Startups operate in markets where uncertainty is high. As a consequence, they must constantly adapt their Business Model (BM) to the needs and requirements of their stakeholders, leading to the adoption of more reactive and flexible management methods.

Innovation is predefined by the process of implementing the invention in the market. This requires the integration of resources, competences, partners, tools and management methods allowing to create, propose and share value from an innovative BM.

This paper aims at citing the different methods of innovation management in startups in order to develop a combinatorial model linking the three approaches: Lean Startup, Effectuation and Design Thinking. By adopting an exploratory approach, we have designed this model that calls upon the different innovation management approaches that allow the successful creation, development and growth of startups.

Our empirical study focuses on the innovation management process in Moroccan startups. Thanks to the LaFactoryStartup incubator, we were able to select radically innovative startups. Four out of seven companies responded favorably to our request. For confidentiality reasons, we finally conducted interviews with four startups.

The four innovation phases developed (Idealization, Startup, Product Design, Product Launch and Testing, Business Growth) are the main coding categories. We then defined sub-categories of coding resulting from an inductive mode of reflection from the empirical data collected.

Thanks to the inter-case and intra-case analysis, we were able to build a model of innovation management in startups integrating the three innovation methods: lean startup, effectuation and design thinking.

Keywords: innovation, business model, startup, effectuation, design thinking, lean startup, entrepreneurship
Lean Startup, Design Thinking and Effectuation represent the innovation management methods that allow us to visualize the development process of an innovative idea into a profitable BM.

2. Literature review and problem statement

While conducting the research, we found that the literature on the subject of innovation management in the startup was almost non-existent. The few works cited concern a few methods of innovation management. The emerging character of our research favors the choice of a qualitative approach to study the construction of a combinatorial model of innovation management methods in startups.

Effectuation is a managerial approach. This approach states that the starting point of the project is the entrepreneur, with his or her personality, knowledge and relationships, which constitute the basic means. These means allow the entrepreneur to determine what he or she can do (the means determine the possible objectives) [5, 6]. If all goes well, the action leads to the engagement of new stakeholders, who bring new resources to the project. These new resources allow the entrepreneur to define new ambitious goals and to return to the starting point: new resources, new goals, which lead to new actions, new stakeholders and additional resources, etc.

This process was developed following a qualitative study allowing to resume the different phases of innovation followed by innovative entrepreneurs. As a result, the approach remains incomplete because it does not integrate test and error practices, with the need to involve all stakeholders during the development of the innovative product.

The Lean Startup [7] is one of the most popular methods of innovation today. It is essentially based on feed-back loops. The process does not have a beginning and an end, but a part of a continuous cycle starting with a Minimum Viable Product (MVP) that must offer sufficient value to satisfy the final customer [7]. The purpose of the MVP is to validate or not the value hypothesis defined in the product/market couple.

Specifically, with Lean, the interaction is with the first customers. The assumption is that it is impossible to know their needs in advance [7]. The solution lies in “doing”: building the MVP, putting it in the hands of customers and measuring their reaction, then learning from that reaction to improve the product, hence the “build-measure-learn” cycle of the Lean Startup method [8]. Interaction with the outside world is therefore fundamental, and Lean emphasizes the need to “get out of your comfort zone”, to go and meet the potential market by developing a first offer that can be improved.

Effectuation also emphasizes interaction with the external environment as a fundamental basis for the progress of the entrepreneurial project, but it does so in a more general way [9]. Effectuation, on the other hand, is not specifically interested in the product, but in the project as a whole, and in the entrepreneur’s approach to develop it [9].

While Lean startup is mainly a method for developing new products and does not say much about the other aspects of the entrepreneurial project. The relationship between the two approaches, Lean Startup and effectuation, allows us to propose a scheme that integrates their principles. Indeed, we propose to integrate Lean Startup, as an approach that intervenes at developing an innovative product, at one of the steps of the effectuation process, which aims at determining the objective from the existing means. These objectives represent ideas to be tested in the field thanks to the interaction of stakeholders with the MVP [10].

The “official” definition of design thinking is given by Tim Brown, CEO of IDEO: “Design thinking is a discipline that uses the sensibility, tools and methods of designers to enable multidisciplinary teams to innovate by matching customers’ expectations, technological feasibility and economic viability” [11].

The reference process for innovation through Design Thinking is the one defined by Tim Brown in Harvard Business Review in 2009, which distinguishes three phases: inspiration, ideation, implementation [12]:

- inspiration phase. The main purpose of this phase is to understand the potential consumer’s behavior based on the
results of the ethnographic research. The objective of this research is to determine the latent needs of the users:
- ideation phase. "Idea is the process of generating, developing and testing ideas that can lead to solutions" [1]. The objective in this phase is to quickly confront the ideas with users in order to perceive their interests while avoiding the waste of time and money;
- implementation phase. The implementation gathers all the necessary activities to transform the project from the state of conception to reality. It consists in transforming the idea into an industrial prototype, contacting subcontractors for the parts that cannot be realized internally, putting forward industrialization difficulties and building a product that is as close as possible to the final product to validate its use [12].

The process of innovation through Design Thinking does not start with an ideas, but with understanding those for whom we want to innovate. Customers are the only source of inspiration for any Design Thinking process.

The design thinking is essentially based on Ethnographic research practices, which aim to analyze in depth the expectations of customers as well as the main stakeholders.

### 3. The aim and objectives of the study

The aim of the study is to design a combinatorial model of the three methods of innovation management (effectuation, design thinking, lean startup), divided into four phases: idealization, conception, launch and growth. The combinatorial model we propose maximizes the chances of success of an innovative project by valuing test/error practices and adding ethnographic research as a tool for analyzing user behavior throughout the project development process.

To achieve this aim, the following objectives are accomplished:
- the development of a conceptual model integrating the three methods of innovation management in startups (effectuation, design thinking, lean startup);
- proposal of a combinatorial model from the field based on the results of the conceptual research.

### 4. Materials and methods

This section aims to explain the methods used by startups to develop an innovative BM (Effectuation, Design Thinking, Lean Startup). Based on these methods, we propose a new model integrating the three innovation management methods: Effectuation, Design thinking and Lean startup.

With a constructivist epistemological position, and an exploratory qualitative approach, the abductive-inductive reasoning mode seems the most appropriate. Indeed, the object of the research is the construction of a model for the innovation management process in startups. Therefore, the abduction allowed us to locate, through the observed findings, the theories that can enlighten the case studies representing these findings in order to deepen the analysis of the observed phenomena and to decline by inducing an enrichment of the challenged theories. The abduction has consequently guided the induction to explore the possibilities of generalization of the constructed knowledge.

In this research, we use an exploratory study through four semi-structured interviews with the creators of radical innovative startups, set up in the LaFactoryStartup incubator.

Indeed, conducting a case study, six sources of data can be mobilized: documentation, archives, interviews, direct observation, participant observation and simulation. We mobilized three of the six data sources proposed: interviews, documents, and observation. These instruments allow us to identify, and understand the process of creation and development of innovative Moroccan startups.

Thanks to the LaFactoryStartup incubator, we were able to select radical innovative startups. Four out of seven companies responded favorably to our request. For confidentiality reasons, we finally interviewed four startups: Baiti CRM, WAFR, Startupsquare and EDUWAVE.

After data collection, we compiled a coding list. NVIVO 10 software was used to process the data. This software facilitates organizing themes into categories and sub-categories. The first list of codes was derived directly from our conceptual model. The four phases of the innovation process constitute the main coding categories. We then defined sub-categories of coding based on an inductive way of thinking from the empirical data collected.

### 5. Results of modeling an innovation management process integrating the three methods: effectuation, design thinking and lean startup

#### 5.1. Conceptual model proposal

This innovation process allows us to review the different methods previously mentioned in an integrative way, the process of innovation through effectuation and its principles: starting with the existing means to determine the goals to be reached, which are improved by the integration of new stakeholders.

This process also integrates the Lean Startup process, through testing ideas to develop MVP by following stakeholder interactions.

By adding the principles of Design Thinking in the process, which aims to study consumer behavior in depth by applying ethnographic research and treating customers as the main stakeholder. Therefore, we can review the different steps of the process by integrating the two elements:

1. Customers: interaction with MPV is based on the expectations, needs and opinions of customers.
2. Ethnographic research: allows us to study the behavior and the way customers interact with MPV.

The combinatorial model we propose maximizes the chances of success of an innovative project by valuing test/error practices and adding ethnographic research as a tool for analyzing user behavior throughout the project development process.

#### 5.2. Modeling of the innovation management process from the field

To conduct our research, we rely on the conceptual framework (Fig. 2) established by assuming that there is a combinatorial link between the three innovation management methods: Lean Startup, Effectuation and Design Thinking.

We propose to present the four cases studied in the thesis by detailing their innovation management process allowing to reach the right product/market fit. The data
presented in this section are based on the analysis of reports made during our empirical research: semi-structured interviews, internal documents, observations, specialized magazines, websites. We have validated the information with the concerned interlocutors during the interviews.

In order to launch their MVP, the two entrepreneurs joined their expertise, experience, and skills, reinforcing their resources with those offered by incubators and business angels.

For their growth, the startup will aim to reach new international markets.

Fig. 2. Combination of the three innovation processes: Effectuation, Lean Startup and Design thinking

5.2.1. Case 1: BAYTI CRM

Bayti CRM is a customer relationship management application, focused on real estate, which brings together sales management, collaboration and organization tools for real estate salespeople.

The BAITY startup was developed in order to meet the expectations of his friend, who declared his need for a simple, intuitive, secure space that is accessible without geographical limits.

The startup was developed in order to meet the expectations of his friend, who declared his need for a property management platform. As a result, and following his skills in computer development and his experiences in entrepreneurship, the entrepreneur was able to develop a first MVP to meet the urgent needs of his first client. The modeling and modification of the MVP were done following the test and error process. Also, based on the study of the usage behavior of the product by the customer, the entrepreneur decided to launch the commercialization of the platform for other types of customers operating in the same industry.

For its growth, the entrepreneur commercializes its innovation for several companies, at the same time, it aims to develop other types of products to reach other markets at the continental level.

5.2.2. Case 2: WAFR

WAFR is an application that allows retailers to increase their market share when selling their products in grocery stores.

To do so, this product allows any citizen to obtain discounts in the form of cashback when shopping in a grocery store and on a range of products present in the application. It also allows the grocer to significantly increase his margins if he accepts payments via the platform.

The WAFR startup was created following the needs declared by pre-existing customers. Indeed, to launch the first MVP, the two entrepreneurs joined their expertise, experience, and skills, reinforcing their resources with those offered by incubators and business angels.

In order to launch their MVP, the entrepreneurs tried to apply agility to different situations in order to stay in line with the needs and expectations of the market. Thus, by testing different modalities and improvement proposals, the product would be ready to be commercialized.

For their growth, the startup will aim to reach new international markets.

5.2.3. Case 3: STARTUPSQUARE

STARTUPSQUARE is a community where startups, investors, corporates and innovation hubs meet, bringing together the four pillars of the startup innovation ecosystem in Africa. Indeed, STARTUPSQUARE is a place of exchange, a content creation hub, piloting tools and process automation for the four stakeholders.

The parent startup, LASTARTUP-FACTORY, allowed the entrepreneurs to launch a new innovative idea, “STARTUPSQUARE”, to meet the expectations of pre-existing customers.

Their skills and experience in the field allowed them to easily create the MVP, test it directly on the target, and improve it instantly.

Today, the startup is marketing its solution exponentially, aiming to reach new international markets.

5.2.4. Case 4: EDUWAVE

EDUWAVE believes in the idea that children, at any age, will learn more easily by having fun: repetition, absence of stress, commitment of the child and reflection are essential elements for learning. These elements are present in the innovation developed by the startup.

In order to succeed in the development of his startup, the entrepreneur relies essentially on the means granted by his family, friends and network (incubators, business angels...).

The idea of innovation was developed following several applications of the test/error process, allowing to propose the service that meets best the requirements of the customers.

In order to achieve growth, the entrepreneur aims to reach other national and continental markets.

Following the analysis of the different sources of information, we have deduced the innovation process adopted by the four selected startups: BAITY, STARTUPSQUARE, WAFR and EDUWAVE (Fig. 3).

To be able to compare the four innovation management processes, the startups follow the same process of creation, proposition and sharing value on the market.

Indeed, the phase of idealization is realized from the training, experiences, network and material and/or immaterial resources that the entrepreneur has.

The conception phase is carried out from the elaboration of the MVP dedicated to be tested on the market. As for the launch phase, it is about managing the different interactions of the customers that result in the commitment and purchase of the product. The last phase, which is the growth phase, results in the launch of new products and/or reaching new markets (Fig. 3).
In our research problematic, we ask the following question: "During the process of creation and development of the innovative product, how does the startup continuously adapt its BM to the fluctuating and uncertain requirements of its environment. Which innovation management methods allow reaching the right product/market fit?"

This work confirms the robustness of our conclusions with regard to our research. We recall that the research question aims to design the process of innovation management in startups.

It emerges from our results that in the process of management of the innovation, the four principal phases of innovation are: idealization, conception, launch and growth.

The training, the competences and the experiences as well as the network and the resources, represent the basic means to succeed in the first phase of innovation: idealization. Then, the design phase intervenes with the mission of designing the first product for the first users. The MVP is dedicated to be tested until the innovation creates value for the customers. Indeed, in order to launch the product on the market, entrepreneurs integrate the principle of trial and error, allowing for a back and forth between the MVP and the customer until satisfaction is achieved, which translates into the purchase of the innovation.

Growth represents the last phase of innovation development. It aims to reach new markets and satisfy new customer targets.

In order to compare the results of the empirical research with the conceptual model, we note that the integration of the Lean Startup method occurs during the design and testing phase of the MVP. Indeed, uncertainty seems to be the variable to be reached following the interaction with the client and the application of the test/learn principle.

The involvement of ethnographic research allowed for a successful design and market launch of the product. Indeed, the analysis of customer interactions is done based on the study of the behaviors of the first users towards the product.

This calls for the integration of the fundamentals of using the design thinking method.

Design Thinking is an iterative process starting from the observation of customer behavior, followed by a stage of team reflection and visualization, allowing the construction of the prototype of the product (MVP). Then, to quickly confront the market and learn.

The back and forth phases between the different stages allow refining the offer, sticking as closely as possible to the market needs and limiting the risks for the company. These steps allow using the principles of innovative product development by applying the Lean Startup method.

6. Discussion of the results of the study of innovation management in startups

The results obtained from the first research objective were aimed at developing a conceptual model integrating the three methods of innovation management in startups (Effectuation, Design Thinking, Lean Startup) (Fig. 2). This model allowed us to review the process in a way that merges the different phases of the innovation process, allowing for the successful development and implementation of the innovation on the market.

The second empirical research result allowed us to propose a combinatorial model of the three methods of innovation management in startups (Fig. 3). This model aims at maximizing the chance of success of innovation implementation in startups through the integration of key elements of each method (Lean Startup, Effectuation, Design Thinking).

The combination of solutions/results allowed the research problem to be achieved through the development of the conceptual model and its validation through exploratory field research.

The combinatorial model that we propose allows us to maximize the chances of success of an innovative product by valuing test-error practices and by adding ethnographic
research as a tool for analyzing user behavior throughout the project development process.

Compared to other approaches, Lean Startup focuses more on the principle of test-error, Design Thinking on ethnographic research, and Effectuation on the means at hand. By taking these three fundamentals into consideration, we were able to propose this model, which allows us to take up the different criteria for successful innovation.

The limit of this model could be the fact that it focuses more on the customer and neglects the other stakeholders. Indeed, innovation requires the intervention of other actors, essentially, shareholders and capital providers, especially at the project launch and development phase.

To conclude, there is no framework that predetermines the application of an approach that allows the integration of the three innovation methods. The complementarity of the approaches favors innovation in its entirety, and throughout the development process of the BM.

Creating a startup means innovating in each phase of the project, from the ideation phase to the growth phase. Innovation must be a holistic and conceptualized approach. Some phases of innovation development lend themselves more to the application of a specific innovation method.

In reality, all three methods promote innovation at each phase of development. They are innovative responses to specific problems, so it is essential to combine them in order to benefit from their complementarity.

For this reason, we have proposed a model integrating the three innovation approaches. Indeed, during the process of creating the BM, startups can integrate the three innovation management methods in order to make their projects as successful as possible.

The conditions for adopting Design Thinking, Lean Startup and Effectuation are not always optimal, and sometimes even contradictory to the objectives pursued. They must be adapted to the field of activity, the culture and the type of innovation adopted by the startup. As a result, we can say that it is not the use but the contextual application of these innovative approaches that guarantees the success of the startup.

At the end of our research, we have reached several conclusions that allow us to build the innovation management process in startups.

However, the practical use of the results and conclusions of our research requires validation in order to increase their level of applicability in Moroccan startups. This could be done by expanding the theoretical sample and targeting other startups. In addition, customers as the main stakeholder for successful product development were not interviewed; including them would allow for a more comprehensive analysis.

In fact, to ensure the continuity of our work, we have identified avenues of research that would be interesting to develop in order to better understand the innovation management process in startups. It would be interesting to test the validity of this process for the typical example of incremental innovation, also for the rest of the fields of activity other than computer development. Furthermore, we could ask ourselves the following questions: do startups that develop incremental innovations adopt the same process as the one adopted by radically innovative startups. What changes would they impose in order to successfully bring their product to the market?

7. Conclusions

1. The theory has allowed us to design the conceptual model that allows us to combine the three methods of innovation management: Lean Startup, Design Thinking and Effectuation. Qualitative indicators: Customers, Ethnographic research, represent the key elements to maximize the chance of success of the product/market fit. These two elements represent the result of conceptual research, allowing to combine the three methods of innovation management: Lean Startup, Effectuation, Design Thinking.

2. The empirical model represents the confirmed solution of the innovation management process model in Moroccan startups. Qualitative indicators: Idealization, Conception of the initial product, Launching and testing the product, Growth of the company. These key phases, allowed us to build the model of the innovation management process in startups, combining the three methods: Lean Startup, Effectuation and Design Thinking. These indicators allowed us to design the phases of the process of innovation management to maximize the chance of achieving product/market fit in startups.

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The main goal of the study is to identify global digital e-marketing trends in the world. The paper discusses the main aspects of the functioning of companies on the basis of the formation of the classical concept of marketing. The main constituents of the classical marketing concept, its advantages and disadvantages are highlighted. Based on the structuring of the main theoretical aspects of marketing development, the evolution of marketing concepts with historical aspects and their characteristics has been formed. The necessity of rethinking the existing business models of companies, which should be based on innovative e-marketing tools, is argued. The main ways and types of transformation of the classical concept of marketing in modern business conditions are highlighted. It has been shown that constant modernization, optimization and improvement of the efficiency of business processes are ensured through the implementation of key elements of e-marketing. Based on a critical analysis and generalization of existing approaches in organizing marketing activities, it is substantiated that ensuring the competitive position of a company on a world level is impossible without the use of e-marketing. The relevance of the study lies in the need for constant modernization, optimization and improvement of the efficiency of business processes in order to increase efficiency and minimize operating costs. An important argument in the presented is that ensuring the competitive position of a company on a world level is impossible without the use of e-marketing. The main purpose of the study is to find and develop innovative management approaches that should provide opportunities for optimizing core activities in order to increase efficiency and minimize operating costs. An important argument in the presented is that modern business processes in most cases cannot be imagined without using the marketing concept as one of the components of the company's strategy. Marketing and all its main manifestations are constantly being improved and developed, which suggests that this direction is relevant and in demand recently. The relevance of the study lies in the need for constant promotion, positioning and business development in an already established business niche every day only increases. Providing a solution to the described tasks for any top management of an organization or company is impossible without the use of modern innovations and information and telecommunication technologies, which every day play an increasingly important role in business. The intensity of the development of information and telecommunication technologies has made it possible to form a virtual environment for doing business and establishing relations between business entities. The need for an in-depth study and analysis of this topic is justified by the rapid pace of popularization of global digitalization in all spheres of the world economy, which confirms the absence of a single universal toolkit for doing business in the virtual space.

1. Introduction

In the context of the global transformation of the world economy under the influence of volatility and uncertainty caused by the COVID-19 pandemic and imbalances in world trade, it is undoubtedly urgent to develop and emerge new approaches, methods and tools for business management. The main purpose of the study is to find and develop innovative management approaches that should provide opportunities for optimizing core activities in order to increase efficiency and minimize operating costs. An important argument in the present is that modern business processes in most cases cannot be imagined without using the marketing concept as one of the components of the company's strategy. Marketing and all its main manifestations are constantly being improved and developed, which suggests that this direction is relevant and in demand recently.

The relevance of the study lies in the need for constant promotion, positioning and business development in an already established business niche every day only increases. Providing a solution to the described tasks for any top management of an organization or company is impossible without the use of modern innovations and information and telecommunication technologies, which every day play an increasingly important role in business. The intensity of the development of information and telecommunication technologies has made it possible to form a virtual environment for doing business and establishing relations between business entities.

The need for an in-depth study and analysis of this topic is justified by the rapid pace of popularization of global digitalization in all spheres of the world economy, which confirms the absence of a single universal toolkit for doing business in the virtual space.

2. Literature review and problem statement

The transformation of the world economy significantly complicates the processes of management and doing business, which, in turn, negatively affects economic growth both in individual industries and in individual countries. The complexity of company management and the main levers of increasing the efficiency of core activities are inextricably linked with the use of innovative marketing approaches, namely electronic marketing. The development of the information society, the digitalization of the global economy require the use of electronic marketing, since consumers prefer those brands that quickly master digital channels, tools and methods of building relationships. It is worth noting that it is email marketing that is intended to change the modification of communication activities. The paper [1] is devoted to the study of the main theoretical aspects of the development of electronic marketing, in which the trends in