
Advancing towards a Business Model Innovation process for start-ups

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Abstract: Because process and product innovations are usually no longer sufficient to establish a company in the market or to generate a competitive advantage, Business Model Innovation is considered a powerful tool, especially for start-ups for which innovation is at the core of their business. Due to the complexity of this process, frameworks should help entrepreneurs with executing Business Model Innovation. However, theory and practice diverge. The aim of this paper is to identify the needs of a start-up regarding Business Model Innovation frameworks, underlining the importance of Business Model Innovation for start-ups as well as the relevance of a supporting framework. The research results aim to contribute to an ideal process for Business Model Innovation when applied to start-ups.

Keywords: Entrepreneurship; Business Model Innovation; Framework; Start-up; Innovation Management; Business Model Navigator; Innovation process; Case Study; Digital Business Model

1 Introduction

Up to 90% of start-ups worldwide fail mainly due to the lack of translating their vision and their idea into a scalable, innovative Business Model (BM) (Ripsas et al. 2018). To be competitive, innovative BM are an essential strategic instrument for start-ups as well as corporate start-ups (Wirtz, 2020). The early development of an innovative and holistic BM is vital as it supports the successful implementation of ideas (Dopfer, 2018; Ripsas et al. 2018).

One of the biggest challenges in Business Model Innovation (BMI) and thus in innovation management is to think of BM as a holistic concept and not to focus on individual components (Gassmann et al. 2017; Stähler, 2018). Therefore, frameworks should be able to support start-ups with the complex process of BMI. Practice-oriented methods are used to reduce complexity and help with value creation (Spieth et al. 2014).

However, the current state of research indicates deficits that make it difficult for start-ups to use existing frameworks. These limitations include the lack of structured, detailed and practice-oriented BMI frameworks (Stähler, 2018) as well as not sufficiently taking organisational differences (start-up vs. established company) into account (Massa and Tucci, 2014). Additionally, frameworks foster innovation and creativity only to a limited extent (Gassmann et al. 2017; Rusnjak and Ercan 2014). Particularly concerning technology, processes need to be redesigned, as most BMI frameworks are not applicable to new emerging technologies and digital innovations (Schaller and Vatananan-Thesenvitz, 2019). Furthermore, frameworks are mostly developed for existing companies (Stähler, 2018). These deficits lead to the problem that current methodologies are not suitable for entrepreneurs (Stähler 2018).

The St. Gallen Business Model Navigator™ (BMN) is a four steps practice-oriented framework for BMI and starts by establishing an existing BM with the help of an ecosystem analysis (Gassmann et al. 2017). Even though start-ups in their early stages may not yet have a holistic BM, the BMN is still a suitable framework for BMI for start-ups due to its further creative and application-oriented steps. Furthermore, the framework was selected due to its systematic process and the use of concrete examples, which make it particularly suitable for BMI (Dooley, 2015) and the usability for founders. Since the BMN was developed for real-world use, examining the BMN with a case study is particularly suitable (Gassmann et al. 2017).

The aim of this paper is to identify the needs of a start-up regarding BMI frameworks and emphasising the importance of BMI for start-ups and the relevance of a supporting framework. The research results aim to contribute to an ideal process for BMI when applied to start-ups.

2 Literature Review

In the following literature review, a fundamental understanding on BMI and BMI processes as well as the BMN is established. Furthermore, the role of BMI for start-ups is outlined.

2.1 Business Model Innovation

BMI either refers to the innovation of an established BM ("business model reconfiguration") or the development of a new BM ("business model design") (Chesbrough, 2010; Massa and Tucci, 2014; Zott and Amit, 2015). The BMI process can be defined as follows: Through an experimental, iterative process supported by social interactions, involving development, implementation, testing and marketing phases, elements of the BM or the entire BM (but at least two elements) can be newly created to adapt to continuously changing environments (Gassmann et al. 2017; Schallmo 2013; Zott and Amit 2015). The goal of BMI is to differentiate from competitors, provide new value to stakeholders, and thus fulfil unmet, new or hidden customer needs by developing new markets or expanding existing markets sustainably and strategically (Gassmann et al. 2017; Osterwalder and Pigneur, 2010; Stähler, 2018; Wirtz, 2020). The customer is at the heart of the entire development process.

BMI has a disruptive and explorative character, requiring the company to detach from old patterns of thinking (Mezger and Bader, 2014). Through creative processes and

innovative ways of approaching issues, this can be supported (Stähler, 2018). BMI is a complex and uncertain process, therefore iterative planning and supporting frameworks are important (Mezger and Bader, 2014). Academia encompasses various approaches to BMI, which are often presented as process models. The process steps are usually structured using phases (Wirtz and Thomas, 2014). An important phase is "idea generation", during which potential innovations are created (Nagl and Bozem, 2018). Observing the market is particularly important in this phase, as it is often the starting point for innovations (Wirtz, 2020).

The BMN is also a BMI process model. It was developed with numerous leading international companies and inspired by the Centre for Design Research at Stanford University as well as the founders of the Design Thinking approach (Gassmann et al. 2017). The core discovery is that 90% of all BMI can be successfully achieved through creative imitation and recombination (Gassmann et al. 2017). The finding points out that innovations are not always entirely new, but rather build on existing ones. Based on the research, 55 BM patterns were identified. Within the scope of an action-oriented framework, these patterns can be transferred to the own company through creative imitation and recombination (Gassmann et al. 2017). The BMN is divided into four steps: Initiation (assessing the current BM and a detailed analysis of the business environment), Ideation (application of the 55 BM patterns), Integration (transferring the mature BM idea into a new, holistic BM) and Implementation (realization of the ideas) (Gassmann et al. 2017). The final step "Implementation" is not considered within this study.

2.2 The role of Business Model Innovation for start-ups

A start-up is a young, agile and uncertain entrepreneurial venture in its early stages, which mainly focuses on finding and formulating an innovative idea and an innovative BM (Hahn 2018; Kollmann, 2016). The pre-seed and seed phases are high risk and resource scarce (time, capacity, human capital, financial resources, network). Through their background knowledge and qualifications, the usually small team of founders influences all decisions and actions of the business (Dopfer 2018; Rusnjak and Ercan 2014). According to the level of expertise of the founding persons, the importance of the BM varies. As a result, founders often only focus on the design of the product and not on the design of a suitable BM (Dopfer, 2018). Fundamental knowledge and the ability to develop a holistic BM are often lacking. Therefore, it is important to integrate external help and frameworks into the development process (Dopfer, 2018).

Market competition and dynamic markets require a fast and efficient launch for start-ups (Kollmann, 2018). Iterative testing of the product can be used to ensure a rapid rollout (Richter and Schildhauer, 2018). The gained insights through testing can be used to adapt and optimise the product, as well as the BM (Wirtz, 2020). A recent multiple case study confirms that start-ups often formulate hypotheses regarding the overall BM and afterwards testing it within an iterative process (Ghezzi and Cavallo, 2018)

To reduce the complexity of the BMI process, iterative and method-based planning are crucial (Mezger and Bader 2014). Frameworks should be flexible, promote the creativity and innovation of founders, optimally integrate existing resources, and integrate a diverse network of mentors (Richter and Schildhauer, 2018). Also considering that the founders' personal experience affects the design of the BM, an accessible framework that allows the founders to focus is essential (Dopfer, 2018). In summary, a

start-up needs a suitable, systematic and dynamic framework that enables the start-up to formulate, develop, refine and improve an innovative BM.

3 Research methodology

The research applies a case study as a qualitative research methodology that follows Yin's (2009) approach to case study research. Since BMI is a complex process (Mezger and Bader, 2014) a case study as an exploratory research helps to understand concepts in their entirety, provides new knowledge and the ability to corroborate what is already established (Grauer, 2012). Furthermore, a case study is especially suitable for investigating "how" and "why" research questions (Yin, 2009).

The basis on which the case study was developed includes a business idea called "Coffee Base", which evolved during the program "Start-up your thesis" of the organisation Kilometer1 of the University of Constance from December 2020 to August 2021, with the aim of applying for the EXIST founder scholarship for the realisation of the idea. "Coffee Base" addresses the lack of accessible all-round guidance about coffee, that is independent of time and place and supports the consumer throughout the process of finding the right coffee, buying and preparing it. The founding idea comprises a customer-centric coffee platform in the form of a Progressive Web App. The case "Coffee Base" is particularly suitable for the underlying research method since the case comprises all typical characteristics of a start-up.

The research design is structured as an action research (Klein, 2012). Initially, an issue is identified based on existing literature followed by defining research questions that provide the focus (Klein, 2012). Next, the research is planned, followed by observations, collected data is evaluated and new decisions are made. The underlying research questions is: "How does a BMI framework suitable for start-ups need to look like?" This research question also leads to the questions: "Which elements of the BMN are suitable for start-ups?" and "Why is BMI important for start-ups?".

To answer the questions, firstly a set of criteria to assess the applicability of a BMI framework for start-ups was derived. As there are no predefined requirements in academia, the catalogue of criteria was derived from the preceding literature research and combined with the specific requirements for a method of BMI according to Schallmo (2013), resulting in a detailed and comprehensive catalogue of requirements.

The second part includes the execution of the first three process steps of the BMN (Initiation, Ideation, Integration). The process steps were divided into different workshops. The structure and number of the workshops as well as the number of participants were continuously adapted to the needs of the BMN. The participants of the workshops consisted of the "Coffee Base" founders who have various skills and backgrounds and were all still studying in university. The workshops were fully prepared and executed by the participants. Each workshop, including the preparation and review, was observed and recorded in a research diary using field notes.

After the workshops and observations, five expert interviews were held. Through this order of data collection, the plausibility and adequacy of the observations' insights can be objectified, evaluated, validated and new insights can be added (Flick, 2014).

Following the data collection, the observations and the expert interviews were used as data sources to investigate the research objective as part of a data triangulation (Yin, 2009). Due to a resulting wide variety of evidence, the findings become more

meaningful, precise and convincing (Yin, 2009). The evaluation of the data is based on the qualitative content analysis according to Kuckartz (2018). The acquired data is aggregated and coded using a category system. The previously developed catalogue of criteria is used for the evaluation and interpretation. Based on the gathered data and the analysis, hypotheses for further research are derived.

4 Findings

Based on the literature research and the requirements for a BMI method according to Schallmo (2018), a comprehensive catalogue of requirements of a BMI framework for start-ups as presented in Table 1 was developed. Afterwards, the results of the observations and the interviews are linked as well as interpreted and presented based on the catalogue of requirements of BMI frameworks for start-ups.

Table 1 Requirements of BMI frameworks for start-ups

<i>Title of criteria</i>	<i>Further information</i>
Completeness of the BM	All relevant elements of the BM and their interdependence have been considered within the process.
Consideration of environmental influences	The framework takes changes of the company's micro- and macro-environment into account.
Evaluation of the developed ideas	During the BMI process, the framework provides the opportunity to evaluate developed ideas using common evaluation criteria of an innovation.
Iterative process	The BMI process is designed iteratively and uses insights gained during the process to optimise the BM.
Completeness of the BMI process	The framework includes all relevant process steps. (Analysis of the initial situation, idea generation, prototyping, BM development, decision-making and implementation).
Practical use of the methodology	The process steps are described in a clear and easy to apply format. For this purpose, suitable tools are integrated and explained for the completion of each process step.
Customer integration	Current and future interests and needs of customers are recognised and considered. Customers are integrated at an early stage.
Networking and exchange with experts, mentors, start-ups	The integration of a diverse network in the early stages of development is considered in the BMI process.
Consideration of the start-up's attributes	The lack of resources such as time, capacities, human capital, financial resources and network) are considered within the process.

Source: Own creation, adapted from Schallmo (2018)

4.1 Completeness of BMN

Within the BMN, the magic triangle is used to represent the BM. It contains the elements "customers", "value proposition", "value chain" and "revenue stream" and is guided by a detailed questionnaire. During the execution of the BMN the participants lack the element "Team" to identify the qualifications of their group early on. Similarly, the interviews show that the element "Team" should be an integral part of the BM of a start-up (Interview 1; Interview 2; Interview 3). Within this step, the vision and goals of the venture should be discussed. A clear vision and thus the purpose behind the business helps founders to recognise opportunities and to implement them (Palos et al. 2020). While working with the magic triangle, the participants have difficulties in defining a clear target group. A reason for this lies in the fact that the start-up idea involves a platform business. The platform accordingly comprises two customer segments, users and providers. To ensure completeness and a clear overview, the developed BM was at the end transferred to the Business Model Canvas¹ (BMC) which is not included in the BMN but seemed helpful to the participants. The experts also noted that the magic triangle can be used as a "preliminary stage of the BM set-up" (Interview 4). Subsequently, other methods should be included for completeness.

4.2 Consideration of environmental influences

The micro and macro environment impacts the BM (Dopfer, 2018; Schallmo, 2013; Wirtz, 2020; Zott and Amit, 2015). The process of analysing the BM environment is therefore significant (Osterwalder and Pigneur, 2010; Schallmo, 2013). Contrary to what is identified in the literature, the environmental analysis is not considered to be of extremely high relevance by the experts during the early stages of a start-up. During the implementation of the BMN, participants confirm the argument that an analysis is time-consuming and not beneficial at the beginning of the BMI process. However, the BMN provides tables of possible global trend scenarios or examples of IT-supported BM developments such as the integration of digital and real experiences through augmented reality (Gassmann et al. 2017). These serve as an initial source of inspiration for the participants and are of considerable assistance. Nevertheless, participants are missing the opportunity to look at BMs from other companies within and outside their own industry as a source of inspiration. The experts share this opinion and say that this is an important step in supporting the development of a start-up's own BM.

4.3 Evaluation of the developed ideas

The analysis confirms that the BMN does not integrate any of the common evaluation criteria for an innovation, such as the "time-to-market period" (Vetter, 2011) or the "degree of innovation" (Schallmo, 2014) for evaluating the developed ideas. Participants and experts do not consider these criteria to be relevant either. Nevertheless, the participants lack a suitable method for structuring and prioritising their ideas and have difficulties retaining an overview of the 40 developed ideas. As a result, the participants created their own evaluation categories to preselect ideas as well as categorised their ideas into short- medium- and long-term ideas. By contrast, the experts do not consider

¹ The Business Model Canvas is a tool presented by Osterwalder and Pigneur (2010) for visualising business models, consisting of nine blocks that represent the key elements of an organisation.

the assessment of ideas to be particularly relevant. In their view, evaluation is "quite static" (Interview 1), and the ideas should only be evaluated after entering the market because the "prototype does not have to be perfect yet" (Interview 1; Interview 4). Nonetheless, all the experts listed suitable evaluation criteria that are helpful for assessing ideas prior to their launch. In summary, the identified evaluation criteria from the interviews as well as observations could be categorised into "Team", "Problem", "Value" and "Vision" as shown in Table 2.

Table 2 Criteria for evaluating the developed ideas

<i>Category</i>	<i>Questionnaire</i>
Team	How creative is the team? What qualifications does the team bring to the table? What is the team's feeling and intuition?
Problem	Does the idea solve a problem? Is there a need? What are the current solutions for the problem?
Value	How much are the customers willing to pay for the solution? Is the idea profitable? How scalable is the idea?
Vision	Does the idea fit the vision?

4.4 Iterative process

As recognised in the literature, an iterative BMI process is indispensable (Mezger and Bader, 2014). The insights gained through exchange with peers and the testing with the target group need to be incorporated into the BMI process and used to revise the BM (Wirtz, 2020). The Need-Approach-Benefits-Competition (NABC) approach used for the idea selection within the BMN is an iterative process which both experts and participants consider to be very useful. The ideas and thus the BM could be quickly improved. An effective iterative process was achieved with small feedback loops (Interview 1; Interview 2; Interview 3). Through customer feedback and own reflection, hypotheses were established, validated and refined. Furthermore, ideas were adapted and optimised.

4.5 Completeness of the BMI process

Contrary to what the literature review indicates, the experts agree that a BMI process does not necessarily need to include a specific number of pre-defined process steps. The individual phases are not to be considered independently of one another but rather intertwined (Gassmann et al. 2017). The observations show that a lot of the steps are intuitively carried out by the participants. The BM development forms the basis of the overall process. In addition, the experts agree that the core aim of the framework should be to help the start-up develop creative and innovative ideas.

4.6 Practical use of the methodology

The results clearly show that the applicability of a framework is one of the most important evaluation criteria by both experts and participants. BMI frameworks must be easy to understand and practice-oriented to reduce the complexity of the process (Dopfer, 2018; Mezger and Bader, 2014). This helps users to stay focused on the relevant issues. The observations indicate that participants spent a lot of time preparing and managing the BMN. All experts agree that the way the results are visualised, significantly contributes to how easy the framework can be applied. Pictures, sticky notes, examples as well as checklists, which are also partly integrated in the BMN, simplify the process.

4.7 Customer integration

Customer integration is considered a central aspect of BMI for start-ups (Nagl and Bozem, 2018). Therefore, Osterwalder and Pigneur (2010) refer to it as customer-centred BM development. The evaluation points out that current, as well as future needs and problems of potential customers should be evaluated as early as possible (Interview 2; Interview 4; Interview 5). This becomes also clear during the observations. The experts agree that the direct integration of potential customers is crucial. However, it should occur in regulated phases. One reason for this is that different opinions can strongly influence the founders. The observations clearly show that a regulated integration of customers would be helpful for the participants.

4.8 Networking and exchange with experts, mentors, start-ups

Part of the iterative BMI process is the exchange with various experts from different fields (Vetter, 2011). Both experts and participants consider interaction and exchange with various stakeholders to be extremely important. It was observed that through the exchange with an experienced founder the participants were able to gain valuable insights and directly incorporate the given advice. This demonstrates how important networking is for a start-up. The experts add that network can provide additional know-how, capacity, more ideas and save time (Interview 1; Interview 2).

4.9 Consideration of the start-up's attributes

Given the diversity of industries, technologies and priorities of start-ups, it is difficult to find a one-size-fits-all framework for BMI. To circumvent this, it is important to combine different methods, as for example França et al. (2017) did in their paper by combining the Framework for Strategic Sustainable Development with the BMC. During the execution of the BMN, the participants already intuitively integrated the BMC. The experts agree that frameworks should not only be used independently of each other. Combining different tools and methods could help a variety of start-ups to generate their most suitable process.

5 Discussion and outlook

The underlying study analysed the process of BMI for start-ups and established a catalogue of requirements for a BMI framework for start-ups. With the help of a case

study the BMN was executed and evaluated. Afterwards the expert interviews validated and objectified the prior observations' insights. The interviews provided a deeper understanding of the requirements for BMI frameworks for start-ups.

BMI is a crucial instrument for start-ups. The evaluation of the data sources clearly show that some elements of the BMN help founders with the process of BMI. With the help of the BMN, the start-up idea is translated into a holistic and innovative BM. Through the application of the BMN and the interviews, the limitations of existing frameworks for BMI were analysed. The identified limitations and challenges of the BMI process were addressed with the help of known components of BMI processes and the newly gained insights. The findings are translated into hypothesis on how a proper BMI process for start-ups should look like. The following hypotheses approximate a practice-oriented BMI framework that fits the needs of start-ups.

Hypothesis 1 Before starting the BMI process, the element "Team" is to be examined and added to the BM as a new component.

The element "Team" includes the evaluation of the qualifications of the existing members. If necessary, further team members should be acquired to form a diverse group. This helps to achieve all ideas and acquire necessary qualifications early on. Most importantly the Team should collectively formulate a clear vision prior to the process. The founders' vision creates a focus and helps to establish the "why" of the start-up. It is also important that the group formulates goals. These can be developed using the SMART-method¹. Establishing a clear vision and goal helps the founders to focus and work together as a team. To visualise the importance, the element "Team" should be added as an individual component to the BM. The Magic Triangle, the Lean Canvas², the BMC or the Platform Canvas³ can be used to visualise the BM.

Hypothesis 2 A short and simplified environmental analysis is sufficient.

The beginning of the BMI process should not include long and complex environmental analyses. The evaluation should include familiarising with its competitive environment and examining interesting BM of existing companies within its own industry as well as companies from other sectors. Consequently, the start-up can save time. The five forces according to Porter (2013) as well as the PESTEL-analysis (Schallmo, 2013; Theobald, 2016) can be used to support the founders.

Hypothesis 3 To help the founders keep an overview, developed ideas are assessed with the help of evaluation categories.

The rating system should not be fixed and be adaptable to the needs of the start-up. Instead of an evaluation matrix, a categorisation system based on short-, medium- and long-term development may also be applied to structure and prioritise ideas. The start-up gains an initial overview of which ideas would already be relevant for the prototyping phase. The evaluation should include the developed categories as depicted in Table 2 and the team can assess their ideas by asking the questions listed in Table 2. In addition, ideas on the shortlist should be directly tested with potential customers.

¹ A method for systematically designing goals. (Further information: https://doi.org/10.1007/978-3-658-09453-9_16)

² A one-page business plan designed by Ash Maurya (2022).

³ A tool to visualise the essential elements and mechanisms of multi-sided platform businesses. (Further information: <https://www.theplatformcanvas.com/>)

Hypothesis 4 The process is iteratively designed and incorporates learnings repeatedly throughout each step.

Iteration has a high priority within the BMI process. The framework helps the start-up to constantly recap the insights. The founders should formulate hypotheses which they validate or reject and afterwards form new ones. The NABC approach as well as the build-measure-learn feedback loop (Ries, 2011) could help with a successful iteration.

Hypothesis 5 Examples and patterns increase creativity and foster innovative ideas and are therefore integrated within the framework.

Innovations are built on the experiences of previous innovators. Only few innovators invent something completely new. Because existing ideas and established concepts are a source of inspiration the framework should provide best practice examples as well as the 55 BM patterns as presented in the BMN.

Hypothesis 6 The framework reduces the complexity of the BMI process and is therefore easily and comprehensibly structured.

Each process step should have a clear instruction and may be supported by examples and various tools. The framework should form a fundament that supports the founders in keeping a clear focus and overview. Illustrative layouts as well as gamification elements, workshops, videos, websites, platforms and more are tools to simplify the process.

Hypothesis 7 The customer is the centre of the BMI process.

Prior to the ideation phase of the BMN, a concrete persona of the potential target group should be developed. Additionally, problems, present and future needs as well as the interests of the customers should be identified. The right side, the "customer segment", of the Value Proposition design (Osterwalder 2014) can be used for visualisation and development. This step helps gain first insights into the start-up's potential customers and to acquire pilot customers as early as possible. Insights about the potential customers are gained through interviews, surveys or other methods that directly integrate them. To conduct target-oriented interviews, the book "The Mom Test" by Rob Fitzpatrick (2013) could be of assistance.

Hypothesis 8 The framework integrates a diverse network within regulated phases.

Similarly, to the integration of customers, the network should be integrated into the BMI process in a regulated manner. It is important that the founders discuss and reflect on decisions with the network, but in the end make the decision on their own. The framework should support entrepreneurs to discuss the established hypotheses with the network in a regulated process, and to incorporate the gained insights afterwards into the BM.

Hypothesis 9 Because different start-ups have diverse requirements, the framework incorporates a variety of different methods and tools.

To make the BMI framework accessible for a wider range of different start-ups, various methods and techniques should be integrated throughout the framework for each process step. This ensures that regardless of the industry or product, a compatible option is available for the start-up.

6 Conclusion, limitations and future research

BMI is a crucial instrument for start-ups. Practice-oriented frameworks help entrepreneurs manage the process and overcome challenges that arise. The BMN as a framework for BMI is partly suitable for start-ups. Some elements such as the 55 BM patterns help entrepreneurs to think outside the box and develop creative and innovative ideas. Further elements based on the evaluation of the findings, nine hypotheses for suitable and practice-oriented framework were formulated. The results identified further elements that need to be included within a BMI process for start-ups.

Like other studies, this study has limitations. The term and concept of BM, BMI and start-up do not have standardised definitions. Thus, the catalogue of requirements for a BMI framework for start-ups that is only based on the considered definitions is not complete. As a research methodology, the case study is claimed not to be suitable for the generalisation of results since the case depends on several given factors and therefore the results are case-specific. Counteracting these concerns, the case study was attempted to be objectified through data triangulation using observations and expert interviews. Moreover, the findings were only presented as hypotheses that need to be addressed in future research.

Despite its limitations, this study contributes to both theory and practice in multiple ways. The established hypotheses pave the way for future research. Scholars can further build on the findings and validate, reject, or modify the hypotheses, for example, through a multi-case study. Future research should focus on designing frameworks that are particularly suitable for start-ups. Additionally, the catalogue of requirements for BMI frameworks for start-ups should be considered and further developed. While doing so, future research could examine different requirements depending on which industry the start-up operates in, or which focus it has. In particular, the focus on technology and sustainability would be of great interest.

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