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Theory of red queen effect: The dilemma of hypercompetition

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Abstract:

This study aims to shed light on the theory of “Red Queen Effect” as one of today's major concept in business management. The study presents a literature review of studies that have analyzed the impact of red queen on companies in hypercompetitive industries. It was noted that, since the first appearance of the red queen as a co-evolution theory in biology field, only a few of managerial studies have discussed it. Despite this paucity, the study examined a total of 10 studies.

Hence, the study shows that results of previous studies are mixed between positive and negative impact, but the current paper focuses more on the distructive effect that makes the red queen as a real dilemma of hypercompetitive environment. Finally, the study offers interesting implications for managers, pointing out that thinking differently to the way of competing, may results in escaping the red queen race.

Keywords: Red queen effect; Red queen race; Hypercompetition; Market creation; Blue ocean.

JEL classifications codes: M10, M13.

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I- Introduction:

As the technological development increased, Companies nowadays are facing significant challenges in their competing markets, which have been shifted from static to hypercompetitive. This state of markets made companies under what has been refered to as “The Red Queen Effect”.

The theory of Red Queen effect (RQE) is a metaphor derived from Alice’s adventures in Lewis Carroll’s “Through the looking glass”. In that short novel, Alice realizes that although she is running as fast as she can in red queen’s wonderland, she is not getting anywhere, relative to her surroundings. The red queen’s response is that Alice must be from a slow world and she adds: “Now, here you see, in this fast world, it takes all the running you can do, to keep in the same place. If you want to get somewhere else, you must run at least twice as fast as that”. (Carroll, 1984, p. 104)

Interstingly, the evolutionary biologist -Van Valen- was the first researcher who coined the term red queen to science. Hence, he used it to explain the constant probability of species’s extinction regardless of the duration of their evolutionary history. (Giachetti, Lampel, & Li Pira, 2017, p. 4) Since then, researchers have used the term of the red queen to explain behavior in a variety of settings ranging from biology to other academic fields.

At a later stage, the term of the red queen effect has been used in the business management literature, but only few research has been carried out in this field. Broadly speaking, the red queen in management can be seen as a contest in which each company’s performance depends on the company’s matching or exceeding the actions of rivals. Hence, in such competitive market race, the only way to survive for rivals is by taking actions of their own. Each company is forced by the others in an industry to participate in continuous and escalating actions, as a result, all the companies end up racing as fast as they can just to stand still relative to competitors. (Derfus & al, 2008, p. 61).

The problem of the study:

Competition has always occured as the center of studies, espeacially with the rapid changes in industries which have turned to a red bloody race, where maintaning the market position become more challenging. Thus, the red queen effect refers to the continious attitude of comapny to adapt to this hypercompetitive environment, however, this way of dealing with competition can negatively affect its performance. Accordingly, the question that can be raised in this regard is: What makes Red Queen Effect as a dilemma for companies in hypercometitive industry?

The questions of the study:

From the above question, the study addresses the following questions:

- What is meant by red queen effect?
- What is the negative impact of red queen effect?
- How can companies escape from red queen race and eliminate its negative effect?

The Objectives of the study:

The following are the specific objectives of this study:

-To understand the concept of red queen effect and hypercompetition.

-To determine the impacte of red queen effect across literature review

-To urge companies to escape from red queen race.

The importance of the study:

This study derives its significance from the novelty of the chosen topic (red queen effect) and the scarcity of works about it. By a literature review of the main studies related to the topic, the study is able to clarify and reveal the truth of being involved in a red queen race, and give a set of arguments that makes this phenomenon as company' s dilemma in 21st century. The study emphasizes the idea of escaping the red queen effect, therefore it suggests to adopt one of the modern strategic tools to eliminate this effect for both short and long term.

II- Background of the study:

Over the last two decades, there has been increasing attention given to the concept of "hypercompetition" in the business management literature. The first of work is D'Aveni's famous book (1994), where he revealed the intensive nature of nowdays industries. Beyond that, few theoretical and empirical studies have been published on "the red queen effect" in those hypercompetitive industries. This part will summarize the ideas behind it.

1- Hypercompetition:

Since the emergence of technology, Industries have changed dramatically from slow moving, stable oligopolies to hypercompetitive environments. Where, the term “Hypercompetition” was introduced for the first time by D’Aveni in his book ”Hypercompetition-managing the dynamics of strategic maneuvering”, where he defined hypercompetition as an environment characterized by intense and rapid competitive moves, in which competitors must move quickly to build advantages and erode the advantages of their rivals. This speeds up the dynamic strategic interactions among competitors. (D'Aveni, 1998, p. 173)

In their studies; Bonnici (2014) and Kotzab (2009), fully agree with D’Aveni’s opinion about the continious prevalence of hypercompetition in industries. Where, they believe that this phenomenon can be identified in almost every industry from high-tech to low-tech industries, from internet services to automobile, food, beverage, clothing, and building industries. The status quo of doing business has been disrupted by competitors and by other external factors in the environment. Digital technologies, globalization, evolving revenue models, innovation in communication and information processing, are all creating rapid shifts in the current industries. (Bonicci, 2014, p. 1) (Kotzab & al, 2009, p. 7) (D' Aveni, 1998, p. 1)

In fact, hypercompetition has always been considred as the new generation of competition forms. Therefore, the paper attempts to distinguish between Static competition and Hypercompetition in Table 1.

Table 1. Static Competition versus Hypercompetition

Static Competition	**Hypercompetition**
Environment relatively stable	Dynamic Environment
Predictable changes	Uncertain and unpredictable changes
Prices and costs competition	Competing through innovation
Stable technology	Permanent technology change
Sustainable competitive advantage	Ephemeral competitive advantage
Responding by entry barriers, the experience effect	Responding by dynamic flexibility

Source: authors, based on Kotzab & al study, 2009, p7

By comparing both Static competition and Hypercompetition in Table1, it is noticed that the latter is marked by its dynamic environment due to the unpredictable continuous changes in technology, laws and policies, consumer tastes, and international conditions, which makes its hard for managers to deal with. In contrast to static competition where change is slow and managers have time to monitor and respond to predictable changes in a deliberate manner. And because Competing through innovation depends on the latest technologies in production and marketing methods, hypercompetition markets became intensive market space of technological race. In the other hand, static competition where companies competes on prices and costs leadership, the need for technology appears not really important to them.

In terms of advantages, sustaining a competitive advantage in hypercompetitive environment is out of the question, the high degree of uncertainty in such environment, prevent the company from maintaining its strategic position in the long term as it is the case for static environment.

Furthermore, from the prespective of strategic responding, it should be noted that in static competition, companies attempt to beat their rivals by strengthening their entry barriers, and benefiting from their experiences in industry. Whereas, any company operating in a hypercompetitive environment, it responds to the changes by adopting dynamic flexibility, in order to adapt quickly to changeable conditions.

2- The Red Queen Effect

The red queen effect is one of the comtomporary terms in strategic vernacular, it became known through Barnett ‘s book “Red queen among organizations -how competitiveness evolves”, which was published in 2008. Nonetheless, the theory’s roots goes to 1996, where Barnett has officially introduced his theory of red queen effect in Strategic Management Journal.

In his book, Barnett argues that the red queen effect is meant to deal with competition generally, as it arises in various organizational contexts. The theory addresses both indirect and direct competition. (Barnett, 2008, p. 48)

Several authors attempted to define red queen effect , Giachetti, Lampel, and Li Pira (2017), Antero (2014), Chakravortya and Douglas (2016) have adopted Barnett’s definition, that this theory is based on an evolutionary theoretical pressumption, which suggests that maintaining the current organizational performance, requires a continuous adaptation to changing factors in the competitive market, with the goal to keep up with competitors who co-evolve in an attempt to lead the competition and eliminate their rivals. (Giachetti, Lampel, & Li Pira, 2017, p. 9) (Chakravortya & Douglas, 2016, p. 622) (Antero & al, 2014, p. 614)

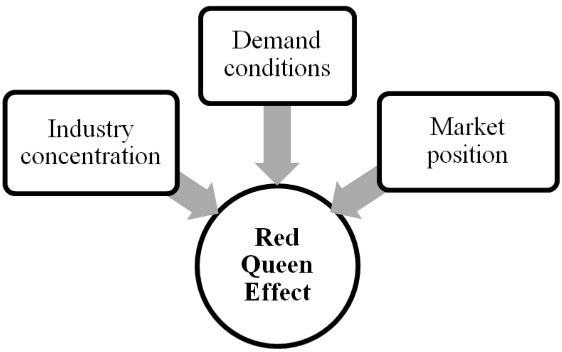
When it comes to competitive advantages, a research published by Zheng and al (2020) and her team from china business school, reveals that acquiring a competitive advantage in red queen race depends not only on company’ s absolute speed in a competitive environment, but also on its relative speed in comparison with other competitors in the environment. . (Zheng & all, 2020, p. 181) This thinking emphasize the point view of Derfus, Maggitti, Grimm, and Smith (2008), when they showed in their research that company’s competitive moves can play out as a red queen race among rivals, because company's moves are related to rival moves and their competitive speed, this will have impacte the whole industry. (Derfus & al, 2008, p. 78)

Another definition proposed by Voelpel and others (2005), in which they have highlighted the danger of red queen effect. According to them, the red queen effect refers to situations where companies easily drift into a self-reinforcing, intense head to head competition, which brings them faster to failure if they just work harder or try to improve traditional industry key success factors. (Voelpel & al, 2005, p. 47)

Based on the previous contributions of several authors, the study considers red queen effect as a term used to express company's competitive behavior in business environment, where, company's future depends on matching or exceeding the strategic moves of rivals, those later must greatly improve their own innovative actions to maintain their market positions. And so it goes, this endless vicious cycle of competing moves (red queen race).

Derfus (2008) and her research team, have proposed three major drivers to red queen effect, where their assumption was based on the ideas of evolutionary theory and the industry position school. The study demonstrates these three major drivers in Fig.1.

Fig.1. The major drivers of red queen effect



Source: authors based on Derfus et al study, 2008, p66

In their research, Derfus and her team pointed out that the major derivers of red queen effect are based on number of concurents in the industry, conditions of demand, and the competitve position in the industry. These define the competitive relationship between the action of the first mover company and their rival actions, in terms of strategic move speed and the performance, this drivers can be explained as follows: (Derfus & al, 2008, p. 66)

-Industry concentration: In any industry, the number of concurents have a major role in defining the effect level of red queen. This later is less influential in industry with a low level of concentration. On the contrary with highly concentrated industries, companies are more inclined to respond faster or marginally greater than other competitors to grab more market share.

-Demand conditions: companies in industry with high level of demand, have a slow frequency of competing, due to its ability to raise incomes just by sustaining their shares of the constaintly expanding demand. In other meaning, industries with high demand lead companies to a static competition instead of hypercompetition where everyone compete under the logic of "survival of the fittest".

-Market position: The red queen has more effect on companies with a weak market position than industry leaders.From a performance perspective, non-leader-companies have less chances to achieve a high level of efficiency in performance than other market leaders. Because they have less potentials (in term of financial resources, experience, technology) to get new market shars and defend their positions. Furthermore, leaders's strategic moves have a stronger impact on non-leaders performance, this can be only explained by pioneering principles, which are more about deterring and eliminating rivals than competing with them.

II- methodology:

It must be emphasized once again that most of red queen research was in biological field, only very few of studies have adopted the term of red queen in business framework. And though the paucity of study material, the paper has selected 10 studies to be analyzed. Apart from the descriptive approach which was adopted to identify the conceptual content of red queen effect in the first suction (Theoretical background). The study adoptes for this part of paper, the analytical approach in order to analyze different studies, besides of finding the research gap and determining the impact of red queen on companies in hypercompetitive environment.

III- Results and discussion:

The basic body of literature identified comprises 10 papers. The allocation of publications in the researched period (1996–2020) is shown in Table 2. While 1996 is the first year of publication , where Barnett introduced the theory of red queen effect for the first time in academic journal.

However, It must be pointed out that Barnett' s 2008 published book is considered as a starting point for publishing, for its greater inspirational impact on researchers. This can be explained by the large number of publications during time period of 2008 and 2020.

Table 2: Summary of Red Queen Effect (RQE) studies.

Author	Study title	Methods	Results
Barnett and Hansen 1996	The red queen in organiza-tional evolution	Quantitative study based on 2970 retail banks of Illinois –time period of 1900 - 1993	It was marked an evidence of red queen evolution among Illinois banks, which they were less likely to fail if they had more competitive experience, and at the same time they generated stronger competition

Barnett and Sorenson 2002	The red queen in organizational creation and development	Quantitative study based on the same sample of 1996 paper and the same time period	Red queen can have negative effect by making organizations more susceptible to "competency traps", due to the responding of new developments using norms that have been learned under previous and different environmental conditions
Voelpel & all 2005	Escaping the RQE in Competitive Strategy: Sense-testing Business Models	Qualitative study based on Mangement literature about RQE, Sense-testing business models	Barnett' s red queen trap is a big threat to company, therefore it must adopte new business model based on distructive innovation and apply Sense-testing which helps to develop, and evaluate possible new business models
Barnett 2008	The red queen among organizations- how competitiveness evolves	Mixed methods : qualitative (theorical chapters) & quantitative (chapters of RQE among commercial banks and computer manufacturers	Companies that survive competition become stronger competitors. It was noted that a company's competitiveness at any given moment hinges on the company's historical experience. And through red queen competition, weaker competitors fail, or they learn and adapt
Pamela J. Derfus & All 2008	The RQE: Competitive actions and firm performance	Quantitative study based on over of 4700 competitive moves among 11 american sectors	company's moves increase performance but also increase the number and speed of rivals' actions
Minet Schindehutte & Michael Morris 2010	Entrepreneurial marketing strategy- lessons from the RQE	Qualitative study based on Mangement literature about RQE, and Entrepreneurial marketing	It is no longer meaningful for company to compare its actions to other rivals, instead they should think more about innovation rather than competition

Michelle Antero 2014	Competitive moves over time- The case of SAP	Quantitative study based on SAP ' s moves -time period of 1970 - 2000	organizations are adaptive systems and over time develop competitive hysteresis which allows them to become stronger competitors
Delacour and Liarte 2015	Strategy of continuous innovation and RQE- An empirical study	Quantitative study based on male shaving industry - time period of 1898 - 2012	The red queen in this industry didn't negatively affect companies, in contrast, by involving in red queen race, companies became more innovative
Chakravorty -a & Douglas 2016	Sustaining process improvement: the RQE	Quantitative study based on production/ maintenance operations of The Air Logistics Complex, in Georgia, USA-	Red queen contributes in sustaining the improvement of performance in production and maintenance operations in indistruel companies
Zheng & All 2020	The Relationship between Product Innovation and Online Sales: A RQE Competition Perspective	Quantitative study based on sales of CTRIP (Chinese e-commerce platform) time periode of March 1, 2017 to December 1, 2018	The red queen competition theory holds that when the new organizational capacity exceeds the average level of the industry, the seller's output ratio of cost input will decline, and it is easy to fall into the "capacity trap", as well as lead to the decline of the seller's learning ability and the loss of competitive advantage.

Source: authors, based on literature review

By analyzing previous studies, it can be said that most of the academic works were published after Barnett's book, in which he detailed more about the phenomenon of red queen effect. In addition, all the authors agree on the fact that competitive environment is turned to a contest for survival, in other words, to a red queen race. Hence the behavior of another organization's search solution is caused by the relative improvement of one organization's performance.

In previous studies, a large number of authors (Barnett & Hansen, 1996), (Barnett & Sorenson, 2002), (Barnett, 2008), (Derfus & al, 2008), (Antero & al, 2014) (Delacour & Liarte, 2015), (Chakravortya & Douglas, 2016), (Zheng & all, 2020), have focused mostly on the idea that intense head to head competition in red queen race is beneficial to company, by forcing it to go through an innovation process of reinventing itself, and developing new advantages. However, the current paper argues that this process of innovation is limited in the long term, and has devastating consequences on the whole industry. Voelpel & all (2004) and Minet Schindehutte & Michael Morris (2010) have challenged this commonly accepted dogmas of red queen's positive effect, where they pointed out how badly to be involved in a red queen race , and they have explicitly demonstrated this idea by their he chosen title "Escaping the RQE in competitive strategy". This is totally consistent with the standpoint of the current paper.

The study examines and digs deeper into this research gap which consists in revealing the truth of the bad effect of red queen race, besides its contribution to the proposal of solutions, designed to put red queen out of the game. Therfore, the study considers the red queen effect as a real dilemma of hypercompetition thinking for the following reasons:

- Companies under the red queen effect in hypercompetitive market, have to keep on competing in to win. This statement means that even if companies survive in the short-term, there is no certainty that they will do the same in the long-term, and this can explain why competitive advantage in red queen race is ephemeral.
- The red queen consumes all of the competitors energy (adaptive capacity) for as long as it persists, and no other adaptation is possible. That is to say, company is constantly required to spend more of financial resources just to maintain its market shares. This cycle of process is endless and negatively affects company's financial situation. The effect of red queen clearly appears in poor industries, where companies chose to focus on maintaining their relative positions instead of trying to get into different industries where the profitability index is high.

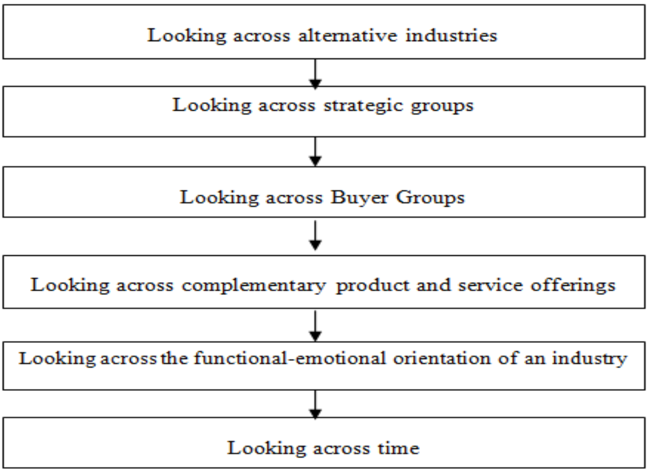
- Red queen race negatively affects market mechanisms, as it increases price wars, eliminates small companies and causes shrinking profit margins. And because the continuous imitative moves of competitors, customer struggles to differentiate between thousands of similar products.

Based on the previous arguments, it is noted that in red queen race, competing is not the right strategic logic that lead to a sustainable advantage; quite the contrary, it is the reason that advantage is ephemeral. The study seeks to find major keys to success in hypercompetitive environment, and to eliminate red queen effect. Hence, the study emphasizes that the only way to escape from the red queen, is to stop trying to escape from her.

The study suggests to not put the hypercometition in the center of thinking, because thinking about beating rivals will automatically lead company to an endless red queen race. Instead, creating new market space should be the company' s ultimate goal. Where , this can only be achieved, when company gets deep into customer' s need to offer him a unic value.

As it appears, the authors of the current paper are influenced by blue ocean thinking, which consists on market creation not market competition. Therefore, the study suggests to adopt blue ocean' s Six Paths Framework (Fig.2) in a context of escaping the red queen.

Fig.2. The six paths framework



Source: authors based on kim and Mauborne study, 2015, p70

The study argues that the Six Paths Framework developed by Chan Kim and Renée Mauborgne in blue ocean strategy book, allows any manager to address and avoid the red queen effect which all the competitors in its industry struggle with. The detailed explanations of each path of this tool with real examples are the follwing :

-Path one : Looking across alternative industries

The first path to create a new market space, is to break out from the narrow view of the limited and unchangable market space. Therefore, companies should eliminate an reduce the conventional things of their industries, and in the same time, they should focus on the major factors that lead company to compete across alternatives industries.

This step will lead managers to create uncontestted space and escape from the red queen race. For example : Pro-biotic drink of Yakult japanese comany. It has done more than any other company to prove that when it comes to food and health there are more similarities. Hence, the Japanese company involved in competition with juice and pharma industries, and no one of these two industries producers, consider Yakult with its Pro-biotic drink as their rivals. In following the idea behind this step, Yakult succeded in creating its own market space across industries, and in 2008 it operated in 38 countries around the world with 3.788.393 Us dollars of annual sales. (Wennström, 2009, p. 77)

-Path two : Looking across strategic groups of the same industry

As the creation of new market spaces is related to the alternative industries, company must understand how different strategic groups of its industry think about competition. Where, a strategic group is a group of companies that have the same activity and adopt a similar strategy. In general, strategic groups are classified by offering price and performance. a company should find the reason why do customers choose a group instead of another one, For example Toyota created its marke space by following this path, where it presented its Lexus car with the quality of Mercedes and a price closer to the lower-end mid-class cars. (Kim & Mauborgne, 2015, pp. 58, 62)

-Path three : Looking across customer groups

In red queen race, companies have the same concept of the target buyer or customer. But in fact, there are many types of customers such as, actual users who use the products, influencers, and intermediate customers who resell it to the final customer. Where, finding a new market space is based on understanding the type of customers that company deals with .For example :Novo nordisk company created a new maket space in insulin industry, by targeting the customer group of diabetics instead of doctors group who most of company focus on it, where, it invented NovoPen Echo, an insulin pen, easy to use, lightweight , travel friendly, fancy design, this product is a kind of shots instead of syringes and insulin bottles, which give the pen a soft aspect and facilitates the process to the patient, as a result, Novopen improve psychologically the glycemic control. (Hyllested-winge & others, 2016, p. 11)

- Path four : Looking across suplementary products and services

To break the boundaries of red queen competition, companies should give more attention to the value offred by their products, than thinking about rivals. Where, by trying to deeply understand the function of product and what customer needs to have a better use of it, they can figure out costumer's pain point and eliminate them by creating new complementary and support products or services. Consider the British industry of teapot, which, altought its significance to British traditions, had declining incomes until Philips came along with its teapot and solved the pain point of tea amators (in that time, the traditional teapots accumulated the lime scale which reached its way to tea). Philips created a filter in teapots as a complementary product, which had perfectly capturedlime sediments. Since than, people replaced the traditional teapots with the new filtred ones which boosted the teapot industry. (Kim & Mauborgne, 2015, p. 70)

- Path five : Looking across the functional-emotional orientation of an industry

Companies offer trought their Products and servicesa functional or emotional allure. And the competition in red queen race is based on one of two possible of allure.However, when the customer appeal is reversed from one to the other, new market spaces are often found and the red queen effect is eliminated. In other words, by understanding which allure the industry is focusing on, For example, Subway (one of the biggest fast food producer), used emotional appeal in fast food industry which characterized by functional (industry drived by prices and time of waiting).Where Subway invested more in taste satisfaction, affordability, convenience and the healthy lifestyle. (Bodi, 2015, p. 2)

-Path six : Looking across time

Instead of adapting incrementally to the red queen competition, company should have a prespectif for the future and make some prediction about how possible trends will have an impact on custumore' s value. To estimate tendencies across time, there are three critical elements that must be achieved, the trend must be determining to the business, irrovocable and evolve in a clearly defined track. Hence,by figuring out which trends have more possibility to impact the current industry, company can create unparalleled and unic value to customer. Apple is a great example for looking across time, when apple decided ten years ago to remove the disketts placements from their computers, because steve jobs projected that CD (compact disk) and USB (flash drive) would be substitutes for disketts. And this is what really happened, now, in 2021 no one use disketts to storage data and information. (Kim & Mauborgne, 2015, p. 77)

Conclusion:

Today, the red queen unrelenting runs and runs ever-faster. In this study, the authors shed light on this phenomenon in the framework of competition. In fact, in any industry, companies are competing everyday just to survive. where, this increasing pressure to adapt fastly refers to the red queen effect. This endless cycle of running faster and faster only to stay in the same place must end, and all begins by understanding the drivers of this effect.

Because the only way to escape the red queen race is by making the competition irrelevant, managers are required to be led by visionary thinking of value creation intead of market competition. They must accept the challenge of creating new opportunities before they become obvious, and not allow themselves to be guided by a copycat mentality. Therefore, the study suggests to managers to use one of the blue ocean strategy tool- The six paths frameworks- in order to reconstruct industry boundaries and create new demand. In doing so, these managers have actively shaped the market space as opposed to running behind it.

Bibliography List:

-Antero & al (2014), Competitive moves over time: The case of SAP, Procedia Technology (16), 613-622.

-Barnett & Hansen (1996), The red queen in organizational evolution. 5 (1), 40-61.

-Barnett & Sorenson (2002), The Red Queen in organizational creation and development. Industrial. Industrial and corporate change , 11 (2), 289-253.

-Barnett (2008), the red queen among organizations -how competiteveness evolves, New Jersey, USA: Princeton University Press.

-Bodi (2015), Subway and its powerful presence in social media, Final project essay- Southern New Hampshire University.

-Bonicci (2014), hypercompition. Wiley Encyclopedia of Management, 1(12), 1-4.

-Carroll (1984), The Complete Illustrated Works of Lewis Carroll, New York, USA: Avenel Books,.

-Chakravortya & Douglas (2016), Sustaining process improvement: the Red Queen effect. Production Planning & Control , 27 (7), 621–636.

-D' Aveni (1998), Waking up to the new era of hypercompitition, The Washington Quarterly, 183–195.

-Delacour & Liarte (2015), Strategy of continuous innovation and Red Queen Effect: An empirical study, Management international, 19 (2), 140-158.

-Derfus & al (2008), The red queen effect-competitive actions and firm performance, Academy of Management Journal, 51 (1), 61-80.

-Giachetti, Lampel, & Li Pira (2017), Red Queen Competitive Imitation in the UK mobile phone industry, Academy of Management Journal, 1-60.

-Hyllested-winge & others (2016), NovoPen Echo insulin delivery device, Medical Devices-Evidence and Research, 9 (1), 11-18.

-Kim, , & Mauborgne (2015), Blue Ocean Strategy, how to creat Uncontested Market Space and make the competition Irrelevant, expanded edition, Bostton, Massachustts, USA: Harvard Business Review Press.

-Kotzab & al (2009), Supply chain management and hypercompetition, Logist, Res- springer (1), 5-13.

-Voelpel & al (2005), Escaping the Red Queen effect Competitive Strategy, Sense-testing Business model, European Management Journal, 23 (1), 37–49.

-Wennström (2009), Wennström's Four Factors of Success, London, UK: New Nutrition Business-The Centre for Food & Health Stu.

-Zheng & al (2020), The Relationship between Product Innovation and Online Sales-A RedQueen Competition Perspective, WHICEB proceding, Wuhan, China, 181–188.