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I, Yafan Wang, hereby submit this original work as part of the requirements for the degree of Master of Design in Design.

It is entitled:

State of Service Design education:
Review of various service design graduate education programs through inductive analysis

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UNIVERSITY OF Cincinnati

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State of Service Design Education:

Review of Various Service Design Graduate Education Programs Through Inductive Analysis

A thesis submitted to the Graduate School

of the University of Cincinnati in partial fulfillment

of the requirements for the degree of

Master of Design

in the Myron E. Ullman Jr. School of Design

College of Design, Architecture, Art and Planning by

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ABSTRACT

Service design: the transition from a new discipline to an established field. Service design is a relatively new discipline that has emerged in recent years to improve the design and delivery of services to customers. The concept was first introduced in the early 1980s by Lynn Shostack, who defined it as "the activity of planning and organizing the people, infrastructure, communications, and physical components of a service to improve its quality and the interaction between the service provider and its customers." (G. Lynn Shostack, 1984, n.p.)

This paper reports on an empirical study investigating service design programs at leading universities and art colleges. The investigation is based on desk study and an inductive analysis method of examining the course content and pedagogical objectives of 15 art and design colleges that offer Master's degrees in service design, exploring the focus of service design programs offered by universities of different natures to develop talent in private, public, and third-party needs.

Keywords: service design, design education, future career development

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Once again, I would like to express my sincerest thanks to my parents and professors. Their support and guidance have been essential to my success, and I am forever indebted to them for their unwavering dedication to my academic and personal development.

Yafan

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CHAPTER 1. INTRODUCTION

As the service economy continues to evolve, there is a perceived need to shift from a business-centric approach to a consumer experience-centric approach (Prahalad & Ramaswamy, 2004, p.4). As a result, most companies are making a critical shift from product-centric to service-centric operations (Gruhl, Bailey, Spohrer, and Maglio, 2007; Spohrer & Maglio, 2010; Vargo & Lusch, 2011, n.p.). The growing demand in the field of service experience has intensified the importance of developing knowledge that helps in the analysis and design of service experiences.

Recognizing the impact and importance of service design, many schools have established service design programs to enable more professionals to enter the profession and continue its development. "The origin of service design in Europe can be traced back to the 1960s and 1970s. During this period, governments and companies in many European countries began to pay attention to the development of the service industry. They gradually realized the importance of service design in improving service quality and user experience. This period also saw the emergence of some pioneers of service design, such as service design firms and academics in Scandinavia (Andy, Lavrans, Ben, 2014, P.21)." In the United States, on the other hand, the development of service design was relatively late. It was not until the early 21st century that service design began to receive widespread attention (Clatworthy, 2014, p. 328)."

Service design now involves a broader knowledge base, user base, and higher technical content and will face significant challenges and opportunities (Frog Design, 2022). Service design is not just product or interface design. However, it needs to consider all aspects of R&D, design, production, and operation, providing users with more comfort, reliability, and practical problem-solving ability as the ultimate goal. The shift in business models (manufacturing to service transformation) of internationally renowned companies such as Microsoft, Apple, and Google has brought service design into real focus. More jobs mean more talent needs to be developed.

The researchers aimed to examine the existing service design degrees offered by universities and colleges. Firstly, by collecting and classifying the existing educational content, the educational orientation of different schools is understood. Secondly, the different educational purposes, as well as the talent pipeline, are analyzed through the educational orientations. Ultimately, the challenges and opportunities of service design education concerning the current needs of private, public, and third-sector organizations are discussed.

CHAPTER 2. BACKGROUND

2.1 Shortage of Service Design Talent

The U.S. Department of Commerce has released the latest data showing that for 2021, real GDP grew by 5.7%, the highest since 1984. In the 1950s and 1960s, the industrial structure of the United States began to change, giving rise to the phenomenon of "De-industrialization," in which the share of manufacturing in national production gradually declined, and the manufacturing industry was gradually diluted, with the service sector was taking the lead. The service industry took the leading position.

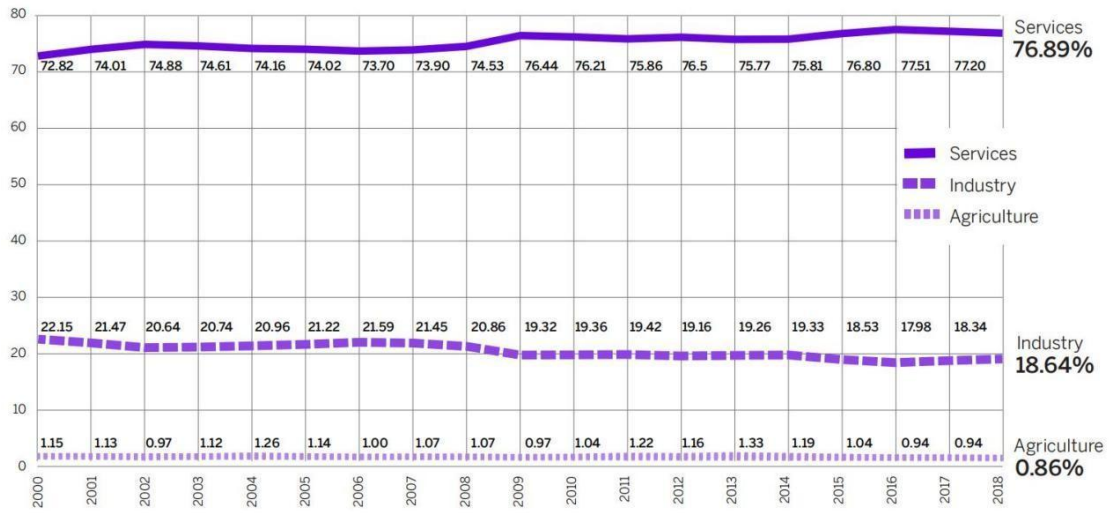


Figure 1. Distribution of gross domestic product (GDP) across Economic sectors in the united states from 2000 to 2018
Source: The state of service Design in the US. Published by Frog

What are services?

Scholars from finance, operations, management, engineering, marketing, etc., have been focusing on services. The first to define service was the American Marketing Association (1960); marketing describes services as activities, benefits, or satisfactions that are or are related to the sale of goods (Service Marketing, p. 271-291). This definition was limited in its view of service, a concept in which service was associated only with the sale of goods.

Reagan's definition (1963) was that "services represent intangible things that directly produce satisfaction (transportation, housing, etc.), or intangibles that produce satisfaction when purchased in conjunction with goods or other services (credit, delivery, etc.)." (Reagan, 1963, p. 282-287). For the first time, services are considered to be purely intangible assets. They can provide satisfaction to customers and can be sold as tangible products. Spohrer and Kwam proposed in 2009 that service is the critical concept that supports the value proposition of participants in an organizational network because it designates only (some of) the actions of participants that are external to other participants. "Service" should constitute a value opinion and be used as a governance mechanism to reduce uncertainty (Jing, Amir, 2015). This refers to more complex forms of collaboration or so-called value co-creation. Bastiat (1850/1979) argues that human capabilities, which he calls services, are the basis of all exchanges, even monetary exchanges of material goods. The service physical resources or goods and systems are provided as a solution to the customer's problem.

To conclude, a service is a behavioral activity or a series of behaviors or activities that create a link between the product, the user, and the service (product) provider, mainly applied to solve the problems encountered by the user and producing a sometimes visible effect., intangible product. It is the co-creation of value between the stakeholders involved.

"Service" is a complex word used in countless fields. The shift from an industrial economy to a service economy in the second half of the 20th century (Fuchs, 1968，p.28). This shift brought with the understanding and managing the application of services, which gave rise to specific disciplines (Fisk et al., 1993, pp. 61-103; Grönroos, 1994, pp. 4-20), such as service marketing and management. Marketing and management focus on the customer and improving users' lives. Marketers consider design to be only one stage of the sales process. In reality, however, modern accountants and researchers also see services as new intangible products that can be studied.

Product consumption is shifting from traditional corporate manufacturing to a user-centered service orientation. The rapidly accelerating change in social paradigms unavoidably poses a challenge to the education system and encourages the cultivation of new design competencies. New viewpoints are advocating for a stronger foundation in service design education that accounts for the novel elements of service design and the imperative for both universities and society to equip upcoming designers with fresh theoretical insights and behavioral direction.

Nevertheless, the only U.S. university that offers formal undergraduate and master's degrees is Savannah College of Art and Design (SCAD).

Most service designers in the U.S. still need formal degrees in service design or related certifications or licenses. According to a 2022 survey by Frog Design, service designers are often replaced by design strategists, user experience researchers, and customer experience (CX) consultants.

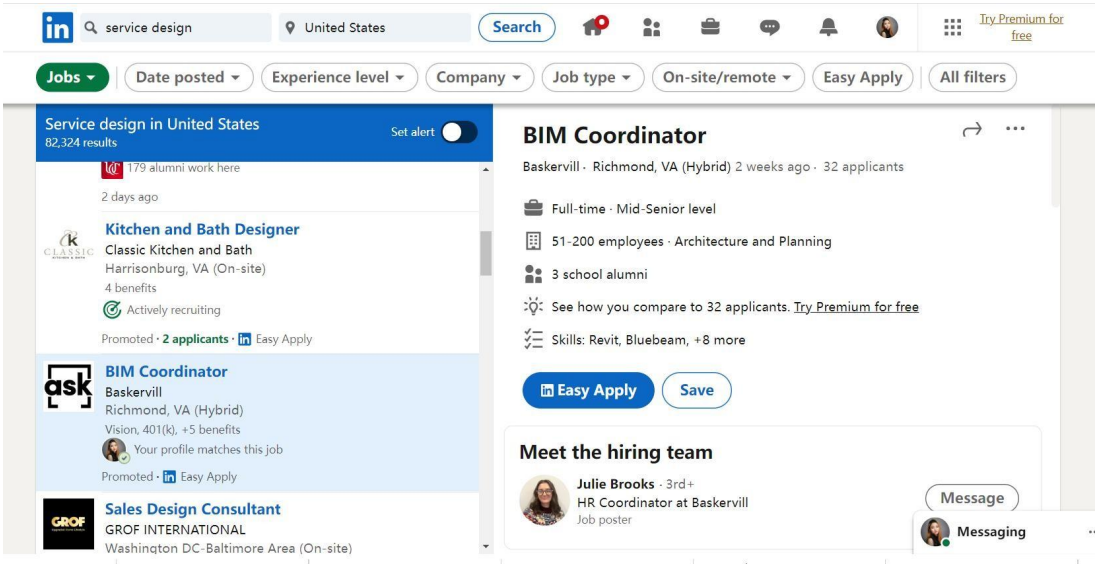


Figure 2. Results for "Service Design" LinkedIn search
Source: LinkedIn

The United States has relevant design positions in 30 states and needs mature design talents. However, most service design professionals in the U.S. still need to gain a degree in service design, and there is a shortage of systematically trained professionals to meet industrial demand (Frog Design, 2022, pp. 5-6).

2.2 What is going on with service design education

The first master's program in service design was launched in 1991 in Cologne, Germany. However, in 2011, Kimbell (2011) noted that many service designers were educated in product or interaction design disciplines or needed more education.

Kimbell also points out that "although the field of service design is small and fragmented, with no strong professional body or well-developed research literature, its existence is undeniable, through conferences and professional networks within the university (Service Design Network, n.p.). In the past decade, new master's programs in service design have been proposed, and the University of California at Berkeley is offering one called "Information and Service Design." Over the past decade, new master's programs have been developed by the Open University Berkeley Advocacy Design, a universal design service proposed for the design, dissemination, and advocacy program established in 2007 at UC Berkeley's School of Global Information. It provides an economic concept with a service-oriented philosophy and information-driven student skills, teaching and research focus on the skills and pedagogy required for an information-driven economy. This allows for practical experience in the design and practice of information services (Peter Fosick, 2007). Cologne has 460 students, including graduate and undergraduate students. Its design school focuses on service design and users. It is trying to expand its courses in design management, mainly through joint projects with German companies. In Wired

magazine, Roger Mandle, the dean of RISD, said RISD is also considering creating a new service design program (Wired magazine, August 2007).

Since the 1990s, some institutions have conducted exploratory research and teaching experiments. The 21st century has seen the development of internationally renowned research in a professional direction. In the past 30 years, the connotation, principles, methods, and tools of service design have been continuously developed and enriched. In the recent decade, policy, industry, research, education, and other aspects have carried out corresponding discussions and there has been rapid and systematic development. Many applications and practices feed back into the theoretical system. (Miaosen Gong, 2020). As part of design inquiry, service design is introduced as a people-oriented and creative approach to service innovation (Meroni & Sangiorgi, 2011). One of the early descriptions of service design defined it as "planning and shaping useful, usable, desirable, effective, and efficient service experiences" (Moriz, 2005, p.40). However, as society evolves, so does service design. It is now understood as a higher level of abstraction rather than a narrow description of some design activity. In other words, service design is increasingly seen as a "method" or "thinking" that can be transferred and applied to a variety of innovative practices (Stickdorn & Schneider, 2010, n.p.).

So, how can this "new approach" be applied in natural social settings? As an applied discipline, the design field proliferates, driven directly by industry needs. Industry drive is the most direct factor in professional development, with the most

notable emerging fields in the past being service design, interaction design, and experience design.

However, according to the research, service design as a professional discipline in the United States is far from mature and even downplayed due to the influence of other majors. Although services account for two-thirds of the product lifecycle, service design still needs to catch up to its European counterparts. For a country with 330 million people and countless services, the United States needs more professional service designers to participate in the production.

Early service designers often received education or training from other disciplines and then gradually entered the field of service design under the influence of social needs. Early researchers wanted to distinguish service design from different fields. Still, the results showed that many were at the intersection of service design and interaction design, rather than based on service design or interaction design concepts alone because the early large Some researchers have a background in interaction design. Some tools in service design are the same as those in interaction design, such as persona, blueprinting, and servicescapes, etc. According to the book, *This is service design thinking, Basic-Tools-Cases,* academic publications have changed since 2008, with researchers attempting to expand and integrate non-design fields such as fashion, branding, marketing, and engineering, challenging approaches from other subjects. This phenomenon is especially reflected in the setting of service design courses.

CHAPTER 3. DATA COLLECTION AND ANALYSIS

3.1 How many graduate degree programs in this world

From 2022 to 2023. This desk-based study was divided into two main phases to study the current state of service design graduate education. The first being the initial data collection phase, in which the authors mainly investigated three databases, Service Design Network (SDN), Google Scholar, and the UC library, by entering the keyword "service design".

After collecting data on existing programs,the relevant data were organized and summarized.

The second step analyzed the data more through inductive analysis. The main focus was on universities and colleges that offer orthodox service design master's degrees, excluding programs related to service management, IT services, and service (economics), and only discussing human-centered service design projects. Further comparisons and analyses are conducted by meticulously summarizing all their course content and program results.

Through Google and the Service Design Network (SDN), a leading non-profit service design professional organization founded in 2004, it is known that many universities around the world have begun offering graduate degree programs in this field. However, the number of master's degree programs dedicated to service design remains relatively limited.

Based on the resources discovered, as of 2023, approximately 30 to 40 universities worldwide offer master's degree programs in service design. In addition, many universities may offer service design courses or electives in other graduate degree programs in design, management, and engineering. Elective or individual courses were not analyzed in the study.

3.2 Why these 15 programs

- Europe, the UK, and the USA

  Approximately 30 to 40 universities worldwide offer master's degree programs in service design. Europe and North America offer a relatively large number of graduate programs in service design, so for this study, the Institute collected information on programs primarily in the United States, the United Kingdom, and Europe.

- Universities that offer Master's degrees in service design

  Undergraduate programs and graduate programs have different levels of learning and knowledge. Graduate programs require more advanced teaching methods and curricula to meet their needs. Master's degree programs must provide more in-depth and advanced service design concepts and strategies to help students deal with more complex issues and challenges in their future careers.

- Explicit "Service Design" title

  The selected programs include the entire term "Service Design" in its official title (e.g., "Master of Service Design Program"). Courses focusing on service management, IT services, and service (economics) are not discussed.

- Human-centered service design projects

  The author analyzed 15 different professional service design master's degrees (Figure 3-6). These represent institutions from three different types of higher education institutions: research universities , art & design colleges, and applied universities. They operate across the UK, Europe, and the United States. Of these 15 programs, six offer a two-year education and nine offer one year program.

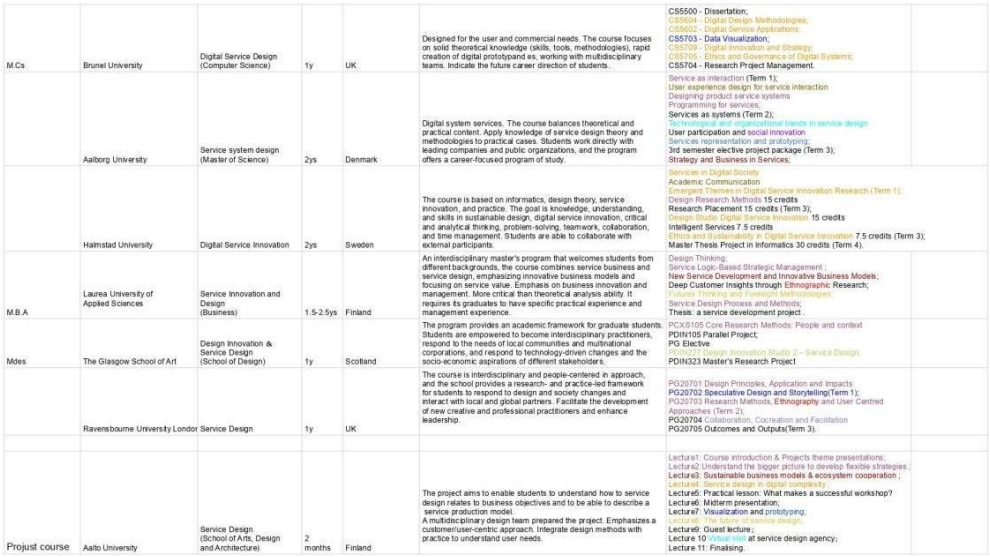
The 15 identified programs present a representative cross-section of service design graduate education. These programs are located in Europe (13, 4 of which are in the UK) and the United States (2).

DEGREE	NAME	PROGRAMME TITLE	YEARS	COUNTRY	PROGRAM DESCRIPTION	COURSE LIST	
M.A	Royal college of Art	Service Design (School of Design)	1y	UK	User-centered approach. Focusing on students with design and innovation backgrounds, the course builds on an academic foundation of design methods and principles, applying real problems and opportunities to real scenarios through collaborations with business, society and public sector organizations.	Service Design Foundation Methods and Materials (Term 1); Advanced Service Design Methods (Term 2); Elelive (Term 2); Grand Challenge (School-wide unit) (Term 2); AcrossRCA (College-wide unit) (Term 1/2); Independent Research Project (Term 3).	
	University of the arts London	Service Design (College of Communication)	1y	UK	User-centred approach. Open to students from a variety of backgrounds, the course is based on seminars and design projects, enabling students to work on real projects, collaborating with stakeholders and experts from multiple disciplines. Emphasis on production and design-based approaches, from team work to individual work.	User-Centred Project (40 credits) Ways of Working (20 credits) (Term 1); User-Centred Project (continued) Design Futures (20 credits); Collaborative Unit (20 credits) (Term 2); Design Enquiry (continued) Proposal Development (20 credits) Major Project (60 credits) (Term 3); Major Project (continued) (Term 4).	
	The Savannah College of Art and Design	Service design (School of Design)	45hs	USA		SERV 700 Service Design: A Systemic Perspective IDUS 711 Methods of Contextual Research DMGT 720 Design Innovation Development and Marketing Strategies SERV 727 Visualizing Services: Storyboards, Maps, and Models SERV 732 Service Design Prototyping: Testing Service Solutions SERV 735 Service Design Metrics: Evaluating Results SERV 737 Systems Innovation for Service Evolution SERV 748 Service Design M.A. Final Project Select one of these three options: SERV 779 Graduate Internship 500-level SCADpro elective 500- to 700-level elective	
	Domus Academy	Service Design/ Double award master's	1y/ 14months	Italy	user-centred approach. The aim is to develop storytelling and prototyping skills, problem solving and business design approaches to help students develop innovative service ideas. Students are able to engage with professionals, companies and public sector organizations. Students are able to follow up all project steps, from research to testing and implementation.	**THEORETICAL COURSE:** Storytelling & Visual narrative; Design thinking; Business for design; Professional accelerator activities. **WORKSHOP:** Experience design; Service design; Strategic brand management; Entrepreneurship through design; Identity design; Envisioning; Tangible strategy.	
	Politecnico di Milano	Service Design (School of Design)	1y	Italy	User-centred approach. Work experience is required, and the program is designed to develop professionals who can build and manage new physical and virtual service experiences and modes of interaction. Combining methodology and practice, students are encouraged to start their businesses.	Service Design Basics &Tools; Emerging Service Culture; Service Business and Management; Future Studies: Systems Thinking and Sustainable Design; Human Centered Innovation and Participatory Futures; Emerging Technologies & Digital Services; Service Design Workshops; Stage Progetto Professionalizzante; choose one of the two	

Figure 3.1 Service design Program 1-5
Source: University official website

	Lucerne University of applied Sciences and Arts	Service Design (School of Art and Design)	20 short 2 day workshops	Switzerland	An interdisciplinary master's program that welcomes students from different backgrounds, the course combines service business and service design, emphasizing innovative business models and focusing on service value. Emphasis on business innovation and management. More critical than theoretical analysis ability. It requires its graduates to have specific practical experience and management experience.	**Basics of research** Human centered experience design in complex eccosystem Storytelling for Eco Social Impact Data literacy for designer 2; **Futures** Design & Ethics 2. Systematic design – design for systems-change **Design** Drawing practice 2, Typography Print & Screen Visual storytelling 2, Data visualisation 2 Good design is inclusive; **Services** Designing online services for the public administration Fundamentals of business 2 Customer journey blueprints Design endings; **Interactions** User experience 2 SuperSight: Augmented reality Tangible experience design 2 Ubiquitous C & IoT 2 Future Un:perfect Lucern **Performance, Display, Presentation, Exhibition** Szenography in presentations.	
	BAU, Centro Universitario de Artes y Diseño de Barcelona	Service system design	1y	Spain	User-centered experiences, By researching service design tools, understanding the user journey, researching branding and user experience, and ultimately designing the service. Students go through all stages of service. Follow the professional world.	Module 1 - Design as a strategic element Module 2 - Service logic Module 3 - Interaction Module 4 - Disruptive innovation and ideation Module 5 - Branding and customer experience (CX) Module 6 - Design research Module 7 - Prototyping Module 8 - Organisational transformation Module 9 - Master's Degree Final Project	
	The University of Tartu	Wellness and Spa Service design and management	2ys	Estonia	Inter-disciplinary programs, Service-oriented, studies include business internships (management), field trips, discussions with professors from different backgrounds, and a combination of theory and practice. Students are encouraged to start their own businessess as well as pursue a career in management.	Society and Wellness; Individuals and Wellness; Tourism and Wellness; Business and Wellness I/II; Optional COURSES; Master's Thesis or Master's Exam.	
M.F.A	The Savannah College of Art and Design	Service Design	95-115 hours	USA	User-centered experiences, SCAD provides graduate students with a well-established and solid theoretical foundation and skills to work with design experts and educators with service design specialists. The program welcomes students from various disciplines and provides an orientation for students about to enter a career path in the service design discipline.	SERV700 - Service Design: A Systemic Perspective; ANTH701 - Global Cultural Theory; UXDG701 - Theory of Interaction Design; Select one of these three options: (Ideation Models and Process; Visualization and Concept Storyboarding; Innovation in Sustainable Branding; Financial Reporting and Analysis; Mixed Methods Research: Analysis to Synthesis); Select one of these four options:(Advanced Motion Media Design Techniques; Information Architecture for Designers; Typographic Voice and Visual Narrative; Sustainable Practices in Design) Select one of these two options: (Contemporary Media Production Techniques; Calculated Risk: Quantitative Insights for Business Innovation); SERV727 - Visualizing Services: Storyboards, Maps, and Models; SERV732 - Service Design Prototyping: Testing Service Solutions; SERV745 - Service Design M.F.A. Thesis I: Research and Design; SERV747 - Systemic Innovation for Service Evolution; SERV751 - Communicating Value: Marketing Service Experiences; SERV762 - Service Design Implementation: Insight to Action; SERV779 - Graduate Internship; SERV790 - Service Design M.F.A. Thesis II: Validation and Communication; Select two of these three options:3 eletives.	

Figure 3.2 Service design Program 6-9
Source: University official website



M.Cs	Brunel University	Digital Service Design (Computer Science)	1y	UK	Designed for the user and commercial needs. The course focuses on solid theoretical knowledge (skills, tools, methodologies), rapid creation of digital prototypand es, working with multidisciplinary teams. Indicate the future career direction of students.	CS5500 - Dissertation; CS5604 - Digital Design Methodologies; CS5622 - Digital Service Applications; CS5703 - Data Visualization; CS5709 - Digital Innovation and Strategy; CS5705 - Ethics and Governance of Digital Systems; CS5704 - Research Project Management.
	Aalborg University	Service system design (Master of Science)	2ys	Denmark	Digital system services. The course balances theoretical and practical content. Apply knowledge of service design theory and methodologies to practical cases. Students work directly with leading companies and public organizations, and the program offers a career-focused program of study.	Service as interaction (Term 1); User experience design for service interaction Designing product service systems Programming for services; Services as systems (Term 2); Technological and organizational trends in service design User participation and social innovation Services representation and prototyping; 3rd semester elective project package (Term 3); Strategy and Business in Services;
	Halmstad University	Digital Service Innovation	2ys	Sweden	The course is based on informatics, design theory, service innovation, and practice. The goal is knowledge, understanding, and skills in sustainable design, digital service innovation, critical and analytical thinking, problem-solving, teamwork, collaboration, and time management. Students are able to collaborate with external participants.	Services in Digital Society Academic Communication Emergent Themes in Digital Service innovation Research (Term 1); Design Research Methods 15 credits Research Placement 15 credits (Term 3); Design Studio Digital Service Innovation 15 credits Intelligent Services 7.5 credits Ethics and Sustainability in Digital Service Innovation 7.5 credits (Term 3); Master Thesis Project in Informatics 30 credits (Term 4).
M.B.A	Laurea University of Applied Sciences	Service Innovation and Design (Business)	1.5-2.5ys	Finland	An interdisciplinary master's program that welcomes students from different backgrounds, the course combines service business and service design, emphasizing innovative business models and focusing on service value. Emphasis on business innovation and management. More critical than theoretical analysis ability. It requires its graduates to have specific practical experience and management experience.	Design Thinking; Service Logic-Based Strategic Management ; New Service Development and Innovative Business Models; Deep Customer Insights through Ethnographic Research; Futures Thinking and Foresight Methodologies; Service Design Process and Methods; Thesis: a service development project .
Mdes	The Glasgow School of Art	Design Innovation & Service Design (School of Design)	1y	Scotland	The program provides an academic framework for graduate students. Students are empowered to become interdisciplinary practitioners, respond to the needs of local communities and multinational corporations, and respond to technology-driven changes and the socio-economic aspirations of different stakeholders.	PCXS105 Core Research Methods: People and context PDIN105 Parallel Project; PG Elective PDIN323 Master's Research Studio 2 – Service Design; PDIN323 Master's Research Project
	Ravensbourne University Londor	Service Design	1y	UK	The course is interdisciplinary and people-centered in approach, and the school provides a research- and practice-led framework for students to respond to design and society changes and interact with local and global partners. Facilitate the development of new creative and professional practitioners and enhance leadership.	PG20701 Design Principles, Application and Impacts; PG20702 Speculative Design and Storytelling(Term 1); PG20703 Research Methods, Ethnography and User Centred Approaches (Term 2); PG20704 Collaboration, Cocreation and Facilitation PG20705 Outcomes and Outputs(Term 3).
Projust course	Aalto University	Service Design (School of Arts, Design and Architecture)	2 months	Finland	The project aims to enable students to understand how to service design relates to business objectives and to be able to describe a service production model. A multidisciplinary design team prepared the project. Emphasizes a customer/user-centric approach. Integrate design methods with practice to understand user needs.	Lecture1: Course introduction & Projects theme presentations; Lecture2:Understand the bigger picture to develop flexible strategies ; Lecture3: Sustainable business models & ecosystem cooperation ; Lecture4: Service design in digital complexity ; Lecture5: Practical lesson: What makes a successful workshop? Lecture6: Midterm presentation;; Lecture7: Visualization and prototyping; Lecture8: The ethics of service design; Lecture9: Guest lecture;; Lecture 10 Virtual visit at service design agency; Lecture 11: Finalising.

Figure 3.3 Service design Program 10-15
Source: University official website

The titles of master's degrees vary, as do the departments offering them, from a Master of Design (M.Des.) to a Master of Arts (MA), a Master of Fine Arts (MFA), and a Master of Science (M.Sc. .) And a Master of Business Administration (MBA). Course content and format depend primarily on the type of institution offering the education rather than other factors (for example, the country in which the course is shown). Some articles have reviewed the initial review of current service design in higher education programs. Still, there is a gap in analysis of the course content and the barriers between the course offerings and practical applications.

3.3 Course Classification

The 15 selected programs were classified by the three different higher education institutions offering them: art & design colleges, research universities, and applied universities. Depending on the nature of the university, the content of the courses they offer also differs. According to the figure below (Figure 4), courses offered by art &

colleges are coded organed, courses offered by research universities are coded green, and courses offered by applied universities are coded blue.

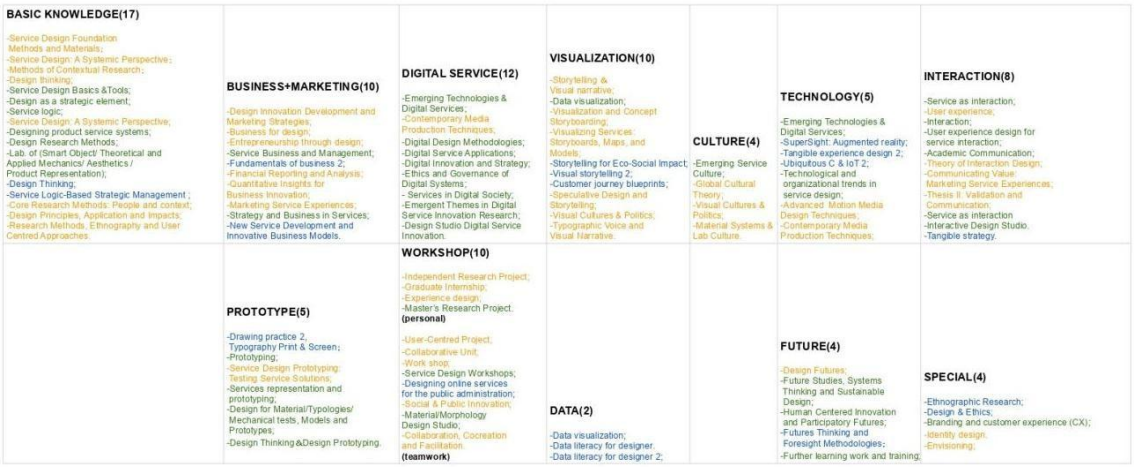


Figure 4. The figures above are service design courses that are divided into 12 categories.
Source: University official website

All courses can be broadly classified into 12 categories, namely: Service Design Fundamentals and Methods, Business and Marketing, Digital Services, Information Visualization, Culture, Technology, Interaction, Prototype, Workshop, Data, Future Development, and more specific or "Special" courses, such as courses offered by only one of the universities that are not available at other universities.

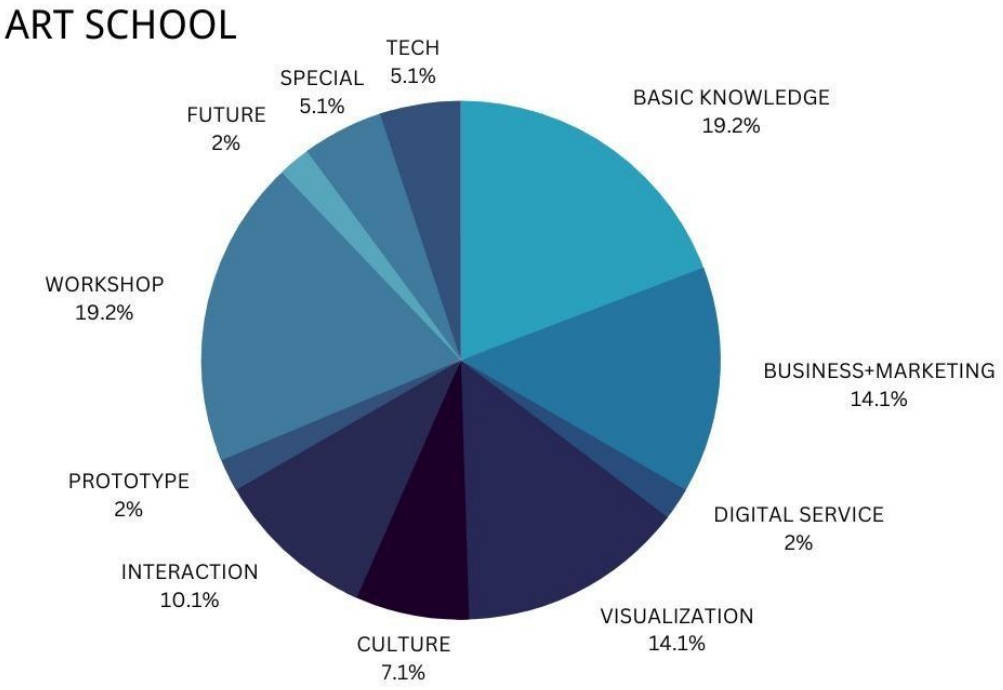


Figure 5.1 Course distribution of art colleges

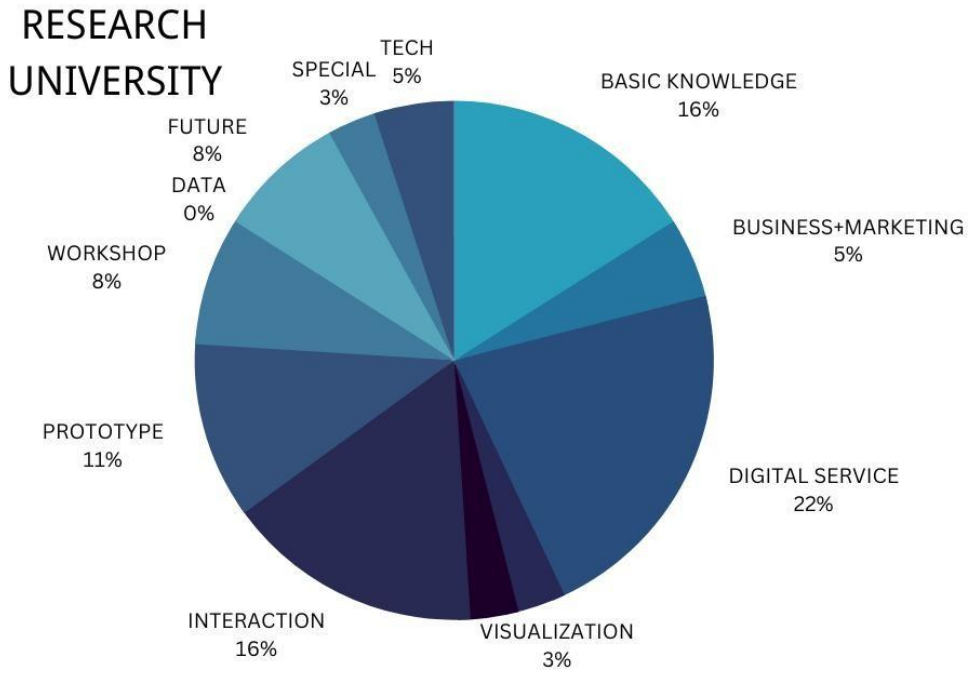


Figure 5.2 Course distribution of Research University

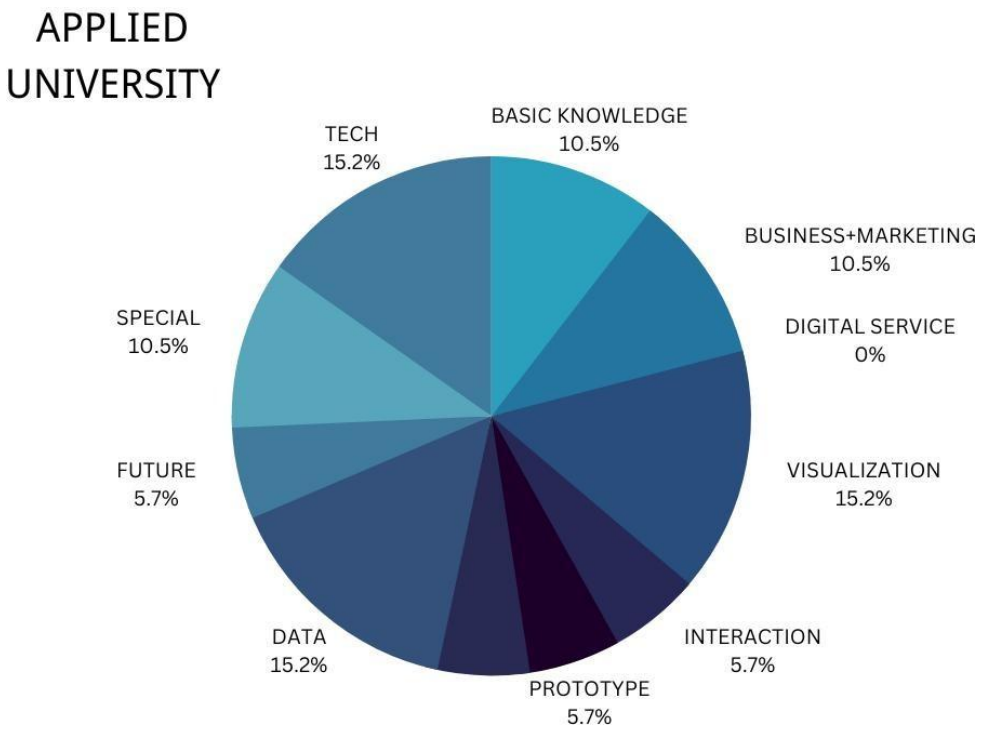


Figure 5.3 Course distribution of art colleges

CHAPTER 4. RESULT

The different types of design education institutions reflect design education's diversity and different pedagogical focus. Most independent design schools are private schools focused on art and design, focusing on practice, skills, and creativity, providing students with more practical design education. On the other hand, design departments in research universities focus more on theory, research, and evidence-based principles and the academic work and accumulation of knowledge by students and faculty, but applied universities focus on the application of technology based on real-world situations.

4.1 Course Analysis: Art and Design Colleges

The focus of teaching at independent art & design colleges is often hands-on, with faculty and student work presented in exhibitions, posters, displays, and tests, and competition awards being a vital evaluation criterion. In their practice, students are urged to explore, experiment, and innovate, thus honing their exceptional design skills and fostering their creative thinking abilities.

The graph (Figure 5.1) shows that service design programs in art schools offer 8.9% more business and marketing courses than research institutions. Of course, the reasons for the programs may vary by individual programs and institutions. From the last decade of the 20th century to the beginning of this century, the old capitalist

countries developed creative industries as a new industrial outlet and model in theface of the degradation of manufacturing. They have abundant resources and advantages in education, culture and science and technology. The universities and research institutions in these countries usually have strong scientific research capability and talent cultivation ability, which can cultivate talents with innovative spirit and creative ability. In addition, the cultural atmosphere of these countries is more open and tolerant, encouraging and supporting innovation and creativity. In this process, the national strategy and cultural orientation play a crucial role, such as the "Design Council" supported by the British government, which provides strong support for the development of creative industries. For example, the Design Council, supported by the British government, has a role in promoting creative industries that cannot be matched by NGOs.

For example, Clive Grinyer, the head of the RCA, who was a leading designer of user experience design at Samsung and Barclays Bank, has brought business collaboration opportunities to RCA students. At the same time the RCA offers interdisciplinary collaboration with Imperial College's MBA program, and UAL provides students with targeted partners in its collaboration units, offering them real-life projects that can be implemented in social organizations. The partners provide students with valid information and if a topic is acceptable, there will be a plan for implementation. Students have the opportunity to present at the headquarters and receive a significant investment fund, which motivates students and helps them practice early on to make designs that are not detached from society. The figure

shows that Art School mainly teaches service design basics, workshops, information visualization, and business.

Art schools that teach service design fundamentals, workshops, information visualization, and business may focus on design principles and techniques for creating practical and aesthetically pleasing designs for various services, as well as using visual aids to communicate information and ideas. They may also cover topics related to business and entrepreneurship, such as marketing and project management, to help students understand how to bring their designs to market and run a successful design business. The curriculum is set up to emphasize a production and design-based approach throughout the curriculum, using research and co-design to collaborate on projects with strategies that evolve from initial teamwork to developing more individual efforts by the end. Art schools focus on social responsibility, corporate and environmental issues that students are required to address after graduation, resulting in a wide range of project topics, including business, geography, healthcare, health, gaming, and more. Information visualization courses help students to arrange known data more clearly. Students learn primarily through lectures, hands-on workshops, tutorials, expert meetings, presentations and advocacy, industry talks, etc. Seminars play a critical role in service design because they provide a platform for students and faculty to interact and collaborate to co-create and experiment with design solutions. Through workshop pedagogy, students actively participate in the design process and can learn through hands-on experience (University of Art London, 2022, 9-10).

The contextualized and collaborative nature of the workshop encourages students to think creatively and critically, which helps develop their design thinking skills. Moreover, the workshop methodology that emphasizes teamwork fosters essential skills in service design, such as collaboration and cooperation. The combination of hands-on experience and collaboration provides students with a unique opportunity to learn design thinking principles and apply them to real-world problems. In summary, workshops are an essential tool for service design education because they provide a supportive, practical, and engaging learning environment that promotes the development of design thinking skills and co-creating meaningful solutions. Due to the changing nature of service-based industries, information delivery has changed from connecting information, knowledge, and people through closed ecosystems and existing media systems to now being a network of expertise in user-centered communities.

Taking RCA as an example, after surveying the employment situation of 30 alumni, it can be seen that the proportion of students working in private sector organizations is the highest, most of which are large companies and multinational companies.

4.2 Course Analysis: Research University

In contrast, design education at research universities is more theory and research-oriented, emphasizing evidence-based principles and the quality of academic work. Faculty and student research is published in academic journals and conferences, focusing on in-depth inquiry and contributions to the design field. Students are also encouraged to conduct research work that delves into the theory and practice of the design field and applies it to real-world design projects.

Graduate service design degrees offered by research universities focus on service design fundamentals, prototyping, and the basics of digital services. They may aim to prepare students to become experts in designing, developing, and implementing innovative digital services. The program is designed to provide students with a solid foundation in service design theory and methodology and practical experience in creating prototypes and digital services.

New digital tools are successfully integrated into the service delivery environment and often have the best impact when new service configurations emerge. The program's program may focus on applying design thinking and a human-centered approach to create digital services that meet user needs and expectations. Students will learn how to use various design tools and methods to research, conceptualize, and iterate on service designs and how to apply digital technologies to bring their creations to life.

The program may also include the following:

· Courses and projects that emphasize the importance of user research.

· Testing and validation in the design process.

· The ethical and social implications of digital services.

Digital design in service design refers to using digital technologies, tools, and platforms to create, implement and manage services. It involves the application of design principles and methods to create digital experiences that are user-centered, accessible, and effective in meeting customer needs and expectations.

Digital design in service design covers many topics, including user experience design, interaction design, visualization, and technology development. It involves a collaborative and interdisciplinary approach involving designers, developers, and stakeholders to create digital services that are powerful, aesthetically pleasing, and meet the needs of users. Its main goal is to enable students to develop digital services that provide value to users, enhance the overall user experience, and contribute to the organization's success. This requires a deep understanding of user needs and behaviors and the technologies and platforms that support digital services. The focus is on designing digital services that are easy to use, accessible, and meet the needs of a diverse user base. Prototyping using the platform helps students explore new ideas and identify opportunities and solutions by assessing risks and developing ways to reduce stakeholder uncertainty. Students will participate in service design experiments and field trials to gain insight into stakeholder needs and problems and develop innovative solutions. The program's ultimate goal is to develop students with a combination of "technology tools + stakeholders + service activities" who learn how

to use digital technologies to create prototypes, test and validate their designs, and bring them to life.

As can be seen from the figure (Figure 5.2), the biggest difference between research universities and art & design colleges is in the education of workshops and data services.

In the case of POLI.design - Politecnico di Milano, the research university believes that digital services play an importance role in everyday life and that the transformation of the industry has led to a society that relies on a large amount of data to support services and make them more meaningful (Prendiville, 2017), with data being a central component of the service concept. In contrast to the service process design workshops offered by art schools, Aalborg University in Copenhagen offers open data workshops to MSc students in service system design, allowing them to learn in-depth how to deal with data issues encountered in specific design problems, including data analysis, data visualization, and being able to interpret and summarize data centrally through programming.

4.3 Course Analysis: Applied Universities

The Graduate Program in Service Design at the University of Applied Design focuses on developing students' expertise and skills in service design, equipping them to design high-quality services. The following are some of the main focuses of the program.

- User research: students need to learn how to gain insight into user needs and behaviors and acquire and analyze data through different research methods and techniques to design service experiences and solve problems.
- Service design methods and tools: Students must learn different techniques and tools, including service design blueprints, persona portraits, customer journey maps, service prototypes, and more. These methods and tools can help students better understand and design service processes, interactions, and environments.
- User Interface Design: Students need to learn to design user interfaces, including mobile applications, websites, interactive screens, and more. These designs must consider user needs, user experience, feedback, usability, and ease of use.
- Data Analysis and Visualization: Students learn to analyze and visualize data to understand user behavior, identify trends, and discover opportunities. Students need to master the tools and techniques of data analysis, such as data mining, visualization, and statistical analysis.
- Interdisciplinary Collaboration: Service design requires collaboration across multiple disciplines, including design, engineering, business, and social sciences. Students need to learn to collaborate with other professionals to solve complex problems such as service innovation, service design strategies, and service evaluation. They use ethnography to define stakeholder problems rather than sitting in a studio and just "thinking."

According to the official website of Laurea University, the employment rate of graduates from the university's graduate program in service design is 98%. More than

50% of the graduates choose to work in service design, with the majority working in startups, innovation companies, and digital agencies. In addition, some graduates work in large companies in technical fields. Examples include financial institutions, consulting firms, telecommunication companies, and manufacturing companies. These companies often have their teams or departments in service design and user experience working to improve their products and services.

CHAPTER 5. DISCUSSION

The interdisciplinary nature of service design is reflected not only in the challenges of educational approaches but also in the challenges of practice. Service design requires the collaboration of professionals from different fields, such as designers, researchers, engineers, marketers, managers, etc., who may come from different organizational, sectoral, national, and cultural backgrounds. How to coordinate these people with different backgrounds and skills to achieve effective collaboration and communication becomes an important challenge in service design practice.

In addition, service design also requires methods and tools that are customized for specific industries, domains and user groups. For example, service design in healthcare, tourism, finance, etc. requires customized methods and tools for specific user needs and industry rules, and whether society wants professionals in the relevant fields. Therefore, flexible methodological choices and adaptations to specific application scenarios are needed in service design practice, which requires this requires continuous exploration and experimentation in educational approaches and practices to find the best interdisciplinary collaboration models and methodologies.

An equally important question is whether service design education should focus more on the business and management aspects of services. According to the course analysis, we find that all three types of universities offer a sizable percentage of business courses. This is especially true as large organizations, including

governments become increasingly complex, with their production and distribution pipelines dispersed across different geographic regions and markets. Service design education should cover the business and management aspects of services to help students better understand how service design relates to areas such as business strategy, marketing, financial management, and organizational management. This can help students better address real-world service design challenges, meet organizational and market needs, and provide students with broader career development opportunities.

Graduate students can work in the private, public, or third-party sector in service design, depending on their interests, professional background, and experience.

Public sector is well understood., service designers typically work for government agencies or nonprofit organizations that provide service design solutions to the public. They may work for various service providers in the public sector, including healthcare organizations, educational institutions, public transportation departments, etc. A service designer's primary goal in the public sector is to improve the efficiency, fairness, and accessibility of public services.

Service designers in the private sector typically work for design firms or consulting companies to provide service design solutions for their clients. They may work for various clients, including retailers, restaurants, financial services institutions, technology companies, etc. The main goal of private sector service designers is to help clients improve business efficiency, user experience, and brand value (Løvlie &

Reason, 2018, n.p.). For example, car manufacturer Volkswagen works with service designers to use a design thinking approach to enhance brand value and customer satisfaction by improving the user experience of vehicles, improving the quality of after-sales service, etc.; food retailer Sainsbury's has an online shopping platform where service designers use user research, collaborative workshops, and iterative design to improve customer experience and increase website usage. Service designers in the third-party sector often work in design firms, consultancies, independent designers, startups, etc. Service designers are often required to work with clients to build service design processes and provide service design solutions for various clients. They may be involved in different areas of service design, including the private sector, public sector, social enterprises, etc.

The analysis provided in this paper results from an analysis of multiple service design graduate programs around the world. Future development of service design education may also be influenced by various factors, such as policy changes, economic situation, technological advancement, social needs, and so on. Therefore, readers must consider multiple factors and make their own judgments and choices.

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