who adopt new modern methods will be able to illuminate the supply network, gaining visibility to vital supplies as soon as possible. Standard methods are likely to take too long and be inadequate to mitigate risk and vulnerabilities for businesses with diverse supplier networks that lack the processes and tools to have expanded SC visibility.

Radical efficiencies can be obtained as SC modules become crucial nodes for tapping data and powering machine learning algorithms. The benefit is understood by: (i) incorporating machine learning into price planning; (ii) on-demand patterns, commodity lifecycles, and stacking-the-product against the market all affect price rises and decreases. This insight is indispensable and can be used to refine the SC preparation phase for improved event efficiencies. The fleet management mechanism is one of the most underappreciated facets of the SC. Fleet managers oversee ensuring the smooth flow of trade by orchestrating the critical connection between the retailer and the user. In addition to rising fuel prices and labour shortages, fleet operators are increasingly confronted with data overload problems. Managing a large fleet may seem to be a complex job akin to that of an air traffic controller. If you cannot locate the information, you need quickly or properly use the data you collect, your data pool may quickly become an unproductive swamp.

VI. CONCLUSIONS

The survey approach was carefully chosen to increase the likelihood of scientific impact. The investigation addresses a critical initial step that will ideally trigger future examinations analyzing the effects of emergencies in sport, yet it stays an exploratory examination that offers just starter results. The investigation configuration restricted the example size to professional clubs from European nations and consequently restricted the generalizability of the discoveries. Despite these limits, we believe this exploratory examination to be a

significant early commitment to investigate on the administration of game associations as a rule and in the domain of an outer emergency, for example, the Covid-19 pandemic specifically. Thusly, various promising future examination roads are ahead. The interviewer accept that the emergency is causing a critical yet unintended change in the football business. Future examination should put least effect of Covid-19 on both the monetary and non-monetary execution of professional football clubs. Similar alludes to the effect of the actions started. Our examination can just give conditional outcomes and calls to more thorough exploration on the results of the adapting measures and activities distinguished. The investigation of long-haul impacts circled back to longitudinal examinations to explore key reactions of professional football clubs to the crown emergency should be the objective of future exploration. More exploration is additionally required on emergency the board in sport associations, the discoveries demonstrated a genuine absence of aptitude and comprehension concerning this pertinent business work. At last, we likewise urge analysts to analyse the impacts of the Covid-19 emergency and reactions of expert and non-pro game associations in different nations and districts to accomplish a worldwide and more extensive arrangement.

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Appendix A. FIRST APPENDIX

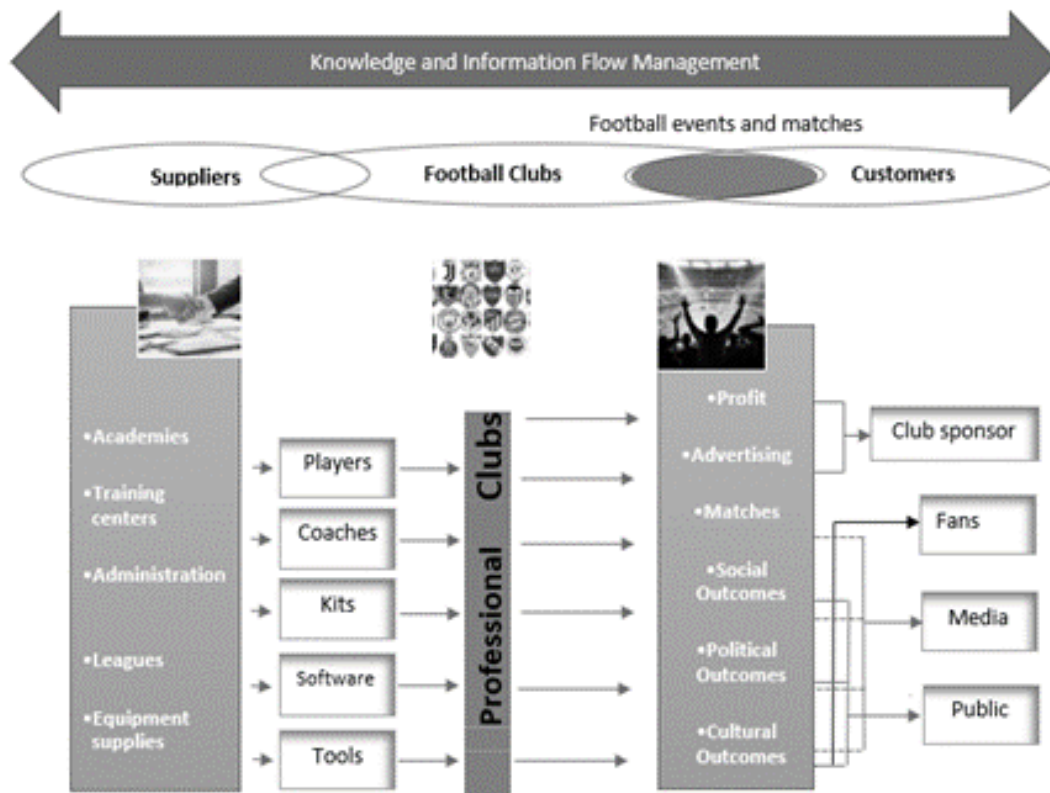


Fig. 1. Football industry SC model (Memary 2020)