

Evaluation and selection of early stage ideas in innovation processes

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ABSTRACT

Industrial designers become more and more important in innovation projects. Their holistic view and user empathy have proven to be important, and Design Thinking (DT) has become a synonym for innovation. The criterias of innovation has been argued to be: desirability, viability and feasibility. To achieve these criterias the DT methodology facilitates a high production of ideas creating a large innovation potential. It is however argued that DT's framework for evaluation and selection of ideas in the early stages of an innovation process is deficient within these criterias. The methodologies of Lean Startup (LS) and Money + Magic (M+M) do however try to manage this deficiency. With the perspective of product design this article does investigate how the frameworks in LS and M+M can improve DT's idea evaluation and selection. Results show that the ideas behind LS' concepts of innovation accounting and minimal viable products (MVP) could strengthen DT's prototype and test step, as they improve the focus on user value. M+M's two idea evaluation maps are argued to be useful in discovering the degree of assumption in an idea, in addition to focusing the evaluation on one of the three innovation criterias at the time.

KEYWORDS: Design Thinking, Lean Startup, Money + Magic, Minimum Viable Product, MVP, Evaluation of ideas, Selection of ideas, Idea selection, Idea evaluation, innovation methods

1. INTRODUCTION

DT is more and more often associated with innovation. For example does The International Council of Societies of Industrial Design define industrial design as "[...] a strategic problem-solving process that drives innovation, builds business success and leads to a better quality of life through innovative products, systems, services and experiences." [6] As industrial design is stated as a driver of innovation and the constraints of innovation are defined as: desirability, viability and feasibility [7], a designer should be able to evaluate and select ideas according to the three. However, the DT method

does lack control over the very first idea selection and has therefore challenges in selecting the right idea to develop [8]. Further on in the process it seems like the DT method pursuits ideas based solely on qualitative user testing, and then leaving the feasibility and viability to be figured out later. This article will present the idea evaluation and selection frameworks of LS and M+M as two possible contributions to the DT method in this regard.

LS and M+M are argued to be methods made in the purpose of creating business value and fast implementation of new products. It is therefore the intention of the article to investigate and

discuss their frameworks in order to strengthen the DT method. As a way finding natural bridges between the methods the DT method are also investigated and discussed. Finally reflections from own practice are used to better emphasis the bridges.

The goal of the article is to show that it is possible and valuable to adopt aspect from LS' and M+M's frameworks for evaluation and selection of early stage ideas in innovation processes.

2. METHOD

The intention of the article is to investigate and strengthen DT's framework for evaluation and selection of ideas in the early stage of an innovation process. This is done by a literature review using primarily professional literature and secondarily academic literature. Professional literature is defined as literature with focus on the practice of performance technology, mainly written by and for practitioners in the field [9]. This article is also to be considered as professional literature, as it is written by and for design thinkers, and in the perspective of product design.

The methods of DT, M+M and LS are investigated and briefly explained in the three following sections. Each section is closed by a discussion of the described method's framework for evaluating and selecting ideas in the perspective of the user, the business and the producibility. The three perspectives are chosen as an adaption of Brown's three success criterias: desirability, viability and feasibility [7]. The reason for the adaption is that Brown's criterias could be considered as a degree of the suggested perspectives rather than the perspectives themselves.

The following section is a review of the DT method based on the five step process [10]. Mark Payne's innovation method called M+M [1] is then reviewed in section four, while the LS method [2] is emphasized in section five.

In section six reflections from own practice are explained. The reflections were done through a student project regarding incubated neonates' safety during inter-hospital transfer. The intention was to develop a product to increase the safety of the neonates. The product is still on a prototyping level and is therefore not launched to market. The prototype is however under evaluation of medical practitioners and a MVP proposal is the next step of the process.

3. DESIGN THINKING

Tim Brown, CEO at IDEO, describes the innovation process of DT as a process "powered by thorough understanding, through direct observation, of what people want and need in their lives and what they like or dislike about the way particular products are made packaged, marketed, sold and supported. [...] Design thinking is [...] a discipline that uses the designer's sensibility and methods to match people's needs with what is technologically feasible and what a viable business strategy can convert into customer value and market opportunity." [11]. At the institute of design at Stanford this process is described as an iterative five-step-process, being: empathize, define, ideate, prototype and test [10].

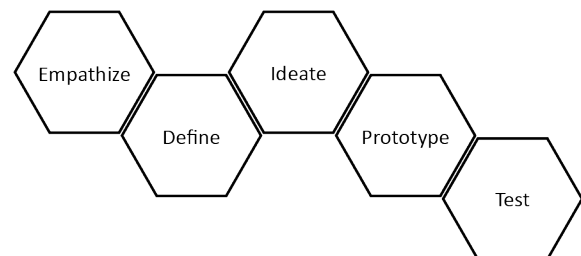


Figure 1: The five-step design process as describe by Plattner [10].

3.1 Empathize

The empathize step consists of a considerable amount of work to understand and empathize with people within the problem domain. Understanding and empathizing are not considered the same. While understanding is about gaining knowledge about something or

someone, empathy is about acquiring someone else's feelings [12]. As Plattner describes it: "It is your effort to understand the way they do things and why, their physical and emotional needs, how they think about the world, and what is meaningful to them." The tools used to achieve this are based on a lot of ethnographic and other qualitative methods [8]. The intention of this step is to uncover inspiring insights that will help create a point of view before ideation.

3.2 Define

In the define step all the uncovered information through the empathize step is clustered, synthesized through sensemaking [13] and visualized in a compressed way [8, 10]. From this the point of view (POV) emerges, and is often made tangible as problem statement assessing a user need at an individual level [8, 10]. It can also be formulated as an emotional value proposition (EVP); explaining how the new product is going to make the end-user feel while and after using it [12]. The POV is used as a stepping-stone into the ideation [10].

3.3 Ideate

The ideate step begins with creating brainstorming topics based on the POV and knowledge obtained from the two first phases. Then brainstorming is done with several techniques and rules. Among the most used rules are: "be visual", "defer judgment", "build on the ideas of others", "stay focused on topic", "one conversation at the time", "encourage wild ideas" and "go for quantity" [14]. The intention of the ideate step is to move from user problems to user solutions and do so by "[...] pushing for a widest possible range of ideas from which you can select, not simply finding a single, best solution. The determination of the best solution will be discovered later, through user testing and feedback" [10].

It is, however, difficult to test these raw ideas on users. Therefore the project group select two or three ideas to become more tangible through

prototypes [8, 10]. The selection is often done shortly after the brainstorming in a democratic manner, often by criterias such as "the most likely to delight", "the rational choice" and "the most unexpected" [10]. Another approach is to use the EVP to prioritize the ideas. To do this distilling of the ideas' functional capabilities is necessary: the capabilities are evaluated and sorted from the one that is the most important in order to achieve the EVP to the one that is the least important [12]. The most important capabilities are the first ones to be prototyped.

3.4 Prototype

In the prototyping step the two or three leading ideas are built rapidly, in such a way that they can be communicated and interacted with by users. This could be anything from a model to a video or a role-play [10]. While building the prototype it is important to keep in mind what particular question or assumption the prototype is going to explore [10]. In many cases this means that the prototype step and the test step are overlapping.

3.5 Test

In order to test the prototypes it is suggested that the users adopt the prototype in their normal routines with a minimum amount of explanation [10]. Then by observing the user use the prototype it is possible to learn if the idea should survive or not [8, 10].

These observations either give direction for further refinement on the prototype and solution, or turn down the whole idea. They might even turn down the POV and definition of user need [8, 10]. While a turned down idea only mean selecting another idea from the backlog, the latter will force the process trough the synthesis and ideation step again.

3.6 Discussion

The process of evaluating and selecting the first set of ideas seems to be the most fragile process

	IN THE USER PERSPECTIVE	IN THE BUSINESS PERSPECTIVE	IN THE PRODUCIBILITY PERSPECTIVE
Evaluation of the first set of ideas	is done by using the EVP as a reference/criteria.	has no explicit framework.	has no explicit framework.
Selection of ideas to prototype		has no explicit framework.	has no explicit framework.
Evaluation of prototype	is done by observation and discussion with users testing the prototype.	has no explicit framework.	has no explicit framework, but the act of building the prototype could give some evaluation.
Selection of prototype to further development	is done based on the user testing.	has no explicit framework.	has no explicit framework.

Table 1: A summarization of the idea evaluation and selection frameworks in DT, classified by the perspective of the user, business and producibility.

in DT. First of all, the DT method does not suggest any explicit framework for evaluation, only selection through democratic voting. Secondly, two of the suggested voting criterias: “the rational choice” and “the most unexpected” cannot be considered to promote voting in the perspectives of the user, the business nor producibility. The criteria “the most likely to delight” can however be considered as relating to the perspective of the user. The way Kolko [12] describes prioritization of ideas by the EVP seems stronger regarding evaluation and selection from the user perspective, mainly because the EVP represents the POV obtained. Explicitly visualizing and stating the EVP as the reference of measure no longer base the evaluation and selection on intuition alone.

The perspective of the business and the producibility, however, has no framework at all. These perspectives are solely dependent on the team members’ knowledge and reflection of it during the evaluation and selection session.

In the second step of the evaluation and selection process the criterias are clearer. When users test the prototypes it is the users’ feedback and observed behavior that is the criteria for evaluation. This means that the selection of a prototype and focus areas for further development are heavily in the hands of the users. However, the criterias of producibility and

business are again in the hands of the project group’s opinion, although the act of prototyping could give a perspective on the producibility of the solution.

4. MONEY+MAGIC

The innovation method called Money+Magic has been developed within the last decade by the consultancy firm called Fahrenheit 212, and has achieved growth in some of the world’s largest companies, such as Procter & Gamble, Coca-Cola, Samsung and Adidas [15, 16].

The origin of the method comes from their experience of innovation projects’ success rate being “absurdly low”, even though companies future growth is dependent on innovation success [1]. As put in Mark Payne’s book: “Too many initiatives result in what Fahrenheit 212 calls unicorns; visions that are dazzling and lovely to think about, but achievable only in some imaginary world. A company can’t hitch its plow to a unicorn.” [1] The M+M method states that finding and solving unmet consumer needs, as in DT, is only the starting point for creating innovation. Innovation needs to both improve lives and businesses. [1] Therefore it is necessary to interrogate both the consumer and the company offering the product with equal intensity from day one until the end of the

innovation project. This starts out with the Two-Track Immersion [1].

4.1 The Two-Track Immersion

As with DT, the Money + Magic method starts out with ethnographic and other qualitative methods to deep dive into the consumers of the domain. The goal is to get insights from six categories of the consumer: functional, emotional, choice-based, interpersonal, behavioral, contextual and experiential [1]. However, at the same time with the same amount of resources, they also investigate the company offering the product. On this side of the immersion they seek six categories of commercial insights: financial, operational, competitive, channel-based, portfolio-based, technological and organizational [1]. With this considerable amount of research synthesis and distillation are done to create an innovation strategy.

4.2 Innovation Strategy Synthesis

This part of the process is started out with synthesizing consumer and the commercial insights into key consumer, company, category and channel insights. From the intersection between these four key insights the innovation strategy emerge. In order to make the strategy work as a stepping-stone into ideas, do the method suggest making three to five hypotheses as if/then statements (Figure 2) The hypothesis will usually point out a pain point to solve or a value point to exploit and how that could lead to growth and/or value. [1]

4.3 Idea development

The idea development step in the M+M method is done quite differently than in DT. First off, the project group members individually ideate on the hypothesis trying to solve both consumer and company needs in every idea. Then the group meet and pitch their ideas to each other. The ideas are then put under positive debate looking at what is exciting, and more importantly they ask: "what must be true for this to work?" [1]

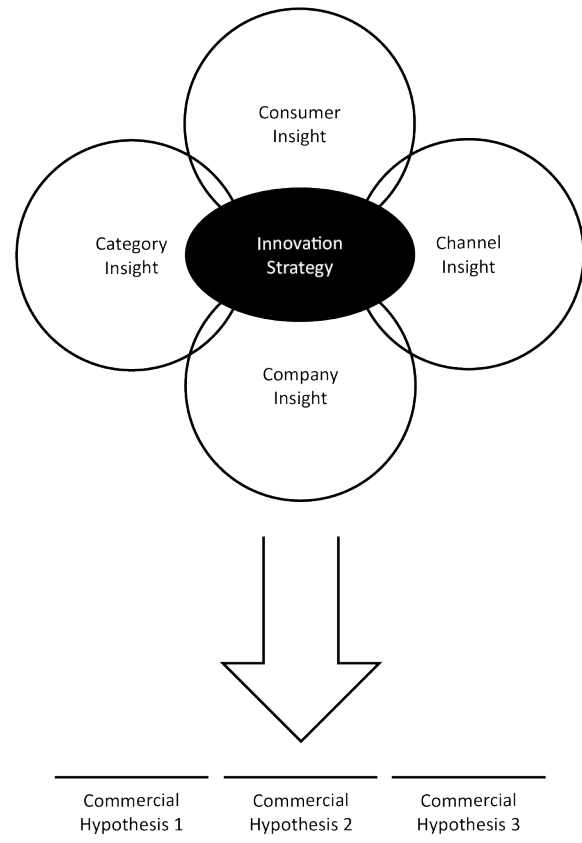


Figure 2: Illustration of the Money+Magic process until the idea development as describe by Payne [1].

By doing so they promote questions that need to be answered for the idea to reach market. The method argues that it is more productive to have a narrower range of ideas making it possible to dive deep into the questions necessary to answer, rather than going a mile wide with a huge amount of unanswered questions.

The ideation then naturally leads into the process of answering these questions. As the answers are appearing through investigative research, the ideas get evaluated in the Big vs. Fast, Doable (BFD) map (Figure 3) and the Marketplace disruption vs. Company disruption (MDCD) map (Figure 4). By doing this exercise the method intends to separate the poor ideas from the valuable ones that will improve the life of the consumer and the growth of the company.

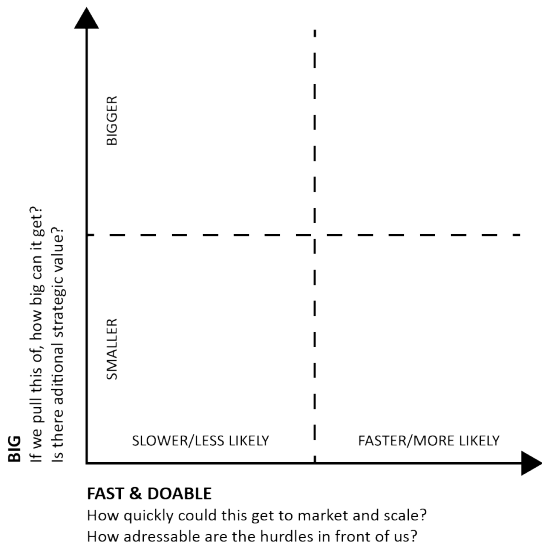


Figure 3: The BFD map as describe by Payne [1]. By evaluating ideas through the map the most valuable ones will be located in the upper right, while the poorest ideas will be in the lower left corner. The unicorns will be outside of the map on the left side of the “Big”-axis.

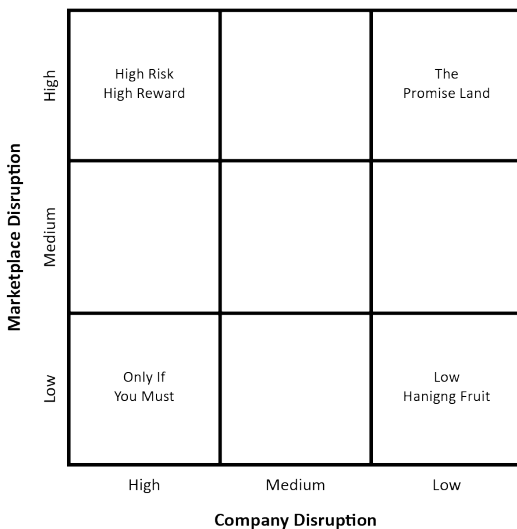


Figure 4: The MSCD map as describe by Payne [1]. Company disruption is described as negative, while marketplace disruption is positive. By evaluating ideas through the table the most valuable ones will be located in the upper right, while the poorest ideas will be in the lower left.

The result will be a few lead ideas that are taken into discussion with the company that is going to produce them, where the discussion is still focused around the same maps. After this discussion the ideas are conceptualized and explored in the field with consumers. In the end of this process there will only be three or four ideas left to be worked on in the solution development [1].

4.4 Solution Development

The three or four leading ideas from the idea development are in this step further developed to answer the key dimensions of consumer and commercial proposition [1]. The products are then usually prototyped either as a video or a physical product, depending on which platform gives the possibility of the fastest iterations. The prototypes are then shared with both the company and the consumers, and the learning from this sharing is used to create new iterations until the product is commercialized.

4.5 Discussion

The M+M method has a thorough investigation process, where they address questions known to emerge at the end of the development cycle throughout the entire process. In that way they are always looking for questions that needs answering in order to not only make a product feasible and viable, but to create products that leverage on existing assets in the company, create attractive ROI and have competitive advantages [17]. The act of intentionally looking at the product from the perspective of the company producing, it could be with the intention to create an artificial environment of producibility and business, to continuously test the ideas in. Figure 3 and 4 are two artifacts explicitly representing this artificial environment through four different references: Big, Fast & Doable, Company Disruption and Marketplace Disruption. These four references distances the team members from their own individual opinions in the evaluation and selection of ideas. The leading ideas from this evaluation is then

	IN THE USER PERSPECTIVE	IN THE BUSINESS PERSPECTIVE	IN THE PRODUCIBILITY PERSPECTIVE
Evaluation and selection of the first set of ideas	has no explicit framework.	is done by the BDF and MDCD map internally in the project group.	
Evaluation of the first set of ideas	is done by conceptualizing them and explore them with potential costumers.	is done by the BDF and MDCD map externally with the production company offering the product.	
Selection of ideas to prototype	learning from the evaluation is used to select three or four ideas.		
Evaluation of prototype	is done again by exploring them with costumers.	is done again by discussion with the company.	
Selection of prototype for further development	learning from the evaluation is used to select the idea(s) for further development.		

Table 2: A summarization of the idea evaluation and selection frameworks in M+M, classified by the perspective of the user, business and producibility.

brought forward to the company, and thereby tested in a more real environment of producibility and business.

It is, however, peculiar that the four references and the artificial environment created do not consist of the perspective of the user. The reference of “Marketplace disruption” could to some extent be argued to be a reference of the user on a population level, but not on an individual level. Therefore the perspective of the user is absent until the ideas are conceptualized and brought to the users for evaluation. However, after the conceptualization the three perspectives seems to be of equal importance, and the ideas always evaluated in their real environment: with the consumers and the company offering the product.

5. LEAN STARTUP

The LS is a more and more popular innovation method benchmarked by Eric Ries, a serial entrepreneur of different IT-solutions [2]. His method uses the core principles of the lean manufacturing method: reduce waste of any sort in the production line. Waste being everything that does not lead to higher customer satisfaction. In innovation production Ries believes spending resources on a product nobody

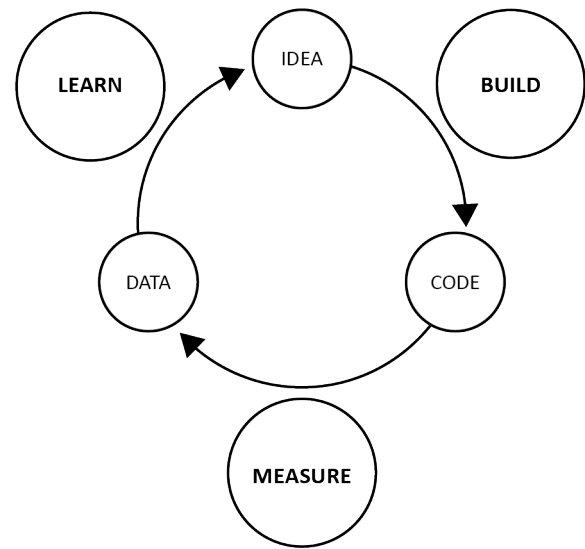


Figure 5: Illustration of the Build-Measure-Learn cycle as described by Ries [2, 3]

needs is the biggest waste [2].

In order to avoid such waste the method suggests doing both product development and customer development. This is achieved by creating a continuous feedback loop with customers during the product development. The feedback results in validated learning which has the power to persevere the existing business

idea, or to pivot in order satisfy customer needs [2]. This continuous feedback loop is called the build-measure-learn cycle.

5.1 Learn

The Lean Start-up method begins with an idea imagined solving a customer problem. This idea is formulated in two hypotheses in which suggest the core of a business model. The first hypothesis is called the value hypothesis and the second the growth hypothesis. The value hypothesis explains how the future product is being valuable for the customer, and the growth hypothesis explains how the customers will discover the future product [2].

The two hypotheses are at the earliest stage what Ries calls “leap-of-faith assumptions” [2] on which everything depends. Therefore the method suggests to immediately go out and talk to potential customers in order to learn whether the assumptions have root in reality or not. These early stage conversations with customers are not to be about the future products features, but about how the customers solve the imagined problem today [2]. The intention is to discover whether they experience a need or problem as hypothesized or if the situation differs from it.

These initial conversations give a coarse refinement of the value and growth hypothesis, and simultaneously gather new learning on who and where the customer is. This does then lead to a third hypothesis, the customer archetype [2]. With three overarching hypotheses about the business model of the product idea, the process suggests to build a minimum viable product (MVP) in order to test the most important assumptions of the business model.

5.2 Build

Ries says, “The minimum viable product is that version of a new product which allows a team to collect the maximum amount of validated learning with the least effort.” [18] Therefore the MVP is the fastest and easiest product to build in

order to learn about the most important assumptions of the three hypotheses of the business model. In other words, to learn if the solution envisioned by the project team creates the expected value and growth for the consumers in the expected market segment. The learning is achieved when the MVP is put in the hands of the customers, and their behavior with it is measured [2, 18].

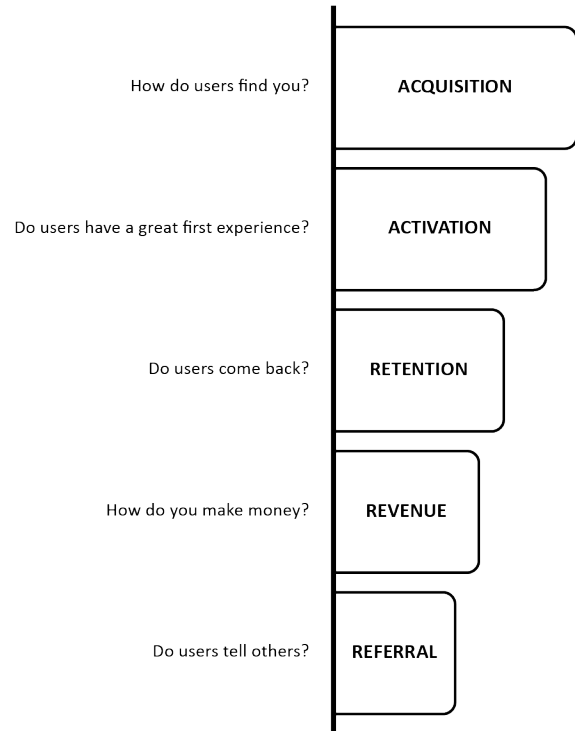


Figure 6: Illustration of the innovation accounting as described by Dave MacClure’s Pirate Metrics [4, 5]

5.3 Measure

At this stage of the process the original idea is formulated into three hypotheses and built as a MVP. To learn if the MVP create customer value and growth for the expected market segment as hypothesized the LS method suggests using innovation accounting [2, 19]. The innovation accounting is described as a metric measure to answer the questions: “How do users find you?”, “Do users have great first experience?”, “Do users come back?”, “How do you make money?”, “Do users tell others?”. The metrics answering

this is respectively the rates of acquisition, activation, retention, revenue and referral [4, 5]. This is a quantitative method demanding the MVP being used by a significant amount of customers. That is why the MVPs are to be launched to market, targeting early adopters [2].

The first MVP gathers metrics that are set as a reference to be compared with the following MVPs. When using a significant amount of customers it is possible to use cohort analysis of the activation and retention values to validate whether a new MVP contributes to customer value or not [5]. The differences in acquisition, retention and referral values are used to learn if the new MVP contributes to customer growth or not [5].

When a new MVP or changes to a MVP, do not contribute to either value or growth, the LS method states that something is wrong with the hypothesis of the business model. To adjust this, qualitative interviews are done with costumers in order to understand why the hypotheses are wrong [2]. Then new ones can be made and another turn in the build-measure-learn cycle can be done.

5.5 Discussion

The logic of the LS method is done highly as a scientific experiment. As the scientist uses knowledge and intuition about the nature to create hypotheses on how it works and test them through experiments, the innovator in LS uses knowledge and intuition about customers to create hypotheses on what they find valuable and test them through MVPs. The LS method is also considered a quantitative approach, as with science. Then, because the scientific approach is so acknowledged, it difficult to argue against its effectiveness. However, there are some challenges in using this method in the innovation process. The fact that the measuring method is quantitative makes the amount of costumers needed when learning from a MVP considerable higher than with DS an M+M. In the world of physical products this is often extremely difficult to achieve, even though crowd-funding platforms might have given some new opportunities to do so.

Another challenge with implementing the LS method in the development of physical products is that it does not consider technology and producibility as criterias for idea evaluation and selection. The only thing considered in this perspective is what is the fastest version of the

	IN THE USER PERSPECTIVE	IN THE BUSINESS PERSPECTIVE	IN THE PRODUCIBILITY PERSPECTIVE
Evaluation of the first set of ideas	is done by qualitative interviews with potential customer.		has no explicit framework.
Selection of ideas to prototype		There is only one idea. The prototype to build is chosen based on the biggest or riskiest assumption of the hypotheses needs testing. This kind of prototype is called a MVP.	The speed and challenge in building the MVP is deciding what to build. The MVP that will test the assumption and is the easiest and fastest to build is the one chosen.
Evaluation of prototypes	is done only if the innovation accounting does not show results according to plan. Then qualitative interviews are done again.	is done by innovation accounting.	has no explicit framework.
Selection of prototypes for further development	If the innovation accounting does not show results according to plan and qualitative interviews are done a pivot is in order.	If the innovation accounting shows improvement the assumption is verified and the MVP improved to a product.	has no explicit framework.

Table 3: A summarization of the idea evaluation and selection frameworks in LS, classified by the perspective of the user, business and producibility.

product possible to build. This will work sufficiently in digital development because the project engineers are both the developers and the producer. Though, in the development process of physical products is generally more complex.

Moreover, the users are only considered as costumers, and the development focus is solely on what features or functions will make them pay for the product. This results in a narrow point of view in the development, and purely economical reasoning behind the product's existence. When developing products with the intention of long-term strategic value it is discussable if the LS method is appropriate.

The LS method is, however, for the same reason considered effective in creating products that survive their natural environment where business and customers' willingness to pay rule. They tend to the biggest assumption from the beginning: what is of value for the costumer?

6. REFLECTION FROM PRACTICE

Own experience on the topic was gained through a student project. The domain was safety during inter-hospital transfer of incubated neonates, with the intention of developing a product to increase the safety of the neonates. In order to make reflection of all the three methods' framework possible I adopted as many tools as possible from M+M and LS to the DT method. A user group of three was also established before the innovation process started. The three consisted of one traffic accident investigator (with a background as paramedic), on specialist nurse and one anesthesia physician.

6.1 The adopted process

The method used in the project consisted of an empathize and define step as in DT. The result of the define step was however a bit different from the usual one. A innovation strategy and three If/then hypotheses was created, as in M+M. Two of them were emotional hypotheses (EH), and

had the same content as an EVP. The third was a business value and growth hypothesis.

Ideas on the topic was written down as they emerged during the empathize and define step, and intentionally generated from the hypotheses in a brainstorming session, as described in section 3.3. This led to about 40 ideas of different fidelity, and an internally evaluation and selection process resulted in nine unique ideas. The nine were illustrated and evaluated both internally and externally. The learning from this evaluation led to conceptualization of two ideas in which one was prototyped and user tested.

6.2 Evaluation and selection of the 40 ideas

The volume of the first set of ideas was considered as too big for external evaluation and the ideas were not unique. For that reason an internal evaluation and grouping were done, and some ideas were killed off. Two criterias were mainly used in this exercise: the producibility, and how the idea achieved the three hypotheses. Using the three hypotheses as criterias were a liberating way of both sorting and specifying the ideas to unique ones. While the producibility criteria were mainly used as a binary measure to let ideas live or die. The exercise was however done highly by gut feeling, and no physical representations of the criterias were used.

6.3 Evaluation and selection of the nine ideas

When the nine unique ideas were established, they were internally evaluated and placed relative to each other in the BFD and MDCD maps. This evaluation resulted in three leading ideas and two challenging ideas, while four of them were considered somewhere in between. It was surprisingly how explicit the act of placing the ideas uncovered the degree of assumptions involved in the idea. The middle four were based on so severe assumptions that it was difficult to place them at all. The assumptions were mainly rooted in whether the idea would create user value, or not. Thus, the assumptions behind the four ideas needed investigation with the users. In

addition it was considered appropriate obtaining external evaluation of the other five ideas. All nine ideas were therefore put through a user test.

Because of geographical distances to the user group the test was performed through a digital description of the ideas and a discussion by phone. The digital description was given to the user group one week in advance of the phone discussion.

As an attempt to do the user test more as an MVP some considerations were done. The considerations done were: ideas that were not mentioned were considered as not valuable (relating to the innovation metric of acquisition), the users retention to every idea where noted and compared (relating to the innovation metric of retention). The retention rate were a helpful metric when merged with the qualitative learning from the discussion. It added some perspective on which ideas the user found the most valuable.

The act of using the not mentioned ideas as an indication of a not valuable idea had some shortcomings. When probing for them, it was true that the unmentioned and well-understood ideas were not valuable for the user. It was however the case that some of the ideas were not fully understood and therefore not mentioned. This implicates considerable risk to such a measure, but it is believable that the risk would have been substantially reduced if the ideas had been conceptualized before testing. In this case the conceptualization was done after the internal and external evaluation, when two of the ideas were evaluated to be the most valuable and doable.

6.4 Evaluation and selection of the two concepts

The two concepts were developed shortly after the first user test, and a new user test of the two were therefore not achievable. Building a prototype of both concepts was neither achievable due to project resources. Instead the

three hypotheses were used as criteria for internal evaluation. This was helpful in specifying the strengths and weaknesses in the two concepts, but it did not establish a clear selection regarding which one to prototype. An evaluation in the BFD map did not create any clear differences either. When company disruptiveness in the MDCD map was adjusted to mean hospital disruptiveness, the MDCD map clarified that one had considerably higher hospital disruptiveness. Moreover, the one with the less disruptiveness were also the one in which would be the easiest and fastest to build. A criteria relating to LS producibility criteria.

6.5 Evaluation and selection of the prototype

The intention of the user test was to learn whether the concept was of value for the user or not. In order to do so a solution to the biggest issue in the concept had to be solved - an issue concerning how to create a technical solution without losing the intended user value.

To solve this issue the perspective of building a MVP was established: all other functions than the one of the biggest issue were prototyped as minimal solutions. Iterations on the biggest issue were done a bit further than a minimal solution. In this case minimal did not relate to minimal for market launch, as the intention in LS, but minimal in the sense of users being able to understand the solution. This way of prototyping was found liberating and efficient, and it did create a believable product.

The user test was also arranged more like an MVP, by presenting the prototype more like a finished product. In order to do so a use case was explained both in a video and a picture strip. In addition an overview of the main components and functions of the prototype were made. This was then shared with the users before a phone discussion. During the discussion the first experience with the prototype was noted, as well as the retention of features the user liked, disliked and missed. General qualitative learning was also noted. The combination of the latter

two did surprisingly uncover that the problem the concept not built tried to solve was valid. This problem was however not emphasized in the concept of the built prototype.

Further on, the first experience and the qualitative learning validated the problem and the solution of the built concept.

Regarding the retention of features mentioned, it helped foremost in verifying features already considered, but in which were left out for the next iterations. Still, it did to some extent, help in the prioritizing the future features in an order of user value. Thus, it could be that an MVP is also helpful in verifying what ideas and features from the backlog to implement first.

6.6 Discussion

The reflection from practice is based on only eleven weeks of project work, is highly subjective and limited to the domain of physical products in

public hospitals. The relevance of the findings for the DT method in general is therefore hard to assess.

One of the implications discovered was however that the frameworks of M+M and LS are first of all helpful as guidance in the evaluation process. The selection process is still experienced as a matter of gut feeling.

Another interesting finding is that the BFD map, the MDCD map could be of greater value when evaluating in groups because of their visual and physical features.

It should also be mentioned that the business perspective of the ideas, only were considered through user value and size of the potential market. The latter was done through the Big and the market disruptiveness, in the BFD and MDCD map respectively. The maps did however not help in evaluating the general market's receptiveness of the idea.

	IN THE USER PERSPECTIVE	IN THE BUSINESS PERSPECTIVE	IN THE PRODUCIBILITY PERSPECTIVE
Evaluation and selection of ideas to be conceptualize	The three hypotheses as a reference for sorting and finding unique ideas Improved user testing.	BFD and MDCD map internally.	
Evaluation of concepts to prototype	How tangible are the achievement of the two emotional hypotheses.	How tangible are the achievement of the business growth hypothesis. BFD and adapted MDCD map. Criteria of a MVP.	What is the biggest challenge? Criteria of a MVP.
Selection of concepts to prototype	Based on the learning from all the evaluation, and chosen based on the differentiation in the company disruptiveness and the criteria of a MVP.		
Evaluation of prototypes	Improved user testing. What functions seems of greatest importance in order to achieve the two emotional hypotheses?	Through user value in an improved user testing. What seems of greatest importance in order to achieve the business growth hypothesis?	What is the biggest challenge?
Selection of prototypes for further development	Based on the learning from the evaluation, and chosen by what is assumed as the solution of biggest user value.		

Table 4: A summarization of the idea evaluation and selection frameworks used in own practice, classified by the perspective of the user, business and producibility.

Further on, because of the small user sample the metrics used from innovation accounting did neither validate general market value. The metrics did however strengthen the qualitative learning from user test. An important question to ask is then: when and how is it possible to validate market value and receptiveness of physical products?

However, the act of using the business growth and value hypothesis as an evaluation tool throughout the process did work as good reminder of that question.

7. CONCLUSION

This article has investigated the idea evaluation and selection frameworks of the DT, M+M and LS method. Thereby it is shown that the DT method lack evaluation and selection tools, in its' three own innovation criterias. The literature review and reflections from own practice do however show that improvement of the framework is possible.

Merging of DT's prototyping step with the LS' idea of a MVP seems especially promising. In own practice this was helpful in both discovering technical solutions and user value. In addition, the M+M's BFD and MDCD maps (and adoptions from them) were experienced as useful in guiding the evaluation through one perspective at the time. The maps did also help framing the degree of assumptions in each idea.

In the reflections from own practice the discussion does however conclude that the tools do not create a validated or risk free selection of ideas. This is rooted in the fact that the tools only guides an evaluation, and the selection is still an action of gut feeling.

Further on, the reflections from own practice did show that the tools were mostly helpful concerning the criteria of user value. The perspectives of producibility and business are still the most fragile ones. Although the reflections from practice implicate that a business value or

growth hypothesis will with time strengthen the development in the business perspective, when used as an evaluation tool throughout the process.

Hence, the article suggests that further research in the domain of idea evaluation and selection, with special emphasis on physical products, is needed in order to establish a framework sufficient for the three criterias of innovation with DT.

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