START UP WITH DESIGN - FOSTERING DESIGN ORIENTATION IN START-UP COMPANIES

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ABSTRACT

In this paper we investigate how the integration of designers' work approaches and their problem solving skills may become an integral part of entrepreneurial behavior. The goal of our research is to explore whether a certain design orientation can be established, and if the successful implementation of such a design orientation may help a company solve various strategic problems. As playground for these investigations we use a third-party project, which strives for initiating, fostering and integrating design orientation into the strategy process of start-up companies. Two of our project partners developed a series of design workshops, which aim to immerse participants in design thinking and therefore apply a learning process based on learning-by-doing and experiencing. As an evaluation methodology for these workshops we use semi-structured interviews. Current results indicate that the inclusion of designer's work practices during the initiation and early working phases of start-up companies leads to the implementation and fostering of design orientation.

Keywords: design-informed management, management-design integration, design-oriented start up work

1   INTRODUCTION

In this paper we investigate how the integration of designers' work approaches and their problem solving skills may become an integral part of entrepreneurial behavior in start-up companies. In design research, studies on entrepreneurship and its underlying theory have not been explicitly conceptualized so that to date potential correlations between entrepreneurship, design and creativity are only poorly understood (Matthews 2009). One underlying premise of our work is that, due to the initially rather small size of start-up companies, their entrepreneurs, or their entrepreneurial teams, simultaneously represent both the general management as well as the design management function. Another aspect we assume is that the structures in such start-up companies are often not explicitly determined so that changes and adaptations may easily be implemented, without facing the problem of breaking long established organizational interrelations. To that effect, our project partners (i.e. a small design firm and an effectuation specialist) developed a number of workshops with the goal to change the entrepreneurial behavior of start-up companies and to initiate, foster and integrate design orientation into their strategy process.

Based on this undertaking, the goal of our research is to explore whether the successful implementation of such a design orientation can help a company solve various strategic problems. With respect to the terms 'design' and 'design orientation' we thereby follow the definition of Venkatesh et al. (2012) who describe them as follows: "Design orientation represents an organizational vision

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and includes the set of conscious, reflective, and creative ways of conceiving, planning, and artful making of products and services that generate value for the customers and enable them to engage in their individual or social endeavors, whether these endeavors be utilitarian, functional, material, communicative, symbolic, or experiential" (Venkatesh et al. 2012, p.291). Referring to Zahra and George (2002) we furthermore suggest to investigate this process from an organizational learning perspective, focusing on the absorption of design related knowledge in SMEs along four distinct capabilities i.e. acquisition, assimilation, transformation and exploitation. Figure 1 provides an overview of this research concept.
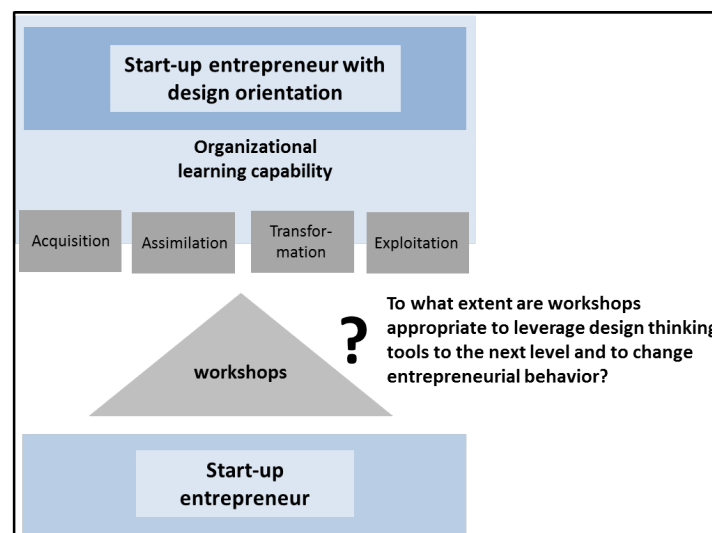

Figure 1 - Research Concept

2 THEORETICAL BACKGROUND

Design research in the field of business studies has experienced an increased interest throughout the last decades, manifested in a wide range of (success) stories reported mostly by the product design community (Ravasi and Stigliani 2012). It was, for example, shown that there is a relationship between the investment in product design and improved business results (Gemser and Leenders 2001; Hertenstein et al. 2005; Matthews and Bucolo 2013). This has led to a comprehensive examination of the distinct value that is added through product design (Stevens 2009), and how it helps companies compete in global markets (Kumar 2009). Added value is hereby measured through improved sales, a brand image and considerable shares in a defined market (Borja de Mozota 2009). Consequently, the integration and holistic application of design resources is increasingly deemed important (Moultrie and Stevens 2011; Stevens 2009).

Today, design practices are not only considered a transformational and innovative power, but also used to find new business methods, highlighting their potential as a strategic instrument. To that end, an area in management theory and practice has recently unfolded, discussing the role of design and its integration in business models so as to broaden existing management strategies

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(Volkova and Jakobsone 2013). It shows that design as a strategic resource and its effective management is already well-established (and researched) in larger companies such as Procter and Gamble, who already embed design thinking into their corporate structure (Brooke 2010) and apply it to ill-defined problems and situations (Matthews 2009). Consequently, scholars as well as practitioners promote the message that with design thinking user-centered innovation and holistic product and service offerings can be created (Boland and Collopy 2004, Martin 2009, Brown 2008). Following this trend, also smaller companies become interested in this 'novel' way of thinking and its application in innovation and value creation.

Although the above discussion shows that there is a certain overlap between strategic management and design (Borja de Mozota 2005; Stevens 2009; Moultrie and Stevens 2011; Stevens et al. 2008), an entrepreneurial dimension of design has not yet been explicitly explained. Often subsumed in illustrations about what designers do and how they work, it is rather considered an inherent part of design (Acklin and Fust 2014). Similarly, in design research we do not find a conceptualization of entrepreneurship and its underlying theory. A potential correlation between entrepreneurship, design and creativity is therefore unexplored (Matthews 2009). To that end, Sarasvathy (2004) suggests to study the creation of a company as a design problem. Acklin, on the other hand, proposes an entrepreneurial mode, overlapping entrepreneurship with design and design management (Acklin and Fust 2014).

2.1 DESIGN MANAGEMENT IN SMES AND ITS INFLUENCE ON PRODUCT INNOVATION

By acting as source and support for innovation, design plays an important role for SMEs, improving product development and communication (Brazier 2004, Acklin 2010). Yet, many SMEs face a number of barriers when they plan to implement design orientation (Cox 2005). Confronted with a lack of resources, design is here often perceived as an expensive luxury and consequently assigned a low priority (Brazier 2004). Nonetheless, the last couple of years have seen the initiation of a number of design initiatives and support programs.

Mostly targeted at SMEs, these initiatives aim to familiarize organizations with design and to promote design both as a means to solve specific problems and as a way to strengthen an organization's innovation capability. Design and business is brought together and companies' design managers are empowered, moving beyond the project assistance level (Boult 2006). However, little is known about whether these initiatives are successful. The way how design and design management capability is integrated in SMEs with no or only little design experience, is also not sufficiently investigated (Acklin 2013). Thus, the question remains to what extent these initiatives succeed and what types of challenges managers and entrepreneurs are facing when they try to implement design knowledge in SMEs.

Exploring similar aspects, Abecassis-Moedas and Mahmoud-Jouini (2008), studied the French clothing and construction industry and found various obstacles in the absorption process of design, marketing and engineering knowledge. The main result being that design may be perceived as something related to designers and architects rather than something that can be easily embedded in manufacturing companies (Abecassis-Moedas and Mahmoud-Jouini 2008).

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2.2 PRODUCT INNOVATION AND ORGANIZATIONAL LEARNING

Conducting a survey with 182 companies of the ceramic tile industry,
Fernandez-Mesa et al. (2013) already showed a link between the organizational
learning capability, the design management capability and the product
innovation performance of SMEs, proposing that design management acts as
mediating role. Their study examined the effect organizational learning has on
companies' product innovation performance and whether it can enhance their
competitive advantage. Results highlight that design management fosters this
link between organizational learning and product innovation. Similarly, an
analysis of leading Italian manufactures pointed to a learning process based on
the design discourse approach (Verganti 2008). Such represents a network of
stakeholders which spans widely outside the boundaries of the firm, sharing and
internalizing knowledge about sociocultural models, meanings, and product
languages (Verganti 2008).

Given these results it may be concluded that the use of design as a strategic
resource involves a learning process (Acklin 2013). Expanding the absorptive
capacity construct by Zahra and George (2002), Acklin developed a model which
describes the absorption of design knowledge (Acklin 2013). She suggests
indicators that determine the progress of absorption as well as those design
management capabilities, which facilitate the design absorption in SMEs with
little or no prior design experience. The absorptive capacity of a company is
described along four organizational capabilities: acquisition, assimilation,
transformation and exploitation. Whereas acquisition refers to the capability of
identifying and acquiring external information, assimilation describes the
routines and processes, which allow a company to analyze, process, interpret as
well as to understand information from external resources. Transformation
represents the capability to create and refine the processes and routines that
allow for combining existing knowledge with new acquired knowledge, including
the adding or deleting of knowledge or its re-interpretation. Finally, exploitation
can be described as capability that enables a company to create new
competencies or to leverage, refine and extend existing ones. It also includes
the incorporation and transformation of knowledge into its operations (Zahra
and George 2002; Acklin 2013). This model acts as the theoretic foundation for
our investigations undertaken in connection with the DOGA project.

3   **THE DOGA PROJECT**

In order to explore the integration of design on an entrepreneurial level the DOGA
project focuses on early stage start-ups. The goal is to investigate to what
extent designers' problem solving skills and work practices may facilitate design-
orientation in start-up companies.

Participating entrepreneurs come from various sectors and trades, are aged
between 30 and 50, and have different educational backgrounds. Male and
female participants are represented in equal shares.

The economic goal of the DOGA project is to implement design as a part of
entrepreneurial behavior, which eventually should strengthen the competitive

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advantage of these companies. A direct advantage in monetary terms is not expected, although a sustainable effect on strategy and product or service development is assumed.

4   PROJECT INITIATION

At the beginning of the DOGA project our design partners, i.e. one designer and an effectuation specialist, developed a set of different teaching modules. These modules aim to:

— construct a framework in which participants experience the significance of design,
— to impart design methodologies and competencies in order to extend and improve entrepreneurial activities,
— an enhancement of the awareness of design (thinking) as a strategic tool, and
— to show how to integrate design orientation into company processes.

Table 1 summarizes the different modules.

MODULE NAME	AIM	LENGTH	FORMAT
The DOGA Jam	Experience how designers work and solve problems	2.5 day workshop	Design jam session
The Effectuation Jam	Learn the principles of effectuation	One day workshop	Lecture, discussions, group work
The Marshmallow Super Challenge	The Marshmallow Challenge as a fun and instructive design exercise encouraging teams to experience simple but profound lessons in collaboration, innovation and creativity	Half day workshop	Exercise and reflections
The Visualization Workshop	Participants acquire knowledge about how to visualize ideas, impressions, experiences etc. in a playful way	One day workshop	Lecture and exercises
Customer-oriented Roleplaying	Participants experience how to develop customer-orientation by asking	One day workshop	Roleplaying, exercises, feedback giving

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	design oriented questions and changing their perspective in order to identify customer needs and desires		

Table 1 – Overview Modules

All modules were designed and framed in such a way that they simulate working in a complex environment (just like it is the case in entrepreneurial reality).

RESEARCH METHODOLOGY

In order to evaluate the above described modules we initially use an interview-based feedback analysis. The goal of this first step is to investigate the extent to which modules can help embed design(-orientation) in participating start-up companies. Evaluating and considering different tools for data collection we found that semi-structured interviews, with their support for multiple realities (Stake 1995), are well suited for this type of exploration. The interviews are conducted between one and three months after a workshop, so that a certain long-term impact can be explored. Each of them lasts approximately 30 minutes and, in order to avoid potential biases, they are all conducted by the same researcher. Sessions are recorded, transcribed and subsequently coded using the GABEK (GAnzheitliche BEwältigung von Komplexität i.e. holistic processing of complexity, https://www.gabek.com/) analysis method (Zelger and Oberprantacher 2002).

An additional control group with start-up entrepreneurs not joining the DOGA workshops will be established in the second half of the project. Also here a survey will be implemented investigating the entrepreneurial behavior with respect to design orientation. Furthermore, we collect companies' characteristics and figures. By comparing the companies participating in DOGA with those that are not participating, we aim at drawing solid conclusions about the contributions our project caused.

5 **CURRENT RESULTS**

Up to this point we have conducted and analyzed 16 out of the 24 planned interviews. First emerging core characteristics are listed below, supported by relevant statements coming from interviewee's. The interview language was German for which both an English translation/interpretation and the German original statement are provided.

1. Characteristic: **Design orientation leads to a more holistic customer perspective, considering various aspects of (product) use and purpose:**

   "Sometimes customers come and say, say I want a pen and the pen should be engraved and then we begin to wonder why it has to be a pen, why pens, that does not actually fit into your business, you actually work with flowers, so would there not something else fit better. So, you simply begin to question, to see the customer has a need and now

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thinks he can reduce it to a pen and this is now his solution. But that there is perhaps something else out there ...“ (German original: „Manchmal kommen ja Kunden und die sagen, sagen, ich will einen Kugelschreiber und der soll graviert werden und dann fangen wir an zu fragen, warum muss es ein Kugelschreiber sein, warum Kugelschreiber, der passt ja jetzt eigentlich gar nicht zu deinem Geschäft, Du machst ja jetzt eigentlich Blumen, oder würde da nicht was anderes besser passen. Also, dass man einfach anfängt zu hinterfragen, um zu sehen der Kunde hat ein Bedürfnis und meint jetzt er hat's auf einen Kugelschreiber reduzieren können und das ist jetzt seine Lösung. Aber, dass es da vielleicht noch etwas anderes gibt, …")

2. Characteristic: **Designers' work practices and problem-solving approaches facilitate entrepreneurial behavior and design orientation:**

"This lateral thinking is for some entrepreneurs, let's say an engine builder, more difficult, because he comes from his specific area. And therefore I think it is a fairly good approach, this design thinking, also for entrepreneurs. It is not the point, if the glass looks this way or that way, because I don't care about that. It is not about that. It is simply about this thinking, why does it even have to be glass? Or is there not another solution? So, this is the challenge. Through this, innovation occurs." (German original: „Das ist manchen Unternehmern, die sagen wir mal so vom Maschinenbauer so langsam zum Unternehmer werden, schwieriger, weil der, der kommt aus seinem Bereich, dieses Querdenken. Und deshalb finde ich das einen ganz tollen Ansatz dieses Design-Denken auch in, bei den Unternehmern. Da geht es mir jetzt nicht darum, ob das Glas so aussieht oder so, weil das ist völlig wurscht, darum geht's nicht. Es geht einfach um das Denken, warum braucht's' denn überhaupt ein Glas, gibt es nicht eine andere Lösung. So was ist die Herausforderung. Dadurch entsteht erst, dadurch entsteht erst Innovation.")

Another attendee answers to the question if he/she considers the workshops and its experiences as appropriate to initiate, integrate and foster design orientation:

"Yes, I see it as appropriate. Basically yes. I believe that we have done this similarly. Intuitively, without that we have known how to do it, with respect to the format. But a bit clumsy, a bit uncoordinated. And now I can do it more coordinated because of this." (German original: „Sehe ich schon geeignet. Also ja, sehe ich geeignet. Grundsätzlich ja. Ich glaube, dass wir das früher teilweise auch ähnlich gemacht haben. Intuitiv, ohne, dass wir gewusst haben, dass wie man das eigentlich vom Format her tun kann. Aber a bißerl patschiger halt, a bißerl unkoordinierter. Und das kann ich jetzt schon auf Grund von dem wesentlich koordinierter machen.")

As response to the question "What should participants know after the DOGA Jam? one participant answered:"

"Lateral thinking. Questioning things, do not say that's always been such a website, so it must always be a website. To say that a website may be boring, there may be another possibility." (German original:

„Querdenken. Dinge in Frage stellen, nicht sagen, das war schon immer so eine Webseite, deswegen muss es immer eine Webseite sein. Zu sagen, eine Webseite ist vielleicht eintönig, gibt es vielleicht eine andere Möglichkeit.")

3. Characteristic: **Design orientation means learning through collaboration, i.e. working with people from different fields with different backgrounds is valuable and inspirational:**

"Because it has once again opened the horizon for me (…) to think very far and work with people who come from a completely different area." (German original: *„Weil es auch für mich (…) wieder einmal den Horizont geöffnet hat, ganz weit zu denken und mit Leuten zusammenzuarbeiten, die aus einem ganz anderen Bereich kommen."*)

"(I've learnt) that a team still can do more than when working individually. It is now and then more exciting to work individually, but the team aspect I find very interesting." (German original: *„(Ich habe gelernt,) dass ein Team doch noch mehr kann, als wenn man einzeln arbeitet. Es ist zwar ab und zu spannender einzeln zu arbeiten, aber den Aspekt Team finde ich sehr interessant."*)

Another interviewee experienced it this way:

"I've learned a lot. I've seen for me, which is quite new to me, how difficult it is to work in a group. The fact that I'm always all alone, decide all alone, sustain my head, I do things the way I want them. And in a group this is of course not possible. Then, you offend very quickly, you have to make compromises and, this was one of the crucial points for me, where I say the reason I enjoy working with it, because it was something completely new for me, so it was really something completely new. Otherwise, there were two days where you met a few people, partly also some crazy people, (…) and what fascinated me, how quickly, with this group, in principle, a team is created and how quickly stuff arises with this team, stuff nobody knew before." (German original: *„Ich habe einiges dabei gelernt. Habe für mich gesehen, was für mich ganz neu ist, wie schwierig es ist in einer Gruppe zu arbeiten. Dadurch, dass ich immer alles alleine mache, alles alleine entscheide, alleine den Kopf hinhalte, mache ich Sachen, so wie ich sie haben will. Und in einer Gruppe ist das natürlich nicht möglich. Da eckst Du sehr schnell an, da musst Du Kompromisse eingehen und das war für mich eine von den entscheidenden Punkte, wo ich sage aus dem Grund habe ich es gerne gemacht, weil das für mich ganz was Neues war, also war mal wirklich was ganz Neues. Was es sonst noch war, es waren 2 Tage, wo Du mal a paar Leute kennengelernt hast, a bißl zum Teil auch ein paar verrückte Leute (…) und was mich fasziniert hat, wie schnell aus dieser Gruppe im Prinzip ein Team entsteht und wie schnell mit diesem Team Sachen entstehen, von denen vorher noch nie jemand was gewusst hat."*)

4. Characteristic: **Designers' work practices and problem-solving techniques help tackle questions and problems in various situations:**

"So ... I think you can use it always, and for all questions. No matter how they are stated. So if you like to make something new, you can

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make it in the end. By starting such a jam. In what area: everything, every question - whether this is a service, whether this is a design, if it's an object, whether it is a process-oriented question, it can all work this way." (German original: „also ich finde, man kann das immer einsetzen, und für alle Fragestellungen. Egal wie die lauten. Also wenn (ich) etwas Neues machen möchte, kann (ich) das im Endeffekt so machen. Indem, dass man so einen Jam startet. In welchem Bereich: alles, jede Fragestellung, ob das eine Dienstleistung ist, ob das Design ist, ob das ein Gegenstand ist, ob das eine prozessorientierte Frage ist, kannst alles bearbeiten auf diese Art und Weise.")

„Or sometimes, something falls in your hand at an exhibition, or on a journey, or on a walk or something in the business, which can be transferred. And just this keeps your eyes open." (German original: „Oder manchmal fällt bei einer Ausstellung, oder auf einer Reise, oder beim Spazierengehen irgendwas oder irgendwas im Geschäft in die Hand, das lässt sich transferieren. Und eben dieses die Augen offen halten.")

5. Characteristic: **Design experiences encourage attendees to prototype, to question things, and to think laterally:**

"…and courage, courage to ask this question, because often we don't dare to ask these questions... And draw connections from a dog's leash to a phone, what could I do to connect this so that something new emerges." (German original: „…und Mut, und Mut auch diese Frage zu stellen, weil oft trauen wir uns ja selber nicht diese Fragen zu stellen… Und Verbindungen ziehen, von der Hundeleine zum Telefon, was könnte ich da verbinden, dass da etwas Neues entsteht.")

Another attendee experienced it this way:

"(I've learnt) that one dares more. …That was the design thinking, the DOGA Jam, the experience of my late puberty time. This might sound stupid, but it is so. It is also the 'Sturm und Drang' period. There you just go out and ask the girls, for example, what type of man they prefer or whatever. So, that I know where I stand. Or that you spontaneously make something you would not do as an adult. This has been good for me, actually totally good." (German original: "(Ich habe gelernt,) dass man sich mehr traut. … Das war für mich beim Design Thinking, beim DOGA Jam, die Erfahrung, von meiner nachpubertären Zeit. Klingt jetzt vielleicht blöd, aber ist so. Das ist ja auch die Sturm und Drang Zeit. Da geht man einfach raus und fragt die Mädels zum Beispiel, was für ein Typ taugt Dir, oder was weiß ich denn. Damit, man weiß, wo man selber umgeht. Oder, dass man spontan etwas macht, was man als Erwachsener nicht machen würde. Das hat mir eigentlich total gut getaugt.")

6   NEXT STEPS

The above highlighted initial core characteristics provide only a first impression about how design orientation may change thinking processes in start-ups. Further interviews are planned to take place in the next couple of month so that

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all in all 24 interviews are conducted. A more in-depth analysis of the collected data should then allow for the extraction of solid key indicators and the definition of hypothesis that are able to thoroughly describe the concrete input design orientation may bring to young companies. These hypotheses will then be tested using a survey among start-up entrepreneurs.

7   CONCLUSION AND FUTURE PERSPECTIVE

So far our results are promising, indicating that the inclusion of designer's work practices during the initiation and early working phases of start-up companies leads to the implementation and fostering of design orientation. We have shown that a number of design jams and workshops help to make participating entrepreneurs aware of the added value design can bring to the problem solving process. Empirical research indicates that, in practice, the function of (industrial) design may vary according to factors such as the nature of the company's business and their design experience (Borja de Mozota 2006). Similarly, we have received different feedback from participants with different backgrounds. A critical consideration for the future is therefore the question whether the impact of designers' work practices may be conditional to industry evolution.

8   ACHKNOWLEDGEMENTS

9   REFERENCES

Abecassis-Moedas, C. and Mahmoud-Jouini, S.B. (2008) Absorptive Capacity and Source-Recipient Complementarity in Designing New Products: An Empirically Derived Framework. Journal of Product Innovation Management, 25, pp.473–90.

Acklin, C. (2010) Design-driven innovation process model. Design Management Journal, 5(1), pp.50–60.

Acklin, C. (2013) Design Management Absorption Model: A Framework to Describe and Measure the Absorption Process of Design Knowledge by SMEs with Little or no Prior Design Experience. Creativity and Innovation Management, 22(2), pp.147-160.

Acklin, C. and Fust, A. (2014) Towards a dynamic mode of design management and beyond. 19th DMI: Academic Design Management Conference Design Management in an Era of Disruption London, 2–4 September 2014.

Boland, R. and Collopy, F. (2004) Managing as Designing. Stanford University Press Stanford.

Borja de Mozota, B. (2005) The complex system of creating value through design - using the balance scorecard model to develop a system view of design management

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from a substantial and financial point of view. European Academy of Design Conference March 2005.

Borja de Mozota, B. (2009) Design management as core competency: from "design you can see" to "design you can't see". Journal of Design Management, 4, pp.91–8.

Boult, J. (2006) Emerging Demands and Challenges for Design Support. In: SEEdesign Bulletin, Issue 3, September 2006. http://www.seedesign.org/seedesign/uploaded_files/SEEbulletin%20-%20Issue%203%20September%202006%20low%20resolution.pdf (accessed October 2014).

Brazier, S. (2004) Walking backward into design: support for the SME. Design Management Review, 15(4), p.61-70.

Brooke, M. D. (2010) Creativity & Innovation in Business 2010. Teaching the Application of Design Thinking to Business. Procedia Social and Behavioral Sciences 2, pp.6540–6546.

Brown, T. (2008) Design Thinking. Harvard Business Review June 2008.

Cox, G. (2005) Cox review of creativity in business: Building on the UK's strength. London: Design Council.

Fernández-Mesa, A., Alegre-Vidal, J., Chivaz-Gómez, R., Gutiérrez-Gracia, A. (2013) Design management capability and product innovation in SMEs, Management Decision, 51(3), 2013, pp. 547-565.

Gemser, G. and Leenders, M. (2001) How integrating industrial design in the product development process impacts on company performance. Journal of Production Innovation Management, 18, pp.28–38.

Hertenstein, J., Platt, M. and Veryzer, R.W. (2005) The impact of industrial design effectiveness on corporate financial performance. Journal of Product Innovation Management, 22(1), pp.3–21.

Kumar, V. (2009) A process for practicing design innovation. Journal of Business Strategy, 30(2/3), pp.91–100.

Martin, R. (2009) The Design of Business – Why design thinking is the next competitive advantage. Harvard Business Press 2009.

Matthews, J.H. (2009) Creativity, design and entrepreneurship: management education and development for innovation. In Solomon, G. (Ed.) Proceedings of the 2009 Academy of Management Annual Meeting: Green Management Matters, Academy of Management, Hyatt Regency Chicago, Chicago, Illinois.

Matthews, J. and Bucolo, S. (2013) Improving opportunity recognition and business performance in small and medium manufacturing enterprises through design innovation programs. Journal of Asia Entrepreneurship and Sustainability, 9(1), pp.116–35.

Moultrie, J. and Stevens, J. (2011) Aligning strategy and design perspectives: a framework of design's strategic contributions. Design Journal, 14(4), pp.475–500.

Start Up With Design – Fostering Design-Orientation in Start-Up Companies

Niedworok, A., Schlögl, S. and Mirski, P

Ravasi, D. and Stigliani, I. (2012) Product Design: a Review and Research Agenda for Management Studies. International Journal of Management Reviews, 14(4), pp.464-488.

Sarasvathy, S. (2004) Making it Happen: Beyond theories of the firm to theories of design, Entrepreneurship Theory and Practice, Winter 519 -531.

Stake, R. (1995) The art of case study research. London: Sage Publications.

Stevens, J. (2009) Design as a strategic resource. Design's contributions to competitive advantage aligned with strategy models. Ph.D. University of Cambridge.

Stevens, J., Moultrie, J. and Crilly, N. (2008) Designing and design thinking in strategy concepts: frameworks towards an intervention tool. International DMI Education Conference Design Thinking: New Challenges for Designers, Managers and Organizations, April 2008, ESSEC Business School, Cergy-Pointoise, France.

Venkatesh, A., Digerfeldt-Mansson, T., Brunel, F.F. and Chen, S. (2012) Design orientation: a grounded theory analysis of design thinking and action. Marketing Theory, 12(3), pp.289–309.

Verganti, R. (2008) Design, meanings, and radical innovation: a meta-model and a research agenda. Journal of Product Innovation Management, 25, pp.436–56.

Volkova, T. and Jakobsone, I. (2013) The creation of successful business models through the extended application of design in business in Latvia and Estonia. Baltic Journal of Management, 8(4), pp.486–506.

Zahra, S. A. and George, G. (2002) Absorptive capacity: A review, reconceptualization and extension. Academy of Management Review, 27(2), pp.185–203.

Zelger, J. and Oberprantacher, A. (2002) Processing of Verbal Data and Knowledge Representation by GABEK®-WinRelan®. Forum: Qualitative Social Research May 2002.