DESIGN THINKING: AN ANALYSIS IN BUSINESS EDUCATION

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Abstract

Design Thinking is not only a tool applied to foster innovation in business, it is also a new and prominent approach in education. Being a creative process that enables academics to meet the needs of the world of work and to produce innovative individuals, it is emerging as a contemporary pedagogical tool, which can be used at all levels of education with later career implications. Despite its growing importance, the application of Design Thinking into business education has been slow and partial, even though business education is currently in crisis as traditional pedagogical tools are unable to produce individuals capable of facing the challenges of the 21st century.st This study explores current trends in applying Design Thinking into higher education, with a particular focus on the strategies of leading schools. Using a case study approach, we provide a road map in the business strategies of educational institutions, and in particular for business schools, that seek to integrate this new tool into their curriculum.

Keywords: *Design Thinking*, *Business Education*, *MBA, Career*.

A.   INTRODUCTION

Design Thinking is a creative problem-solving process that is based on human needs and is one of the most influential trends globally and extends to many markets and businesses around the world. The idea itself dates back to the 60s (Khurana & Spender, 2012), and was coined by Peter Rowe in his 1987 book, Design Thinking, but has only recently become a buzzword in various industries (Kolko, 2015). This comes with a number of opportunities and constraints. On the positive side, more and more companies are implementing, or at least attempting to integrate Design Thinking into their processes, regardless of whether they engage in design management in the traditional sense or not. On the other hand, the buzz around Design Thinking makes it one of the least understood concepts by the global industry. Moreover, how Design Thinking should be applied to the peripheral structures that support businesses is still a question across multiple dimensions. This research focuses on a particular aspect of this last question, business education, and explores how Design Thinking can be integrated into business school curricula. To this end, we first review the concept of Design Thinking, how it evolved and became an important part of the process for many companies in the last two decades. We then turn our gaze to business education and give a brief overview of the challenges in this field. Next, we present an analysis of the strategies and curriculum structures of excellent schools that implement Design Thinking pedagogy. Finally, we offer an initial roadmap for educational organisations, and particularly business schools, seeking to integrate this new approach into their curriculum.

B.   LITERATUR REVIEW
1. Design Thinking

Design Thinking, at its core, refers to what is literally suggested: A designer's way of thinking. Academically, the term originally meant "design-specific cognitive activities that

designers apply during the design process" (Goldschmidt, 2008) and was limited to research investigating the cognitive methods and patterns applied by designers. The nonlinearity and creativity embedded in this thought process is of great interest to many researchers and practitioners, through which they seek alternative models for business that they can apply in various managerial contexts.

With the shift towards an experiential and service-based economy (Pine, 1999), design activities are evolving into the creation of meaningful experiences for people. The way designers think, the methods they use and the approaches they adopt in tackling complex problems are also evolving into the application of "creative methods, effective communication and proactive entrepreneurship" (Lorange, 2003). This emerging design culture prioritises people's experiences and perspectives, and mobilises creative and innovative methods that are highly flexible, visual and participatory in order to better empathise and communicate. Empathic design waits for designers to be aware and sensitive to the individual experiences, needs, desires and emotions of the people they design for. In addition, designers must also maintain a holistic perspective on the overall experience and influence of the product or service they are developing on society. Design's ability to be empathetic and multifocal in addressing human-centred and complex problems iteratively makes Design Thinking a promising set of methods and principles to apply in addressing business problems. (Kolko, 2015), who appreciates the emergence of this design-centric culture, highlights the shift in large organisations towards applying design principles to the way people work, regarding Design Thinking, as a collection of principles that prioritise empathy, the "discipline of prototyping" and the iterative nature of design that tolerates failure, to be the best tool for developing responsive and flexible organisational cultures.

David M. Kelley and Tim Brown of IDEO pioneered in integrating the concepts of "empathy", "rationality" and "creativity" into managerial problem solving (Brenner et al., 2016). They argue that Design Thinking should not be limited to a set of practices applied during new product development, which is usually done to generate financial rewards and build customer loyalty. Proponents of this camp rather propose Design Thinking to evolve into a method and process for investigating non-obvious problems, acquiring information, analysing knowledge, and proposing solutions within the field of design and planning, paving the way for the concept to be used as a means to foster creativity and innovation within organisations. (Çeviker-Çınar et al., 2017) state that this happens because "designing, acts as a 'glue' - a bridge, facilitator, protector, explanation, assessor, modeller, orchestrator, and supporter of all kinds of thinking". Embodied in a new definition that expands its boundaries, Design Thinking is now embraced as a key tool and goal in many organisations. Its uses range from tactical domains, such as sales management activities, to strategic management, such as building a foundation to drive a brand or business forward.

Design Thinking is not only a tool applied to develop strategies and increase innovation in business, it is also an approach that is prominent in all walks of life. However, despite its growing importance in business life, many support structures in the market have failed to keep pace with this new approach, and education is definitely one of them. In essence, Design Thinking has many benefits for education in general, and business education in particular: Design Thinking, as a formal method for practical and creative problem solving, suggests new ways of thinking to redesign our classrooms, schools, and education systems. Being a creative process that enables academics to meet the needs of students and help raise creative and innovative people, it stands out as a contemporary pedagogical approach that can be used from kindergarten to higher education (Rhinow & Meinel, 2012). Most importantly, it can be used as a long-term strategy to deal with the challenges facing business education in the new millennium.

2. Crisis in Business Education

Business schools today are in a severe crisis, stemming from the fact that they cannot effectively respond to the needs and challenges of the 21st century. Major changes in the economic, political, and demographic environments, technological advances, periods of recession and economic collapse, ethical issues, paradigm shifts in the sociocultural field accompanied the collapse of managerial and economic theories, and all of these have left many business schools with failed perspectives and antiquated curricula that cannot answer postmodern challenges.

There are countless articles in leading business education journals, documenting the dynamics and impact of this crisis, as well as offering prescriptions for an ideal curriculum to guide those developing it. Much of the research, in this context, is based on the seminal work of (Porter & McKibbin, 1988), who proposed six essential aspects for an ideal MBA curriculum. Subsequent research has focused on these insights, as summarised below:

a. Multidisciplinary integration (e.g. Ducoffe, Tromley & Tucker, 2006);
b. Experiential learning (e.g. Kolb et al., 2000);
c. Soft-skill development (e.g. Andrews & Higson, 2008);
d. Adopting a global perspective (e.g. Lorange, 2003);
e. Building awareness, knowledge and adaptability to information technology (e.g. Leidner & Jarvenpaa, 1995);
f. Business ethics and corporate social responsibility (e.g. Nicholson & DeMoss, 2009).

Although these insights were provided in the late 80s, and there has been considerable research since then focussing on how these can be implemented into business school curricula, the current situation is far from perfect (Datar et al., 2011). The failure of business education is evident in many of the above areas, but the most glaring problems remain in multidisciplinary integration, experiential learning, and soft-skill development.

Multidisciplinary integration requires education to be conducted "jointly in two or more disciplines, subdisciplines, or professions, bringing together and to some extent synthesising their perspectives" (Athavale et al., 2008). This approach helps prospective employees to become better team players, understand interactions within the organisation, and improve decision-making skills. However, in a recent study, Athavale, (Athavale et al., 2008) revealed that 81% of deans in US Business Schools perceive that their curriculum is in dire need of integration. The second domain, experiential learning, refers to "learning that uses the learner's experience as the basis" (Armstrong, n.d.), and includes the application of a broad spectrum of educational experiences, such as study abroad programmes, community service, fieldwork, workshops and internships to the curriculum. It is based on a hands-on approach to learning, and although some of the above tools are now commonly used in many business schools, their efficiency in generating real "hands-on experience" is questionable (Kirschner et al., 2006). Finally, business schools also fail to equip students with soft skills such as creativity, critical thinking, team building and decision making, which are capabilities that are critical to an effective workplace (Floyd & Gordon, 1998). In the last few decades, business schools have been criticised for paying much attention to equipping students with technical skills, but not soft skills, a problem that still persists (Datar et al., 2011).

Today, business schools recognise that they need to focus on what they have overlooked, yet designers have implemented (Glen et al., 2014). In this context, Design Thinking can provide business schools around the world with a new approach to nurturing future leaders. Integrating Design Thinking into business education can guide teachers and students in managing innovation and problem solving, by fostering a culture of creative confidence (Kelley & Kelley, 2013). To date, there have been some notable efforts to achieve this goal, although in general the application of Design Thinking in business education has been slow and limited. In this context, below we present three case studies, which examine

schools in the US, Canada and Japan that have Design Thinking perspectives fully or partially integrated into their curriculum.

C.   METHOD

The method we use in this journal is literature study, which involves collecting information and data from various relevant sources, such as books, articles, journals, and other electronic information sources. This journal uses case studies with the aim of analysing alternative models of curriculum development and proposing guidelines for schools that seek to encourage Design Thinking in their pedagogical approach. Case studies are empirical studies that investigate contemporary phenomena in depth and in real-life contexts (Hollweck, 2015), and are appropriate for exploratory purposes, especially when the available literature is limited.

Since the purpose of this paper is to examine the application of Design Thinking methodology in university curricula, and to elaborate on the findings by proposing an alternative curriculum development strategy for business schools with implications for the career development of business graduates, we began our research by selecting three cases available worldwide. In selecting the cases, we used the list provided by (Kelley & Kelley, 2013), which includes universities and schools that have integrated Design Thinking into their curriculum design. Although the list includes about 20 schools, our selection ended with the school at Stanford University, the Rotman School of Management at Toronto University, and the Engineering Sciences and Design programme at Tokyo Institute of Technology. the school at Stanford University was chosen because it pioneered the use of Design Thinking in education. The Rotman School of Management was one of the early adapters of Design Thinking in business schools, which makes it an important case for the purpose of this research. Finally, we wanted to work on a specific example with a different perspective, and included an interdisciplinary graduate department, the Engineering and Design Science programme, at Tokyo Institute of Technology. This last case also offers an opportunity to see how techniques incorporate Design Thinking, as well as compare Western and Eastern perspectives on integrating the two domains.

D.   RESEARCH RESULTS AND DICUSSION
1. Stanford University

The Hasso Plattner Institute of Design at SU, can be called the headquarters or cradle of Design Thinking. It is an independent institute that focuses solely on design thinking as a pedagogical tool, where students can learn, teach, work on, solve problems, and ultimately become design thinkers.

Stanford University's methodology is different from other universities, as it aims to introduce the philosophy and methods of design thinking to all Stanford students. In this context, the school's reach is not limited to majors or courses alone. All students from all seven schools at Stanford, from law to medicine, are admitted to Stanford University and can register for courses. The school offers independence.

A master's programme called "Design Impact", which is essentially a core integrated with other graduate programmes. This core includes courses such as design process, prototyping, and design leadership. In addition, Stanford University offers courses in almost all subjects, which may be related to Design Thinking. The school employs a diverse team of faculty and students, enriching the Stanford University experience. Courses vary from year to year according to the expertise of the teaching team. Some of the courses offered at Stanford University are provided below:
   a. Advanced Design Studio
   b. Building an Innovative Brand
   c. Bursting the 'Impossible' Bubble: The Art of Creative Engagement

d. Liaison, Analyser & Quiet Listener
e. Creative Gym: Design Thinking Skills Studio
f. Creativity and Innovation
g. d.compress: Designing Calm
h. Design for Healthy Behaviour Change
i. d.leadership: Designing for Leadership in Context
j. d.media: Designing Media that Matters
k. d.org: Designing Creative Organisations
l. d.science: Design for Science
m. Designing Liberation Technologies
n. Design Thinking Boot Camp
o. Design Thinking Studio: Experiences in Innovation and Design
p. Design Thinking for Public Policy Innovators
q. Designing Solutions to Global Grand Challenges
r. Emotions by Design
s. Failing Faster
t. Design Foundations for Design Thinkers
u. From Maps to Meaning
v. From Play to Innovation
w. Game Design: Making the Game
x. Methods in Systems Thinking
y. Organisational Psychology Design Thinking
z. Out of the Lab: Design Thinking for Scientists & Engineers
aa. Rapid Prototyping and Experimentation Lab
bb. Restarting Government with Design Thinking
cc. Rethinking Purpose
dd. SparkTruck: Designing Mobile Interventions for Education
ee. StoryViz: Communication Redesigned
ff. Design Mind and Consumer Behaviour
gg. Designers in Society
hh. Transformative Design
ii. Understanding Superfans
jj. Visual Design Basics

Students can be enrolled into credit courses as core classes, additional classes, as well as non-credit courses such as pop-out workshops. These workshops are developed at Stanford University, but are held in different places according to the topic. Rather than taking courses, graduate students can also work on d.school research projects. Other universities and individuals can also benefit from the facilities and programmes developed by the school. Accompanying the motto that "everyone is a student of innovation", the school organises "Executive Boot Camps" for startups, Fortune 500 companies, and NGOs, where executives learn the philosophy of Design Thinking by practicing on real projects, and manages a network to help educators of all levels to integrate Design Thinking into K12, undergraduate, and graduate education.

Stanford University's website is even a course in itself. It is a Design Thinking portal, which contains presentations, videos, interactive experiences, and other tools aimed at individuals who want to learn the Design Thinking methodology for themselves. In short, d.school acts as the most comprehensive resource for introducing Design Thinking to the world, by designing and offering a wide variety of specialised training according to the needs of participants.

2. University of Toronto

The University of Toronto is Canada's leading research university with 85,000 students and more than 20,000 faculty members. Rotman is the university's School of Management. At Rotman, Design Thinking is at the heart of business education, integrated not just as a course, but as an encompassing philosophy.

Rotman's choice of Design Thinking as a pedagogical tool stems from the problems in business education, which we discussed earlier. The School's management realised that business school graduates were not equipped with the necessary skills to deal with contemporary business issues, and considered investment in empathy, creativity, and collaboration as core skills to enhance innovation and growth. In the words of Roger Martin, Rotman's visionary leader, "business people don't just need to understand designers, they need to be designers", and with this motto the school intersects with David Kelley (founder of d.school and IDEO) and Patrick Whitney (dean of IIT Institute of Design at Illinois Institute of Technology) in developing new ways of working to succeed in innovation.

The school used Design Thinking as inspiration when developing the Business Design concept, which is now operated by DesignWorks, the business studio. Being at the core of Rotman's design thinking approach, DesignWorks' goal is to transform business education through user-centred design. DesignWorks was formed as a studio due to the belief that business design can only be learnt through practice. DesignWorks is not limited to credit courses, and at Rotman students can enhance their business design capabilities through various training programmes (Figure 1).

For graduate students, Rotman provides the opportunity to pursue a major in Business Design, as well as enrol individually into specific courses offered within this major. The Business Design curriculum focuses on user-centred business design, and the three respective steps in bringing a product from design to reality, namely user empathy and understanding, problem solving, and change management. Students must take elective courses on each of these in addition to the compulsory core course called the Business Design Practicum. This practicum is also open to other programmes as an elective, giving other students the opportunity to gain expertise on user needs, create innovative solutions, and design new strategic business models. The pedagogical approach involves a thinking-doing-feeling triad, with 20% lectures to reinforce thinking through principles and frameworks, 10% instruction to practice methods and tools, 50% application to use these methods, and 20% devoted to discovering mindsets and reflecting on values. In addition to the Business Design course, Rotman also organises boot camps, short innovation-focused workshops, and sprints that allow its students to collaborate with other MBA students as part of extracurricular sessions in the Sandbox Series.

FOR CREDIT CLASSES

MAJORS
• Business Design Major

COURSES
• Business Design Practicum
• Strategic Foresight, Innovation & Business Design
• Deep Consumer Insights
• Business Design Study Tour
• Independent Study

CAREER PREPARATION

• Fireside Chats with Industry
• Portfolio Creation
• Industry Night
• In My Backyard Series (company field trips)
• Career Coaching

SKILLS DEVELOPMENT

• Sandbox Series (boot camp, workshops, sprints)
• Rotman Design Challenge (case competition)

COMMUNITY BUILDING

• Business Design Club
• Design Thinking Experts Speakers Series

Figure 1. Rotman Program on Design Thinking

3. Tokyo Institute of Technology

With a 130-year heritage and 10,000 students across three campuses, Tokyo Institute of Technology is the top national university for science and technology in Japan. The school offers graduate programmes in a very broad spectrum, ranging from classical branches such as mathematics and physics to new topics such as artificial intelligence, and innovation science.Selain program pascasarjana tradisional, sekolah menawarkan jurusan pascasarjana interdisipliner. Dalam konteks ini, program Ilmu Teknik dan Desain merupakan pusat studi kami, because it combines engineering with Design Thinking. The programme sets Design Thinking at the core of one of the five programme features. These features enable students' practical learning through interdisciplinary problem-based learning (PBL) courses, which give students the ability and experience to solve open-ended problems.

The PBL courses in this programme are 1) Fundamental Design Thinking, and 2) Engineering Design Projects A, B, and C. IDEO is also part of these courses as a mentor. The Fundamentals of Design Thinking course was developed to teach students the basics of Design Thinking, which is replaced by Project A, which focuses on engineering design. Later on in Projects B and C, students enhance their skills by working on real projects with companies. The outcomes of the Design Thinking Fundamentals course enable students to utilise the five steps of design thinking: Empathise, Define, Ideate, Prototype and Test. The course involves lectures and long-term projects, with the aim to teach aspiring engineers useful problem-solving methods, as well as raise awareness of the importance of user needs. The course modules cover topics such as inspiration, idea and concept development, Business Design, and Storytelling.

The intended competences in this course are communication skills, critical thinking, practical skills and/or problem solving, which are then put into practice in Engineering Design Projects A, B and C. The projects are based on real-world problems, and Design Thinking is applied as an important tool to solve them. The projects are based on real-world problems, and Design Thinking is applied as an important tool to solve them. The programme also involves other Design Thinking-centred courses such as design theory, social systems design, and human-environment systems design. In addition to these graduate programmes, Tokyo Institute of Technology also offers courses that build on the Design Thinking philosophy, such as Design Thinking, and Business Design, which focus on applying design solutions in real-life business cases.

E. CONCLUSIONS

Based on a careful evaluation of the three cases presented in this study, a key insight for business schools is that Design Thinking is more than just a course or series of courses integrated in the curriculum. It should encompass a philosophy that covers all aspects of business education, rather than offering it as a fast-track through credit courses. In this context, schools that want to integrate Design Thinking into their educational offerings must adapt them as a whole, including specialised divisions, curricula, studios, practical courses, industry connections, speakers, and clubs. Institutional structures that guarantee the functioning of the philosophy must be in place, with long-term commitment from management, as the results of such radical changes will not be obtainable in the short term. Physical and non-physical infrastructure must be well planned and realised. Investments in Design Thinking must be carefully planned, organised and monitored to get the best results and positive impact on graduates.

Secondly, an interdisciplinary structure is key to sustaining a Design Thinking approach in education. Even when a school decides to adapt Design Thinking into business education only, as in Rotman's case, the structure should be planned using an interdisciplinary lens, where the curriculum is developed and supported by other departments. In this context,

the co-operation of the design school and the business school is essential. As a consequence of such collaboration, courses can be diversified for the ultimate goal of "Design Thinking", according to subdomains and application areas.

The third insight from this case study relates to the use of real-life business problems in education. Since Design Thinking is essentially a method of solving, Its teaching should also include a problem-solving perspective. At this point, the university's interaction with the outside world, including the private sector and government, is crucial. In addition to institutions, individuals, particularly professionals, should also be considered an indispensable element of the programme. Real-world problems should be used as cases, where students can apply a hands-on approach in finding solutions to the problem.

As a common finding in all three case studies, the design of "*Design Thinking*" courses is one of the most critical issues in curriculum development. There seems to be a consensus that*Design Thinking* cannot be taught through traditional lecture pedagogy. As seen in the examples, lectures are limited to a small part of the course, providing only principles, while the rest is only practical. Here practice refers to real-world problems and projects, which enable problem-based learning. Hands-on learning supervised by experts will also help students to improve design thinking skills. Moreover, the basic knowledge of *Design Thinking* includes a comprehensive understanding of the tools, and these tools can only be internalised by experiencing them personally. Therefore, business schools to integrate *Design Thinking* into their curriculum should shift from traditional lecture methods to a more practice-based and project-based pedagogical approach.

The scope of this study is limited to three cases selected from a list of schools that have adopted the *Design Thinking* approach in whole or in part, and will be expanded to more schools and applications, which will provide a more detailed view of the issue. However, even the three case studies included in this paper provide practical andreliable guidelines for business schools seeking new approaches to meet current market challenges. Future research might be directed to other schools from different economic and cultural contexts, and could be enriched by integrating pedagogical approaches that also seek tochallenge traditional business education. A comparison of classic business school pedagogies, such as the case method, simulation game method, etc., with the *Design Thinking method* couldalso be applied to explore the potential advantages and disadvantages of this approach over other approaches.

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