INTERNATIONAL CONFERENCE ON ENGINEERING AND PRODUCT DESIGN EDUCATION
6 & 7 SEPTEMBER 2018, DYSON SCHOOL OF DESIGN ENGINEERING, IMPERIAL COLLEGE, LONDON, UNITED KINGDOM

HOW TO WITNESS DESIGN

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ABSTRACT
Design adds value for the benefit of the economy, people and the environment; however, reliable and comparable tools demonstrating design's contribution to the economy and its impact on return on investment are lacking. Also, entrepreneurs are willing to apply design to improve their products and services; yet, design's comparative advantages can neither be measured nor witnessed, except as sales profits. Furthermore, no evidence-based design identification system has been provided by design professionals or education to evaluate design's added value.
Thirty small- and medium-sized enterprises in the wood industry, producing for both the domestic market and exports from Estonia and Latvia, were questioned on how they witness design's added value in their respective companies. The questions were based on the analysis of theory and existing online design valuation tools. The wood industry was chosen because it is one of the region's traditional and most exported products. Export data indicates that design has not been properly applied. In addition, there is no confidence in design's added value in the wood industry. Consequently, it raises a question to design education: why are there no mastery and design performance indicators?
Enterprises state that design adds value; nevertheless, the understanding and application of design within the wood industry is weak. Enterprises are neither confident nor aware of design diversity and its impact. To address the lack of indicative tools in design as a method, strategy or system, an identification system of measuring design's value needs to be elaborated and tested.

Keywords: Wood industry, design identification system, design's added value, design education

1 INTRODUCTION

In the design world, it is assumed that design pays off. Several studies have found that companies that adopt a comprehensive approach to design make more money and generate more exports than companies that do not use design. The European Commission has acknowledged the vital role of design as a tool of innovation economics, where design adds value to the products, services and processes for the benefit of the economy and society [1]. However, reliable and comparable evidence-based tools demonstrating design's contribution to the economy and its impact in return on investment are lacking [2]. There is a correlation between the use of design and companies' economic performance and subsequent macroeconomic growth [3].
Professionals tend to say 'design adds value', and they spread the assumption that 'good design always creates good value' [4]. Yet, at the same time, no evidence-based tools or identification systems exist to prove this. Also, entrepreneurs are willing to apply design to improve their products and services, but the comparative advantages of design cannot be witnessed.
Existing design valuation methods can be divided into two categories: tools and methods for policy makers and sets of questions or templates for entrepreneurs. In this paper, available online tools and methods for enterprises are analysed. Academic research and tools for policy makers as theories or policy frameworks are not within the scope of this paper.
In this paper, design is perceived as an activity of people-centred innovation by which desirable and usable products and services are defined and delivered [5].

2 EXISTING DESIGN VALUATION METHODS FOR BUSINESSES

There are several online practice-based tools to use as methods for explaining the value of design to businesses. In the following, the advantages and disadvantages of each method are briefly analysed.

The *Design Maturity Matrix* as the Design Maturity Survey (DMS), developed by the Artefact group, identifies the level of design maturity within an organisation and aims to reflect how to expand design's impact on the business. The survey includes five steps with multiple questions:

- Empathy: design maturity of the organisation on understanding its customers;
- Mastery: design maturity of the quality of the organisation's execution of design thinking and crafting;
- Character: design maturity of the organisation to support design, design thinking and integration of professional designers;
- Performance: the market's response to the design output of the organisation; and
- Impact: design maturity of the organisation's actions around its cultural, social and environmental legacy through design.

The survey promises to provide insights into areas where the organisation excels, as well as those it needs to work on in order to make design a more integral part of the company [6].

An advantage of this particular survey is its diverse range of questions to demonstrate the impact of design, although the responses of the respondents are more subjective than objective. By knowing what the right answer to each question should be, or how design should be used for design excellence, the results of the survey lead towards the respondents' self-satisfaction rather than encouraging improvements in the company's products or services. In addition, the results of the survey are generalised and not formative, without explicit and practical advice. DMS does not provide a valuable understanding of how design adds value. The system does give insights into design's impact and value domains, but it is not an evidence-based design identification system capable of witnessing and assessing design's innovation capacity and diversity.

The *Design Maturity Matrix*, developed by the Design Management Institute (DMI) [7], aims to be a simple mapping tool to assess design maturity in any organisation. It also promises to be a diagnostic and a communication tool; however, it is subjective and does not provide valuable feedback on the use of design and its added value. The Design Maturity Matrix not an evidence-based design identification system capable of evaluating the impact of design and design's innovation capacity.

The *Design Value Map* developed by DMI aims to pinpoint the functional areas in which design adds value across four parameters [8]:

- revenue;
- customer experience;
- organisational learning; and
- process.

The map also proposes to answer how design delivers value in operations & processes, as well as management & support as financial, customer, process, capability and social aspects. However, it does not give an explicit answer and understanding of how design adds value. Hence, the Design Value Map is also not an evidence-based design identification system capable of measuring the impact of design and design's innovation capacity. Thus, the tool is more subjective than objective.

Design audit as a method examines companies' product development, innovations and visual identities. These domains are important to all organisations or enterprises, regardless of whether they are in manufacturing or the service sector. The purpose of design audit is to provide a workable tool to help assess design capability and to back up this assessment with a collection of additional tools that would help the business develop its capability [9]. In addition, design audit is a method to evaluate and understand the use of design and to assess design's innovation capacity in products, services and design management levels. It is not an evidence-based design identification system capable of measuring design's impact and design's innovation capacity. Design audits are usually performed by design professionals as a service, and it is not a method for enterprises to witness design's added value on their own.

To perform *benchmarking in design*, differentiating between products/processes and development issues are suggested:

- products as product aesthetics, novelty, function and integrity;
- processes as the number and quality of the concepts generated, the effectiveness with which stakeholders' needs are addressed, and 'fitness for purpose';
- product development as product price, reliability, and longevity; and

- process development as time to market, number of developments, number of last-minute changes, ease of manufacture or service delivery, and schedule and budget adherence consistency.

Development in the benchmarking of design refers to activities that bring a concept into a tangible form in the marketplace. Innovative performance and product development are more measurable in the later stages of the product-creation process than in the earlier stages. As comparisons among products are made by producers as well as consumers, the results are suitable for making good advertising copies [10].

- The profitability of products and services is an indicator of design and development effectiveness, although it is often overlooked. Non-financial outcomes of a design application may be as important as financial ones.

Product performance is characterised by product desirability, functionality and reliability, while process performance is based on consistency, timeliness and effectiveness [11].

The lack of design valuation tools is also identified in *design award sites*. Non-existent feasible design criteria highlight the problem that design is judged subjectively. A product's novelty, uniqueness, aesthetics or elegance as a solution to a particular problem or need is weak arguments for entrepreneurs to witness design's added value.

To assess product development performance and success, criteria such as product aesthetics, technical performance, price and value should be measured. For the product creation process, measures should include development lead time or time to market, and efficiency, i.e. the resources, including labour and materials. A criterion such as aesthetics may be balanced against others, such as the need to produce constantly and in volume. Finally, whether the product is making money or is a loss leader needs to be benchmarked as well [12].

Also, benchmarking is an evidence-based system capable of measuring design performance; however, the system does not evaluate design's innovation capacity. From this overview of open source design matrices, maps and systems, benchmarking in design is a system that gives valuable input of design performance to develop a design identification system.

3 ENTREPRENEURS WITNESS DESIGN

Thirty small- and medium-sized enterprises of the wood industry, producing for both the domestic market and exports from Estonia and Latvia, were questioned on how they witness design's added value in their respective companies. The wood industry is a very traditional industry and the greatest exporter of the Baltic countries' economies. For example, in 2016, raw wood was the most exported product in Latvia, followed in the third place by wood products, except furniture. The total export volume of wood products, except furniture, was 22% of the export share. Also, compared to 2016, the export of wooden furniture in 2017 had increased by 2.4%; still, the total wood industry export is still at a low added value. Statistics show that although the wood industry is one of the core industries, its added value is low. This indicates that design has not been properly applied. There is no confidence in the wood industry of design's added value.

Thirty entrepreneurs in the wood industry were asked to formulate how they witness design's added value in their products or services during a seminar–workshop, 'Design in the wood industry in Latvia and Estonia'. The respondents' answers were correlated with benchmarking in design but not with any other method as a tool analysed in this paper. None of the answers mentioned all aspects of benchmarking in design; rather, each entrepreneur nominated only one aspect of design diversity.

The entrepreneurs said that they witness design as a product's functionality and ergonomics, and technological and material solutions. Design might also be witnessed as a product's aesthetics, even as a golden ratio of the product, harmony. The nominated design performances correlate with product aesthetics, novelty, function and integrity of the benchmarking in design.

The entrepreneurs also said that they witness design by the frequency of product usability by the target audience, highlights, comparisons with similar products, sales turnover compared to similar products, and satisfaction with meeting clients' needs and fulfilling users' wishes. Design is also witnessed through the responses of clients/users, even something as simple as a smile on the client's face. These indicators correlate with process development and the profitability of products described as performance of the benchmarking in design.

The entrepreneurs said that design is also the brand of the company. How to witness design can be summarised in one sentence: 'Bad design does not work'. Nevertheless, no real indicators were

mentioned whereby entrepreneurs could witness added value from design in the wood industry, and its products and services.

4 HOW TO WITNESS DESIGN IN BUSINESS – MASTERY OF DESIGN EDUCATION

How to witness design in business and professionally is a mastery, and design performance is a result of design education. Good design is not only about excellence in the final product; it is the central part of the business process and how an organisation is run [13]. To witness and prove that design adds value, specific metrics have to be defined and agreed in a reliable, understandable and simple way. Design valuation is not explicit in business, in this case, the wood and furniture field. How design is valued and witnessed in design education, except subjectively as a product's novelty, uniqueness, aesthetics or elegance, or a solution to a particular problem or need, depends on the know-how of every school or involved academic. To witness the impact and promised added value of design in the early stages of a product, the service design process is the main problem faced by entrepreneurs in the application of design for the benefit of companies, the economy, the environment and society. Businesses and organisations need to understand that a sharp break with old habits, and designing new ways of behaving and addressing complex challenges and problems, demand courage, choices and intellect to look at the world anew [14].

Design metrics as a design identification system could be constructed to measure performance areas of usability, experience, value, responsibility, intellectual property and resilience, correlating with benchmarking in design as a tool of evaluating practice. Socio-technological changes should be addressed horizontally.

Usability includes task success, user satisfaction or experience, and errors, and they should be observable directly or indirectly and quantifiable. Usability reveals something about users' experiences and the effectiveness of the interactions between the users and the products or services. Usability metrics provide answers that are critical to the business. They are a key ingredient in calculating return of investment. Product and service functionality, technical performance, consistency, effectiveness and integrity should be included in the usability performance area.

Experience of product and service usage is an umbrella term of design valuation metrics. It forms frequent users, the good of society, and the growth of the business. An organisation starts with an attitude [15] that is formed by experience. Individual experience is formed and interpreted on the basis of our life experience, which has gone through social, cultural and historical filters. Our experience is also constructed by our perceptions [16]. Experience emerges from trying or testing something out, which is our physical interaction with a product/service. Experience is formed by our memory and how we selectively remember an interaction. Also, experiences are tied to the passage of time; designing from experience or experience design helps customers get more value from the products and services not just by improving usability, but by unlocking options and potential [17]. Experience metrics are close to interaction touch points as micro-events and could be tied to an aesthetic level, meaning and emotional experience [18]. Product/service experience should be measured as emotional attachment, behaviour, attitude, value and social/cultural background, including aesthetics or product/service reliability and product durability.

Value as expressions, such as 'added value through design', 'design adds value' or 'value by design', are used by professionals to stress the central role of design in business success, design thinking and innovation processes. Value is defined as cost divided by benefit – how much you pay for something and what you get in return [19]. A fair price depends on the product/service and proportionate price-performance ratio [20]. For companies, the one indicator of economic value is productivity. To determine design value as design revenue, market segments and competitors, both enterprises and products/services, are crucial [21]. According to a business dictionary, value from the customer's point of view is a product's value to him or her. It may have little or nothing to do with the product's market price, and depends on the product's ability to satisfy his or her needs or requirements. A person will remain a customer only as long as they perceive value. Users' thoughts, emotions and actions are created by tangible, intangible and aspirational delivered value.

Value in the economy is determined by gross domestic product – an indicator of economic growth – while economic growth is an indicator of increased consumption. Product price and profitability should be analysed in relation to experience, value and responsibility performance areas. Sustainable consumption is a metric that links usability, experience, value and responsibility.

Responsibility – sustainability and social responsibility as the future of the bio economy are key performance areas of a design identification system in order to deliver products and services for sustainable social well-being and a welfare society, as well as transformation towards a knowledge-intensive economy. Environmental and social impacts of products or services are measured by a Life Cycle Assessment. The product development process is measured as indicators related to people, their values or satisfaction in life. In 1996, the Bellagio Principles were developed as the 10 principles [22] of the sustainability process. Sustainability indicators are discussed in relation to the specific place, time, or quality of the system and goods (products, services). Corporate social responsibility is a crucial issue in the context of a sustainable bio economy and is defined as a business based on values that foster sustainable development, and the mutual influence of businesses, communities and educators to ensure that companies respect fundamental human rights and obligations [23]. The Life Cycle Assessment, ecological footprint and sustainable production, as well as the durability and longevity of products and services, and the efficiency of resources should be incorporated in the metric of the design identification system.

Intellectual property as design's innovation capacity, skills and knowledge building, education and competencies as well as product and service novelty are initial metrics to measure design's added value. Metrics of intellectual property will include attributes and elements of a design innovation system and design ecosystem.

Resilience is addressed as the ability to return to the original form or position, and to recover readily from depression or crisis by applying design methods and performance. As cross-sectorial performance, it should reflect contextual socio-economic, environmental and technological changes and challenges of every organisation, before designing products and services for frequent and volatile users, as well as the product and service development process. The performance area of resilience will demonstrate quick adaptive responses to extreme changes, and experience business and life as a series of challenges, bringing stability to a crisis and maintaining inner calm in the stressful situations of entrepreneurs and design leaders.

5 CONCLUSIONS

Enterprises state that design adds value; nevertheless, the understanding and application of design among companies in the wood industry are weak. Enterprises are neither confident nor aware of design's diversity and impact.

There is no clear tool to witness design's added value either in the early stage of product/service development or in the final stage. Available online practice-based tools and methods of design performance for enterprises do not provide clear and understandable, easily usable identification systems to prove that design add value to products and services. From this overview of open source design matrices, maps and systems, benchmarking in design is a system that gives valuable input of design performance to develop a design identification system.

To address the lack of indicative tools in design as a method, strategy or system, an identification system to measure design's value will be elaborated and tested in the near future as practice-based research.

ACKNOWLEDGEMENT

This paper "How to witness design" was supported by research "Identification system of design socio-economic impact towards transformation of knowledge intensive economy in Latvia" (1.1.1.2/VIAA/1/16/125) fellowship, granted by European Regional Development Fund under "On Implementation of Activity 1.1.1.2 "Post-doctoral Research Aid" of the Specific Aid Objective 1.1.1 "To increase the research and innovative capacity of scientific institutions of Latvia and the ability to attract external financing, investing in human resources and infrastructure" of the Operational Programme "Growth and Employment".

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