The Characteristics of the Market and of High-tech Products: The Role of Marketing in an Uncertain Market Context

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doi: 10.51505/IJEBMR.2023.7409 URL: https://doi.org/10.51505/IJEBMR.2023.7409

Received: April 6, 2023 Accepted: April 11, 2023 Online Published: April 20, 2023

Abstract

Since the late 1970s there has been a surge in interest in high tech marketing. The industry of market research firms such as International Data Corporation has grown to offer competitive intelligence and market forecasting to companies that buy and sell technology-rich products. The strong enthusiasm in this sector has involved not only high tech marketing consultants but also the university world. In this paper we will highlight the role that High Tech marketing plays in the life of companies and then focus on the problems generated by the uncertainty to which marketing exposes High Tech companies.

Keywords: High Tech, marketing, uncertainty

1. Introduction

Since the late seventies there has been a surge in interest in high tech marketing. The industry of market research firms such as International Data Corporation has grown rapidly to offer competitive intelligence and market forecasting to companies that buy and sell technology-rich products. The strong enthusiasm in this sector has involved not only high tech marketing consultants, such as Regis MecKenna, but also the university world, in fact, several universities now offer a degree (diploma) in High tech MBA. The specialized press has widely circulated numerous articles on the successes and failures of computer, telecommunications and biotechnology companies. A generation of marketing-savvy high-tech entrepreneurs has captivated American business people. Men like Steve Jobs, founder of Appler Computer and NeXt, owe their success to high-tech marketing. Marketing scholars have always pointed out that high tech marketing has nothing to do with marketing related to other products or services, although there is a lot of confusion about the factors that make high tech marketing different from other types. of marketing. Starting from the definition of high tech marketing, we will highlight the vision of Williams Shanklin and Johns Rays and then arrive at the more comprehensive and comprehensive visions of Regis McKenna and Sergio de Vio. Before going into the various definitions, it is good to highlight how high tech marketing scholars define the term "technology" and that of High tech.

- Let's start with the term "technology", which has been defined as "the practical knowledge, know-how, technologies and products, which can be used to develop a new product or service and/or a new reproduction/system. Technology: can be found in people, materials, cognitive and physical processes, factories, equipment and tools. This definition includes both product technology (which is part of the product itself) and process technology (which

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ISSN: 2456-7760

is part of the production/system). It also includes "management technology, that is, knowing how to market and manage the company".

- Instead, the term High tech identifies all those elements that are characterized by a high degree of uncertainty both in the market and in technology. In light of these clarifications, we can question ourselves and ask ourselves what the real task of high tech marketing is, whether or not it has a unique role.

At this point we can highlight the definitions of high tech marketing given by some authoritative studies. Williams Shanklin and Johns Rays give a definition referring to areas traditionally considered high tech and for which high tech means: strong technical scientific base, fast obsolescence that involves a rapid replacement of old technologies that are replaced with new ones that are able to respond to new needs of a very turbulent market. Instead, according to Regis McKenna, the so-called “high-tech marketing” conceived for high-tech companies is now widely transferable to other sectors. It is, in fact, a new approach to marketing inspired by a context permeated by high technology but which is not limited to it. The characteristics of this context analyzed by Regis McKenna are:

• The accelerated pace of change
• Products that are increasingly sophisticated and difficult to use
• Products tailored to the customer

For Sergio de Vio, on the other hand, the constitutive characteristics of "High tech" marketing can be assimilated to that of the diffusion and assimilation of new ideas and new thought models, that is, of the "marketing of theoretical products". For this author, the high technology market is characterized not by finished products, but by expanding potentials that reach their "completeness" at the time of real and particular use, and therefore with the contribution of the end user. All these definitions have in themselves an element that unites them, namely the uncertainty both in the market and in the technology adopted.

2. The marketing of high tech products: qualitative and not quantitative

Businessmen love numbers because they feel confident. In emerging markets, however, the numbers are rarely reliable. Marketers who trust them have little chance of success. In many cases, type analyzes would take the past to predict the future. But today we live in an era in which the «future almost never resembles the past. It is extremely difficult to underestimate the pace of technological change. It is almost never successful to extrapolate today's trend into the future. Businesses have run into this problem since the dawn of the computer age. In the 1940s, computer companies, evaluating the potential world market, estimated it in a few dozen computers ". Certainly «do not foresee the proliferation of new applications or the rapid decline in prices. Mitch Kapor, the inventor of the incredibly successful software programs called 1-2-3, ran into an analog problem when he had to draft his original business plan for integrated software packages. He developed his business plan for a course at the Sloan School of the Massachusetts Institute of Technology in the late 1970s. Kapor did not receive top marks for his project, partly because he lacked market statistics. What would Kapor have found if he had any? Probably found that there was no potential demand for his product. After all, in the late 1970s, only a few large companies made personal computers. Kapor, however, had a nose for the market. He realized that companies could eventually buy personal computers, at that point, he could have his

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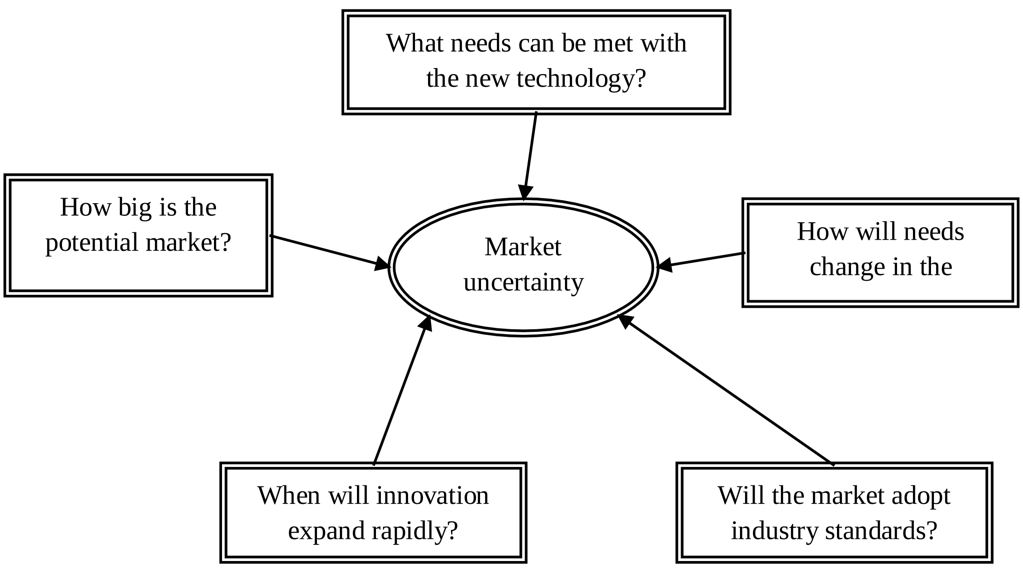
ISSN: 2456-7760

software. Kapor used what I call a qualitative approach to the market ", that is, the one that goes" beyond numbers to consult the trends and insights that create numbers. He looks after the consumer's eyes and personal relationships. Marketers can only hope to anticipate the future by understanding the market with a qualitative approach. Simple statistics tend to overlook the nuances of the market. A survey may indicate that 60% of customers use the company's product. However, a qualitative approach can reveal that customers are dissatisfied with the service from the company and that many are considering the possibility of switching to the competition ».''There is a need for a greater number of companies that operate with the logic of entrepreneurs. The best entrepreneurs don't care about statistical market projections. They ignore whether the projections point to a $ 50 million or $ 500 million market. They plan the strategy qualitatively. They simply take good ideas, develop them until they become products and then constantly adapt the products to market needs. A qualitative approach is equally important in sales. Some tech-savvy companies try to sell products based on their quantitative characteristics. They pride themselves on having products with an access time of many nanoseconds or a memory capacity of many kilobytes. On the contrary, customers tend to make their decisions more on the basis of qualitative factors, such as service, reliability, reputation. If a company manages to have credibility with key players in the sector, it is likely to be successful even if its product is a few nanoseconds slower than that of its competitors. To achieve a qualitative approach to marketing, managers must understand what I call the market environment. Quantitative approaches to marketing often ignore the environment. They consider the product as an object in its own right that can be defined with statistics and technical specifications. But in the real world, products are not isolated objects. They exist only in the context of their environment. Qualitative approaches to marketing make use of the environment as a guide to understanding products and markets. The environment operates as a lens through which the customer observes the product. As the environment changes, the public's impressions of the product change: even if the latter has not changed at all. As technology advances, products that were considered cutting-edge begin to appear banal. As prices drop, products that were considered cheap begin to look expensive. To effectively market a product, marketing managers must understand how the environment behaves. Managers need to be sensitive to trends and perceptions. They need to understand how different environmental forces interact with each other and be alert to changes occurring in each force. In fact, they must be able to look at products as customers do, through the lens of the environment. Let's take the case of the personal computer industry ». “The personal computer industry was still in its infancy, with limited competition and a host of future opportunities. Enthusiasts were the core market, and specialty retailing had just begun to spread. The environment was perfectly conducive to Apple. Other industries were dripping with bad news. Japanese companies were beginning to dominate the automatic equipment and consumer electronics sectors and were making forays into the semiconductor sector. The American public and journalists were eager to have good news about the business world. Apple capitalized on this attitude of the environment. It presented itself as a symbol of hope for the future. It represented a bright spot in an otherwise sluggish and depressed industrial context. America was beginning to see new entrepreneurs as the saviors of American capitalism, so Apple valued the "poor man who gets rich" story of its dynamic founders, Steve Job and Steve Wozniak. Apple public relations repeatedly told the story of the two Steve working late at night in their garage. Other personal computer manufacturers emphasized the technical specifications of their products and made complex presentations of the technical differences between competing brands. The Appie, on the other hand, understood that the environment was not highly competitive. The sector was in its infancy and there was room for everyone. Rather, the main challenge was to attract new types of users. Thus, Apple put emphasis on the fun side and the potential of the new technology. In short, the 1977 environment for personal computers was singularly favorable. Apple took a qualitative approach to marketing and transformed Apple. The in a great success ».

3. Uncertainty and High Tech marketing

Both market and technological uncertainty plays a very important role in High Tech marketing. Let's start by looking at the uncertainty related to the market, the following figure shows five questions that highlight the uncertainty of the market.



First, when faced with radically new technology, customers may not understand what needs the technology can satisfy. A very simple example that allows us to understand this element is the purchase by a manager of a portable computer. Secondly, once identified, customer needs can then change rapidly and unpredictably as the environment changes. An example of how a product has to cope with an always-on-the-go target could be a program for filing a tax return in case federal tax numbers change. Third, one may wonder if the market will sooner or later establish technical standards and, therefore, if the products chosen will be compatible with other products that the buyer plans to use. The discussions about VHS and Betamax formats early on in VCR are an example of this kind of market uncertainty. Fourth, it is difficult to predict how quickly "high tech" innovations will spread. An example is the difficulties that market researchers have had in predicting the shift of the sales boom from videotape recorders to office automation systems. Finally, all these questions make it difficult to determine the size of the

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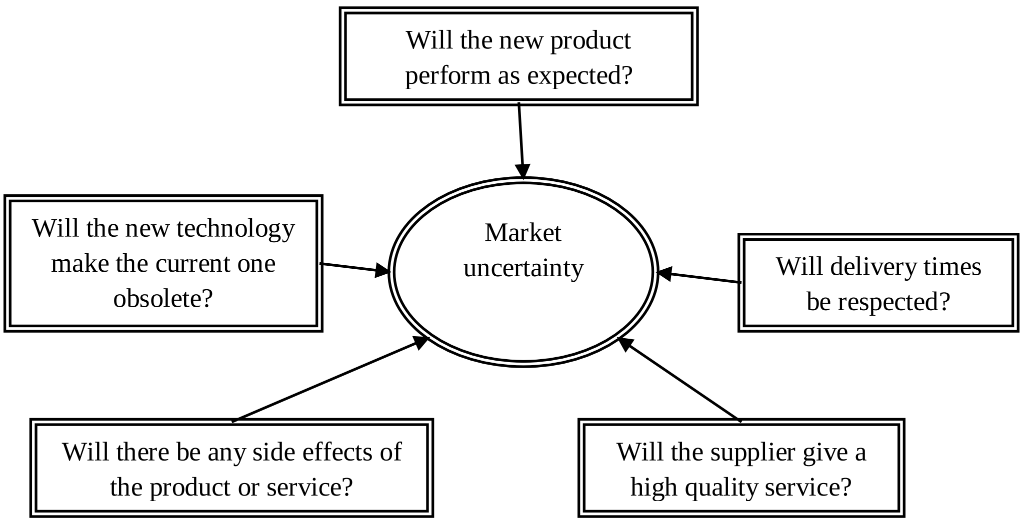
potential market. In 1959, for example, IBM turned down an offer from the newly formed Haloid Corporation to invest in an entirely new xerographic technology because an investigation predicted that the total market for the Xerox 914 would not go beyond 5,000 units.

A decade later, Haloid (which became the Xerox Corporation) had sold two hundred thousand nine hundred and fourteen to become a billion dollar company. A second dimension that distinguishes high tech marketing is technological uncertainty. Technological uncertainty means not knowing what customers want from new technology or not being sure of the manufacturing company's ability to honor its promise to satisfy needs, once these have been made explicit. Technological uncertainty is greater when the technology is new or rapidly evolving. All three of the above definitions refer to this type of uncertainty. The following figure illustrates five potential causes of technological uncertainty. The first consists of a lack of information about the functional performance of a product: it will live up to what the seller promises. When computer "time. sharing" systems were adopted in the 1970s, both buyers and sellers of computers often faced this uncertainty when trying to determine response time (the speed at which a computer responds to a user at the terminal) of different machines operating under different conditions.



Second, the company providing the technology may not give sufficient guarantees for delivery times. These times can be uncertain for various reasons, due to the slow arrival of raw materials or the inaccuracy of delivery by couriers and so on. Thirdly, there is uncertainty about the ability to ensure timely and effective assistance. It should be noted that quality assistance is essential in many situations, be they "high tech" or "low tech". Uncertainty about high tech support, however, is undoubtedly greater due to limited information on the new technology.

Older technologies such as washing machines, televisions and automobiles have decades of experience with problems and their solutions, which reduces the degree of uncertainty. The newest technologies are unprecedented and therefore even if the maintenance worker arrives quickly, it is not known whether the fault can be repaired and how long it will take. Fourth, the technology may have unexpected effects. In the 1980s, the increased use of microcomputers and computer networks was accompanied by an increase in unauthorized access to both public and

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private information systems. The press reported several threats to businesses, including embezzlement, "computer fraud", "privacy" and even national security violations. Finally, technological uncertainty may be due to technological obsolescence to replace the current one. The risk of obsolescence can manifest itself long after a technology has settled in a market. Furthermore, another risk can arise in the event that a new technology is introduced for the first time, the customers resist with the old systems long enough to bypass it to choose, subsequently, the even more advanced solution. The risk for the marketing expert is that, in this case, of being too hasty, and leading the products of the competition to override his product, condemning him to an early death. This uncertainty characterized the introduction of the "compat disk audio system" in the early 1980s. Sales of this product were just starting to take off when "digital tape players" were announced which promised the same sound quality at a cost. much lower. Uncertainty as to whether the "digital type" would make previous technology less obsolete even before it conquered the market, prompted many potential buyers to wait before buying. So when we are faced with high technological uncertainty and high market uncertainty, we are in the area of high tech marketing. If, on the other hand, we are faced with low technological uncertainty and low market uncertainty, we are in the area of low tech marketing where the application of a technology is known to satisfy an explicit need. When we are faced with high technological uncertainty and low market uncertainty, we are in the area of marketing of mature products. Here the manager knows the market and his customers very well, many of whom are loyal, therefore he will try, introducing a new technology to deal with an unsolved problem: a new drug, administered in pills, which helps to lose weight. There is therefore no doubt about the needs to be satisfied. What is uncertain from the start is whether the new technology introduced will really improve the existing situation. Finally, if we are faced with low technological uncertainty and high market uncertainty, we are in the "High fascion" Marketing area. In this area, technology evolves relatively slowly, and customer tastes are not easily predictable. The simplest example, which at the same time offers us the opportunity to have a clear vision of the reality of the "High fascion" area, is the high fashion market. In fact, in this type of market, the uncertainty of the market is the dominant factor due to the constantly evolving customer demands. In the following paragraph we will highlight the key problems arising from the combination of technology and market uncertainty in High tech marketing.

4. High tech marketing and the problems generated by uncertainty

If greater technological and market uncertainty is the key difference between a "high tech" and a "low tech" marketing situation, what are the problems created by uncertainty that must be solved to be successful in the world of "high tech" marketing. tech "? Experts often face five main problems illustrated in the following figure:

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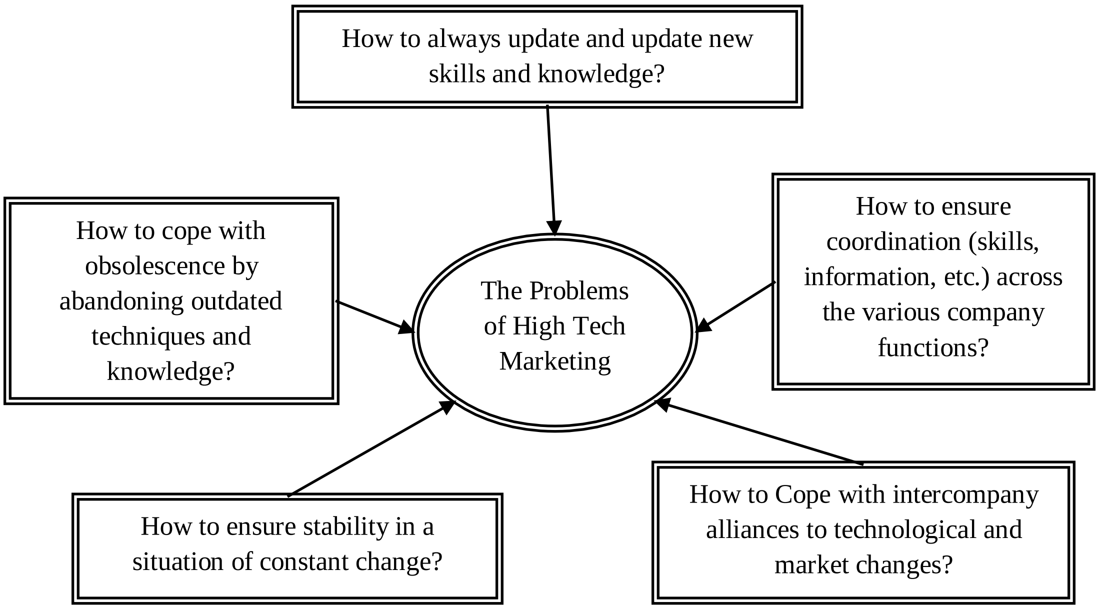

Let's see them in detail:

- *How to always update and develop new skills and knowledge?* High tech marketers and sales people need to acquire enough expertise in key technologies to understand their market potential and then be convincing of their design and R&D peers. They must also have sufficient knowledge of the functionalities of the technology and the characteristics of the customer industries to be able to identify potential applications not yet discovered by the market. The state of both technological knowledge and the potential market is therefore necessarily greater in the high tech world than it is in the low-tech one.
- *How to cope with obsolescence by abandoning outdated techniques and knowledge?* Technological uncertainty and rapidly changing customer preferences mean shorter life cycles for products and technologies; this implies, paradoxically for "high tech" experts, that while they are asked to know more about technologies, markets and applications, at the same time their knowledge life cycle is shorter, because they quickly become obsolete.
- *How to ensure coordination (skills, information, etc.) across the various company functions?* Marketing and sales people in technology-rich sectors must have an active presence in the various functions to obtain the expertise, attention and staff needed to solve customer problems. When the technology is new and untested, people's R&D, manufacturing and service skills are more important than they are for mature technology products. When market needs are unclear, better communication between marketing, sales and R&D stimulates ideas for new products. This communication also ensures that existing products are continuously adapted to new market needs. The interaction between functions allows marketing, which knows customers more than others, and R&D, which knows the limits of technologies better than others, to coordinate information and therefore to better manage the two types of uncertainties, both technological and market.

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• *How to cope with technological and market changes with inter-company alliances?* The 1980s were marked by an increasing number of marketing alliances between suppliers and customers, between manufacturers and distributors, between suppliers of complementary products (for example, publicists, etc.) and competitors. Alliances build trust, facilitate the flow of information and encourage customers or consultants to be "beta best sites" during the evolution of a new product. Evan A. Von Hippel also points out that another important benefit of a close supplier-customer relationship is that cutting-edge customers are often an important source of new product ideas. In a study of more than 160 product innovations, Hippel found that it was from pioneering customers, not marketers, that the new ideas had sprung that led to the new products that were then successfully sold.

• *How to ensure stability in a constantly changing situation?* A high level of technological and market uncertainty stimulates enthusiasm for innovation, but also causes enormous stress in the people who work there, and, therefore, in the relationships between staff and the organization. If sales and marketing managers are unable to develop mechanisms that ensure continuity of change, employees, customers and suppliers may not be considered permanently necessary by the company and often not really be. For many veterans of high-tech marketing campaigns, the paradoxical search for continuity in a situation of rapid change appears as difficult as making a hole in the water. If this problem were unsolvable, then high-tech marketing would be a game that only young people working in new companies could play. The consolidated success, however, of old foxes like H. Ross Perot and Ken Olsen and relatively old companies like Hewlett-Packard tells us that some high-tech experts have found the right path. Therefore, we can conclude that the rapidity of change is such that strategies based on the lessons of the past are obsolete from the start and the corporate future is dismayed by a massive dose of uncertainty. High tech managers can avoid falling victim to their own experience by thinking and acting in terms of the perfect future. Therefore, we can say that uncertainty gives rise to marketing problems that successful "high tech" companies solve thanks to creative adaptations and focusing on some key elements.

References

A.S.I.M.: *Risk managment: a reader study,* Asim, New York, 1973.

Banks E.: The simple rules of risk,Willey 2002

Bernestein P.: *Against the Gods.The remarkable story of risk*, Wiley 1998.

Bertini U.:*Introduzione allo studio dei rischi nell'Economia Aziendale*, Pisa, Cursi, 1969.

Bertini: *Il governo dell'impresa tra "managerialità" e "imprenditorialità"in Scritti di Politica Aziendale*, Giappichelli, Torino, 1991.

Bertini: *Il sistema d'azienda*, Giappichelli, Torino, 1990.

Boniello C.: *Cauchy the theory of groups and the theory of polyhedra*, International Journal of Advanced Engineering and Management Research 2021 Vol.6, No. 04; p.38-47, ISSN: 2456-3676;

Boniello C.: *Business risk is a crucial node for the success of the business: Corsani's point of view* Journal of Advanced Engineering and Management Research2022 Vol.7, No. 02; p. 31-40 ISSN: 2456-3676;

Boniello C.: *The Business Risk* International Journal of Advanced Engineering and Management Research 2021 Vol.6, No. 05; p.29-36, ISSN: 2456-3676;

Boniello C.: *The concept of the causes and effects of risk in some italian and foreign scholars of the twentieth century* Journal of Advanced Engineering and Management Research2022 Vol.7, No. 01; p.66-71, ISSN: 2456-3676;

Boniello C.: *The Methodologies for identifying corporate risks* Journal of Advanced Engineering and Management Research 2021 Vol.6, No. 06; p. 141-151, ISSN: 2456-3676;

Boniello C. – Cuozzo C.: *Marketing Is a Valid Ally for Business Success: From the Origins of Marketing to its Evolution during Covid-19*, TESS Research in Economics and Business 2022, 1(2): 107.

Boniello C: *The success of the company through the knowledge of business risks* Journal of Advanced Engineering and Management Research 2021 Vol.6, No. 06;p. 58-67, ISSN: 2456-3676;

Borghesi A.: *La gestione di rischi di azienda*, Padova, Cedam, 1985.

Carter R.L.– Doherty N.A.: *Insurance and risk retention*, Handbook of risk management, Kluwer-Harrap Handbooks, London, 1974-1984.

Cassola C.: *Il rischio e l'organizzazione dell'industria moderna,* Milano, Sandron, 1926.

Chessa F.: *La classificazione dei rischi e il rischio d'impresa* in Rivista di Politica Economica , Fascicolo II Roma 1927.

Crockford G.N.: *An introduction of risk management*, Woodhead-Faulkner, Cambridge, 1980.

Crockford G.N.: *The bibliography and history of risk management*: some preliminary observations Geneva Papers, n.23, 1982.

Crockford G.N.: *The changing face of risk management*, Geneva Papers, n.2, 1976.

Culp C.: The risk Management process, Wilwe, 2001

De Finetti B.: *Il rischio e le decisioni economiche*, Rivista Bancaria, Milano 1953.

Di Cagni P.L.: *Il sistema aziendale tra rischio d'impresa e rischio economico generale,* Cacucci, Bari 2002

Fazzi R.: Il contributo della teoria delle funzioni e dei rischi allo studio dei comportamenti imprenditoriali, Cursi, Pisa, 1957.

Ferrero G.: *Impresa e Managment*,MilanoGiuffrè, 1987.

Forestieri G. (a cura di) *Risk management, Strumenti e politiche per la gestione dei rischi puri dell'impresa*, Egea, Milano, 1996;

Galbraith I.K.:*L'età dell'incertezza*, Mondatori, Milano, 1978.

Green P. – Tull D.S.: *Research for Marketing Decision,* Prentice – Hall, Englewood - Cliffs, N.J. 1966-1975.

Greene M.R.-Serbein O.S.: *Risk management: text and cases,* Reston Pubblishing Co., Reston1981.

Head G.L.: Continuing evolution of the risk management function and education in the United States, Geneva Papers, n.23, 1982.

Hesponse R.F. – Strassmann P.A.: *Stocastic tree analysis of investment decision*, Management Science, vol. 11, n°10.

Knight F.H.: *Rischio, incertezza e profitto*, La Nuova Italia, Firenze 1960.

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ISSN: 2456-7760

Knight F.H: *Operational Risk,* Willey, 2001

Leinter F.: Die Unternehmungsrisiken, Berlin, 1915.

Leti G.:*Statisticadescrittiva,*il Mulino, Bologna, 1983.

Mendenhall W., Reinmuth J. E., Beavere R. J., *Statistic for Management and Economia*, Belmont, Duxbury Press, 7th ed., 1993,

Misani N.: *Introduzione al risk management*, Milano, EGEA, 1994.

Mongoldt H.: Die Lebre von Unternebmergewinn, Leipzig, 1855.

Oberparleiter K.: *Die Bedeutung des Grosshandels und seine Funktionen im osterreichischenWirtscaftsleben*, Wien 1955.

Oberparleiter K.: *Funktionen und Risiken des Warenhandels,* Wien 1955.

Sadgrove K.: The complete guide to business risk management, Gower, 1977

Sassi S.: *Il sistema dei rischi d'impresa*, Vallardi, Milano 1940.

Schroech G.: Risk management and value creation in financial institution, Wiley, 2002

Shimpi P.A.: *Integrating Corporate Risk Management*, New York, Texer, 2001

Smullen J.:*Risk Management for Company Executives*, Financial Times/Prentice Hall, 2000.

Zappa Gino: *Il reddito di impresa*,Milano, Giuffrè, 1950.