Innovation in Innovation

The future of innovation and product/service design

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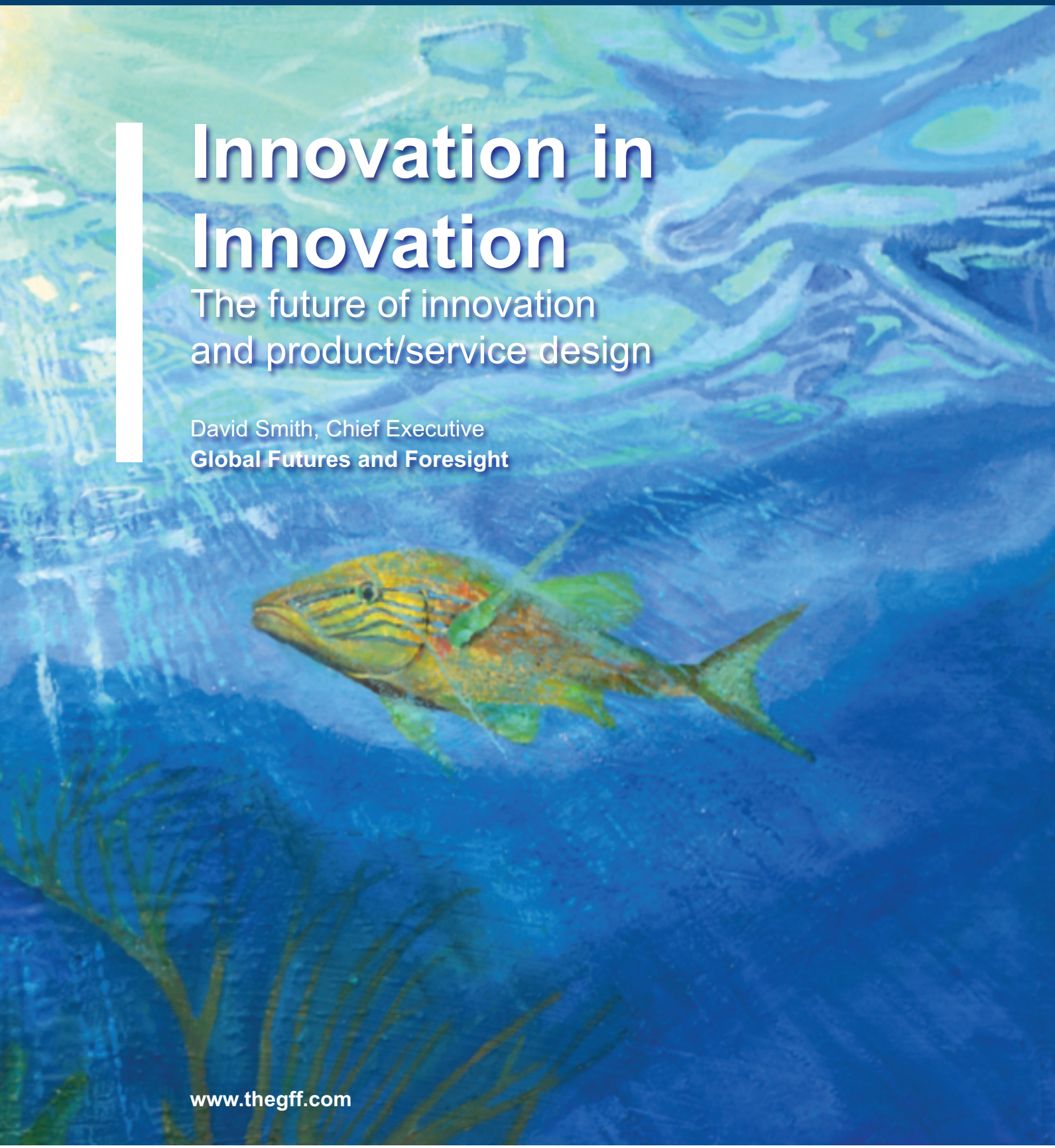

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The Financial Services Forum

Global Futures & Foresight

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"A lot of times, people don't know what they want until you show it to them."

Steve Jobs, Co-founder and past President, Apple Corporation

The state of innovation and product/service design

Across an expanding range of industries, disruption is becoming the new normal. Some 73 percent of companies globally believe they are already exposed to digital disruption[1], whilst 89 percent anticipate that their industries will be disrupted by digital trends to a great or moderate extent[2]. Against this, only 44 percent say their organisations are adequately prepared for such disruption.

The disruptive potential, is, in part, related to the ability of a business to make the most of digital technology in their efforts to provide a better customer experience. Many of the companies leading today's technology-driven transformations across industries are building their proposition on business platforms. This shift is still in its' early phases, although it is already becoming clear that traditional business models will become increasingly uncompetitive over time[3].

We are also witnessing a shift in the traditional 'innovation' model – in so far as any single model could be said to have existed. This is to be welcomed, since various studies show a failure rate for innovation of between 40 and 90 percent[4]. In fact, half of all businesses admit they are only 'marginally effective,' at converting R&D spending into actual products[5].

Not only is product centric innovation generally ineffective, it ignores two important issues driving change – the rising servicisation of products and the primacy of the consumer experience.

The first trend is reflected in the forecast of average allocation of R&D budgets to product offerings. From 46 percent in 2010, the figure is expected to decline to 37 percent by 2020[6]. The issue of consumer experience is also intertwined with the relative success of innovation since numerous studies reveal innovation processes involving customers, especially lead users, to be more likely to succeed[7].

Key questions and takeaways

- The nature of innovation is changing in a commoditised world; design thinking can help provide value, points of differentiation and catalyse needed organisational change.
- Do you know the needs, behaviours and problems of your target groups? What kind of value do you provide them?
- Do your target segments' needs, your value proposition, and your overall business model align?

The role of platforms

Digital platforms are becoming the tools of choice for building next-generation products and services around consumer experience. They are also key in scaling entire ecosystems in the digital and physical worlds.

Such platforms will be transformational for companies and industries, owing to the ecosystem they create. 81 percent believe that in the future, industry boundaries will dramatically blur as platforms reshape industries into interconnected ecosystems. Such blurring will necessitate the design of truly customer-centric products and services, as well as a new organisational approach.[8]

In a blurred business environment, design can be the factor that helps organisations stand out.

Platforms already form a central part of many organisations' innovation strategy. Some 50 percent of executives' highlight platforms' importance[9] in innovation, whilst 82 percent cite them as 'the glue that brings organisations together in the digital economy[10].' In this sense, platforms can strengthen both internal and external structures; for example over nine in ten R&D professionals suggest that smart products will require them to expand their partner ecosystem[11].

The platform economy will develop new wrinkles, opportunities and potential as the Internet of Things (IoT) gathers pace. The top 15 public 'platform' companies already represent $2.6 trillion in market capitalisation globally[12]. This will inevitably rise as '…companies are starting to build proprietary platforms and driving third parties to engage in co-innovation initiatives around R&D or customer engagement[13]. '

The wider process of digital transformation is also a catalyst for innovation. A Cognisant study reveals higher rates of innovation to be the biggest benefit of enhancing digital capabilities[14]. One important route for capitalising on these capabilities is through the servicisation of products. GE has already embarked on a vision to become a 'top 10' software company by 2020 using the IoT and machine learning to provide value and income streams beyond that generated by its' stand-alone machines[15]. The digital shift is reflected across many manufacturers; by 2018, 40 percent of the top 100 discrete manufacturers are forecast to provide product-as-a-service platforms[16]. The emphasis on servicisation is redrawing the landscape of traditional products and services. BBVA, the Spanish bank, has also declared that in the future it will be a software company, whilst Honeywell CEO Dave Coty has publicly stated that he wants his company to become '…the Apple of the industrial sector.[17]

Some of the most well-known platforms are the most disruptive – such as Uber or Airbnb. The latter is calculated by HVS to cost hotel groups approximately $450 million each year in direct revenues[18] and possesses a bigger room inventory than the biggest three global hotel chains[19]. Not all platform businesses are start-ups however. In January 2012, Nike began the diversification of its business model with a hybrid servicisation strategy. It brought out a wearable technology device, the FuelBand, to track user fitness activities,

including steps walked and calories burned. It has also developed apps, that could usher in a new form of growth akin to Apple's platform business model[20].

Another prominent platform – Alibaba - straddles the B2B –B2C divide – operating in both but with an increasingly blurred distinction. Several platform offerings are aimed at both simultaneously. Alipay Everywhere resembles a mash-up of other prominent platforms such as TaskRabbit, Uber, and Paypal combined into one. 'Users who tap the feature inside Alipay's mobile app will see a map filled with location pins, each representing a person offering a specific service. Users can filter service offers into categories like "personal training" and "repairs," but anyone offering any service will appear as long as he or she is within the range of the prospective buyer[21].'

Pure B2B platforms are also appearing that combine new forms of value with well-designed and easy to navigate interfaces. Seattle-based Convoy, for example, connects local truck drivers to area shippers to fulfill FTL and LTL (Full Truckload and Less than full Truckload) requests. The platform features a proprietary algorithm, whilst the app prices the proposed shipment and offers it to the carriers that are best suited to handle the load. Deloitte notes that '… Convoy may charge less than a freight broker to facilitate the transaction, and it is designed to offer a more streamlined service than a call-and-quote broker[22].'

However, for many organisations the gap between their current capabilities and the promises of platform-led innovation are both substantial and internally located. Insufficient time and capital are usually cited as barriers, but both the internal organisation and the user experience are of at least equal import, if not more. A new design paradigm will be a prerequisite for organisations looking to build innovation capabilities – both from an organisational standpoint and in terms of product and/or service.

Key questions and takeaways

- Intelligently designed platforms can create new forms of value at scale as well as distributing innovation efforts.
- Do we have the right incentives in place for people to use platforms?
- What aspects of our business would be best suited, or reap most value from a platform approach?

Platforms are the glue that brings organisations together in the digital economy.

Accenture

A new design paradigm

The effectiveness of traditional innovation and R&D is further compromised by the fact that only 40 percent of new products that reached national retail distribution are still sold three years later[23]. Whether deliberate or not, this short-termism reveals a lack of focus on how the customer makes purchase decisions and evaluates new offerings. What's worse is that this ostensible short-termism reflects a form of organisational myopia.

Fully 89 percent of customers have started doing business with a competitor following a negative customer experience[24]. Designing a seamless experience throughout the lifecycle of a service or product is fast becoming a key point of differentiation in an increasingly commoditised world. In 2016, only 4 percent of organisations said it is "very easy" for customer service people to access the information they need and to provide rapid service[25]. A holistic approach also helps mitigate against a bigger source of disruption than technology itself. Changing customer behavior and expectations are seen as the biggest source of disruption[26] and are often overlooked by organisations fixated on technology as providing plug and play capabilities. The medium is clearly of great import, and greatly tied to design, but the bigger picture must be grasped by those who wish to build a superior customer-centric product or service.

In its widest sense, design thinking encompasses an approach to innovation that depends on a deep understanding of, and drawing insights from, the people at the centre of a given change. With sufficient insight, designers then take an iterative approach to generating, prototyping and testing their ideas[27]. This includes previously undervalued areas of business such as customer service.

Since more business in the future will be digitally enabled and handled, it follows that increasing volumes of product and service design will be digital. It would be mistaken to see technology as a design paradigm in and of itself however; the medium is in some ways less important than the orientation a brand brings to it[28]. A design led approach will require companies as a whole to think like designers – and incorporate an expanding array of tools from the world of design. This must be fused with a strong focus on human behaviour. In short, design thinking will become essential to business success[29], but only if it is done right.

As traditional industry barriers erode and technology becomes ubiquitous, it is likely that the medium of a given brand will matter less than the service provided through it. Service design is therefore effective in both driving business model change and generating value for customers and organisations alike across a range of industries[30]. It will also be key in unlocking new pockets and forms of value in the future if the World Economic Forum's (WEF) prediction of all products becoming services by 2030 comes to fruition[31].

Key questions and takeaways

- Design thinking needs to evolve beyond the product or service to encompass the wider consumer experience and the internal structures that support it.
- How can we servicise our offerings?
- How are our customers changing?
- Is our data sufficiently strong to draw upon?

Design thinking in practice

'In the new world, it is not the big fish which eats the small fish, it's the fast fish which eats the slow fish[32],' notes Klaus Schwab of the World Economic Forum. This observation holds true across nearly all industries, and is central to both innovation and the notion of design thinking for products and services.

Design thinking is not confined to the creation of attractive interfaces, pretty interfaces or digitising operations, although these may feature as part of it.

Design thinking, in essence, involves applying creative, nonlinear approaches to reinvent how customers (and, increasingly employees) interact with the business.

As with the examples described thus far, change is happening across many markets and industries and we can all learn from each other in these disruptive times. What follows is an illustrative view of innovation in innovation in five markets.

"In the new world, it is not the big fish which eats the small fish, it's the fast fish which eats the slow fish.'"

Klaus Schwab, World Economic Forum

In Financial Services

Examples abound within financial services of novel approaches to interact with customers. ASB Bank in New Zealand, for example, was among the first banks in the world to pioneer interactive, two-way video banking applications for mobile devices.

BNP Paribas meanwhile has tapped the creativity of a number of start-ups to explore emerging technologies and new business models. One such partnership, with SmartAngels, is aimed at '… leveraging blockchain technology to enable private companies to issue securities[33].' This in turn could enable BNP's customers to be able to do different things.

More holistic approaches exist too, such as with ING. A company-wide strategy project was initiated in which design thinking principles took a leading role. The innovation team ran it, applying design thinking to develop a new strategy and new business ideas, and as a result, the organisation created its own approach to scenario planning based on design thinking.

The extent to which the project has permeated the organisation is striking - account managers now use design thinking during their sessions with clients. In addition, ING has a toolkit dedicated to observing trends such as blockchain and AI. This toolkit is accessible both internally by employees, and by clients, who will often have to react to these developments in their own markets[34].

To grow its wealth management business, BT Financial Group (BTFG) concluded that it needed to simplify its legacy systems while simultaneously integrating them with the core banking IT infrastructure of parent Westpac. This required a holistic approach, an entirely new system and investment buy-in from the Board. The iterative approach was supplemented by data from the increasingly successful customer use of the products and platforms – ensuring user-centered design twinned with intervention design to bring about a revolution in the way BTFG served its customers.[35]

Other stakeholders are able to adopt greenfield design principles, notably start-ups. ETrade for example follows the approach laid out in the Double Diamond Process developed by the British Design Council. There are four stages in this design process: discovery, definition, ideation and delivery[36].

1. In the discovery phase, designers and product managers conduct research to understand customer pain points.
2. Customer research is then synthesised to help pinpoint the first phase.
3. Next, early prototypes are created to visualise potential concepts in the ideation phase. Customers are part and parcel of this process and co-create these concepts.
4. In the final phase, customers play a vital role in testing the usability of the new experience.

A major advantage of start-ups and newly created challengers is the lack of legacy infrastructure. Nick Wiles, Head of UX at Atom Bank notes that they're '…not tied by trying to create a different user experience on top of another banking platform. We've designed something from

the ground up that we're happy with and that we believe puts us in a strong position for the long game[37].'

A design thinking process is evident in their alignment between customer experience and how Atom designs for interaction. For example, biometrics (face and voice) can be used to log-in which would seem to align well with the targeted Millennial market, whilst the logo of the bank that appears on screen can be personalised. The app based bank is also aiming to use machine learning technology to guide its customer support team. 'The software learns which agents are getting the best results resolving customer queries and feeds that learning through to the rest of the team, making sure queries are handled consistently in the best way[38].'

Key insights from Financial Services:

- Legacy infrastructures constrain the potential of design thinking and innovation, but also compel both to be explored.
- Design thinking and customer - centricity can enable challengers and start-ups to quickly gain ground.
- Building a truly consumer-centric approach may take time, but is perhaps a better approach than rashly applying pseudo-functions that do not address consumer needs.

In Insurance

A 2015 study out of the University of Potsdam discovered that only about 7 percent of financial and insurance industry firms are actively encouraging design thinking, versus close to 20 percent of leading industry groups, such as IT, communications and education[39]. This low number explains some of the popularity of those who embark on it as an innovation tool and manage to get it right, such as Atom Bank.

In 2012, MassMutual was investigating innovative ways to persuade people younger than 40 years old to buy life insurance. The traditional product-centric approach wasn't delivering desired results, leading MassMutual to partner with IDEO to design a new customer experience focused on educating people about long-term financial planning.

The result, launched in 2014[40] featured a multi-channel experience and the provision of consumer facing tools that disrupted the firm's norms and processes; in effect they launched a new brand, new digital tools and initiated organisational redesign. Above all the new service provides MassMutual with real-time insights into customer behaviour; something they were previously lacking.

In ways reminiscent of changes convulsing the wider financial services ecosystem, many of the agile and innovative consumer-centric propositions are being instigated by FinTech (or InsurTech) companies. As McKinsey notes, customer preference is the guiding principle underpinning insurance fintechs

such as PolicyGenius, Knip and Acorns. Again, 'digital is key, but not in and of itself; rather, the experiences it enables' [41].

Key insights from Insurance:

- Design thinking can help address some of the most strategic market issues insurance faces, including low penetration and problematic market segments.
- Innovative challengers and InsurTech companies could lead to a death by a thousand cuts, absent, a holistic and far-reaching reorganisation that places people ahead of products.
- Ecosystem partners and collaborators can be key for those without the expertise or experience to embark on design led principles.

"Digital is key, but not in and of itself; rather, the experiences it enables."

McKinsey & Company

In Healthcare

Examples abound of design thinking in the healthcare ecosystem. In 2014 Johnson & Johnson announced it had become the first Big Pharma company to appoint a chief design officer[42]. The rationale for such a move is inherent; pharma at its core is a design business, and the size of the big players requires a degree of integration between the various departments and interest to ensure consumer needs are front and centre of the process.

Evidence of a general shift can be detected in products. In 2016 Novo Nordisk joined with a design agency to create a diabetes injection device that resembled a pen rather than a syringe, helping to address patient concerns[43]. GE Healthcare's Chief Patent Officer Greg Petroff, also notes that the human-centered approach can effectively address structural issues within the pharma industry. He believes that design thinking should be used '…to have multidisciplinary teams frame the problem space more accurately. It's a great process for stakeholder alignment,' he suggests[44].

The Cleveland Clinic, meanwhile, successfully reorganised its entire hospital network around patient medical problems. This involved moving beyond traditional functional medical practices which had hitherto separated surgeons and medical specialists, '…to combine personnel into patient-centric teams, dramatically improving patient outcomes[45].'

Key insights from Healthcare:

- The creation of team powered services is a concept central to design thinking.
- Flatter, and even decentralised, power structures are a better fit in an environment characterised by ambiguity, speed and evolving digital norms. In such an environment design and redesign is critical[46].
- Design thinking can provide a platform, or common ground, for stakeholders to coalesce around.

In FMCGs

One of the more common assumptions amongst organisations is that technology is the innovation (and design) itself; that being able to do something means that it should be followed through. Often this can lead to the creation of products with pseudo-features that add little to nothing to the experience.

Prior to contacting a design team to help them through the process, Braun and Oral-B had wished to develop an IoT electric toothbrush replete with data-tracking features. The designers convinced them to instead think about how additional technology could mitigate existing frustrations consumers had with the non IoT product. The end result was the integration of two features deemed to be most value-adding for consumers; a USB port to allow charging whilst on the road and an app that the toothbrush connects to, reminding the user of warn out brush heads. Pressing a button on the brush sends a reminder notification to your phone to buy replacements[47].

Key insights from FMCGs:

- Design thinking and innovation should address real needs and not rely on what is possible technologically.
- External input, even for leading companies, can provide key reflections and ideas.

In Technical Industries

The focus on teams is replicated across industries. Cisco states that a team-based organisational model is fundamental to its strategy. CEO Chambers has previously noted that Cisco competes '…against market transitions, not competitors,' and that transitions are speeding up. To aid their redesigned work structure, Cisco established a new talent organisation called Leadership and Team Intelligence. Its focus is on '…leadership and team development, team leader selection, performance management, and intelligence-gathering for Cisco teams and their leaders around the world[48].'

Giving key employees what they need and when they need it, is a key driver of organisational design and by extension customer service and experience. Denoting who is key, and who is not is not an easy first step; for example at Infosys the issue of design thinking is considered so important that board members are being trained and educated in it[49].

As incumbents, especially large and complex ones, design thinking needs to be central to reorganisation and core competency. IBM's Bridget Kralingen notes that as a result at IBM, '…there's no longer any real distinction between business strategy and the design of the user experience[50].' That said, specific design thinking principles can at times be applied selectively – whether through a pilot project or to address a specific need.

Key insights from Tech Industries:

- Design thinking can smooth processes and systems prone to friction.
- Design thinking is key to employee experience.
- Innovation is extremely difficult/ inefficient without basing it around real people's problems.

Cisco competes "…against market transitions, not competitors, and transitions are speeding up"

Cisco CEO, John Chambers

Design thinking within companies

Design thinking at its best is also intent on improving internal processes, structures and outcomes. KPMG, for example, used design thinking principles to help identify and understand what drives employee engagement and retention. Initial analysis pinpointed that purpose-driven work was a key area to explore more fully. KPMG then began a process of refining specific goals and focussed their analytical efforts and metrics to track progress and results. The resulting Higher Purpose Initiative has since led to significant improvements in employee engagement and morale[51].

Specific results include[52]:

- 90 percent of staff reported that the higher purpose initiatives increased their pride in KPMG.
- Employee engagement survey rose to record levels as well. A year after the initiative launched 89 percent of employees agreed that KPMG is a great place to work, up 7 percentage points from the previous year.
- 76 percent of employees said their 'job had special meaning (and was not just a job),' 6 points higher than the average of their Big Four counterparts and a 4-point jump year over year.

KPMG also found a strong association between leaders who talk about the positive societal impact of their teams' work and a variety of positive human resources and business indicators. Since superior customer service and satisfaction can stem from happy and engaged staff, internal applications of design thinking are a key facet of success.

Telstra hires thousands of employees each year, each of which has to learn a number of systems, products, pricing plans and new ways of working. To address this strategic challenge, Telstra used design thinking to develop a new '90-Day' onboarding experience for all employees. Its design thinking process gave Telstra key insights into pain points, needs, and challenges of their onboarding process during the first 90 days.

Using insights from this research, Telstra designed the onboarding approach around four elements and as a result, '… productivity rose, employees became more committed and engaged, and more quickly integrated into the organisation[53].' Its success in this area has led to Telstra applying design thinking across the organisation and other HR processes.

Key questions and takeaways:

- Design thinking is people-centric, both in terms of consumers and employees.
- Design thinking can permeate all of an organisation and help drive strategy.
- Which of our partners could be leveraged to help drive change?

Designing and building the future

Innovation and design – along with data - will become strategically aligned to the core values and vision of an organisation. Designing organisation models that allow this will become a pre-requisite for success; to assume that new technologies, processes and ways of thinking can be grafted onto legacy structures is a damaging fallacy. This redesign must be holistic – encompassing back and front ends, and oriented towards employees just as much as consumers. There is even merit in suggesting that design thinking needs to be applied more definitively with regards to how experiences are produced and services delivered internally. Companies spend $1 Trillion on the customer journey, yet around one thousand times less on employees' journeys according to BCG[54]. Such an imbalance makes complex change more likely to fail.

McKinsey notes that 70 percent of complex change programmes result in failure[55] whilst only half of reorganisations are deemed successful[56]. With the wider world of work evolving at a quickening pace, the need for organisational renewal – no matter how difficult – is pressing. Organisational design, although largely hidden from the end user, could become a key form of differentiation – not only providing seamless journeys uninterrupted by silos for consumers, but a better work environment in which to work. Companies can no longer afford to ignore the pressing nature for organisational renewal. If today's or tomorrow's competitive environment is not considered reason enough for change, consider the degree to which fundamental shifts in work structures could upend your structure.

Bain predicts that '…by 2027, most work will be project-based, with agile teams (internal and external) the dominant unit[57].' Such a change is not guaranteed but neither is it an isolated possibility. A range of work-related changes, mostly emergent within current work structures and product design offerings, suggest that organisations will need to adopt new measures and tools for rapid delivery of customer experiences – and organise along these lines. Designing agile organisations will become a major point of competitive advantage, but significant legacy barriers – whether mental, structural or technological will need to be overcome.

The majority of executives are receptive to the idea of technological change; some 86 percent say the pace of technological change will increase rapidly in their industry over the next three years[58]. The friction that results from transplanting new technology, processes or ideas onto old structures remains impossible to ignore however. 85 percent of executives state the greatest growth barriers are internal[59]. It is here that innovation and design thinking is most sorely needed.

Such internal focus also enables a better consumer focus in time. Holistic consumer experiences require holistic organisations, and cross-silo coordination is increasingly key to delivering outcomes. Data provenance is an obvious enabler of such holistic service. The technologies underpinning digital transformation – such as data analytics, mobile capabilities and social highlight the pressing requirement

for design thinking to permeate management decisions. They are relatively prosaic, technologically speaking, yet nine in ten organisations in 2016 still reported the implementation of digital transformation a significant challenge, with 70 percent of these again citing internal complexity as an inhibiting factor[60]. Such organisational challenges will severely restrict the success of any external offerings.

Customer experience key

70 percent of buying experiences are based on how the customer feels they are being treated, and this is directly related with showing the customer they are cared for and thought of, throughout the lifecycle[61]. It has even been predicted that customer experience will overtake price and product as key brand differentiators by 2020. Focusing on the customer experience and its design, affords businesses the opportunity to differentiate in a more meaningful way than through price alone[62].

Building a design driven culture

In the age of business agility and shifting consumer demand, it is no coincidence that design-driven companies have outperformed the S&P 500 by 219 percent over the 2005-2015 decade according to the Design Management Institute's Design Value Index[63].

Back in 1956, IBM was perhaps the first large company to establish a corporate-wide design program. Starting in 2012, the company's more recent iteration is more wide-ranging[64]. The company is investing more than $100 million in an effort to become design centred, with three major market shifts accounting for IBM's conscious design shift. The first is technology – cloud, mobile and analytics all demand a new focus, and design can help to differentiate all three. The rise of the Millennials is another key driver, with consumers facing products and services requiring careful design attention, as do the internal systems with which the increasingly Millennial staff, is working. The last distinct trend is the digitisation that is impacting every industry to a greater or lesser degree. IBM's chief focus is on '…designing new products, processes and services, with the best attributes of digital in mind[65].'

Design driven cultures can also express themselves in relatively prosaic ways. Walmart's redesigned e-commerce experience led to an increase of unique visitors to its website by 200 percent. Bank of America's user-centered redesign of its process for account registration boosted online-banking traffic by 45 percent[66].

Key questions and takeaways

- Organisational design will become a key enabler of innovation, differentiation and of consumer experience.
- Overcoming internal legacy technology, mindsets and structures will be key in enabling better design.

A number of questions should be considered for those wishing to embark on design-led innovation.

- How can you speed up your processes?
- Do you have somebody appropriately placed to drive design-led thinking throughout the organisation?
- Does your technology align with your business imperatives?

Technology in design

Although the future of product and service design is clearly more than either technology or interfaces alone, they clearly play an important role in connecting the user to the experience – whether on the back-end or directly consumer facing and, whilst technology on its own does not innately provide superior user experiences, with clever design and alignment it can become synonymous with an experience, brand or company.

Strategic use of technology can also enable companies and brands to do different things, as opposed to merely doing things differently. New business models, forms of value and customer relationships can result. For example, 84 percent of manufacturers hope to increase their use of virtual reality for customer service over the next three years (from a current base of 38 percent). Furthermore, by 2020, 90 percent of manufacturers plan to offer purpose-built apps for their customers, and 89 percent hope to use automation for customer experience in the future[67]. If they are to succeed, design thinking is essential – not just in terms of delivering an experience that enhances customer satisfaction but enabling new forms of value.

A key driver of this could be the IoT, which could revolutionise customer service proactively. Harvard Business Review notes however that '…IoT success will be difficult for many companies to achieve, because they'll fail to recognise the value of design in connected product development.

The fundamental principle in the IoT 2.0 era is that IoT is *not* the end product[68].'

The IoT, because of its innate technological integration and as an avenue for new customer experiences, - whether in the form of automated purchasing, insights into spending or customer service - demands a significantly higher level of design and technology partnership than most existing technological infrastructures. Indeed, this new medium for designing new products and services around the consumer, could easily account for a range of broken consumer relationships.

Success will '…require a new partnership between those who understand and advocate for the user and those who understand and integrate the technology[69].' This will hold true for other technologies too.

Mixed reality, augmented reality and real-world information overlays can be used to augment workers, provide better customer experiences and potentially boost productivity. Whether or not humans design the specifics of future partnerships is open to debate.

Mark Zuckerberg suggests that within five to ten years, artificial intelligence (AI) could surpass human perception[70], which could potentially redraw the human/AI balance, with profound impacts on work in general but also on such specific activities as design and other business critical activities. In fact, Bernd Schmitt, Professor of International Business at Columbia Business School, thinks '…it's entirely possible that creative tasks may be done by supercomputers[71],' in the not-so-distant future.

Certainly, the wave of new design imperatives will demand a raft of new skills and approaches. Working alongside AI is probable. The next generation of apps, meanwhile, could require developers to think more of the human as the user interface.

Skinput and other zero ui (user interface) technologies such as Google's project Soli, do not have inherent screens.

Such technologies bring new tactile senses from touch for example – meaning designers will need to incorporate insights and visions from science, biology and psychology, to create these devices; things designers haven't necessarily considered when designing for screens[72].

Key questions and takeaways:

- Technology is not analogous to design, but provides a key platform on which to 'practice' design.
- Which technologies can we use to enhance our value proposition?
- Do we have the necessary skills, mindset and desire to integrate our business internally and/or technologically?

Success will "…require a new partnership between those who understand and advocate for the user and those who understand and integrate the technology."

Harvard Business Review
Scott A. Nelson & Paul Metaxatos

Changing talent paradigm

The changing nature of design, the shift in areas to which design-thinking is applied and the evolution of new technologies such as artificial intelligence and virtual reality will all contribute to a shift in the type of design jobs in demand[73].

Table 1: Adapted from FastCoDesign

Design jobs that could decline or die	
UX Designers	User experience designers are among the most in-demand designers working today. UX design could divide into more fields however.
Visual Designers	In the next 10 years, all visual design jobs will start to be augmented by algorithmic visual approaches.
Design Researchers	New technologies like machine learning and virtual reality are intruding on design research.
Chief Design Officers	Good design is, fundamentally, interdisciplinary, which means that in a company that is design-oriented, all executives will be design practitioners.

It is also possible that a combination of machine learning and algorithms could de-skill parts of the designers' job. Many forms of automation effectively deskill a professionals' job by automating some of the tasks that once defined the job. An emergent form within healthcare sees cognitive systems besting humans in diagnoses, for example. Along similar lines, machines like ReForm seem set to allow people with no technical knowledge to design products. ReForm is a desktop machine, described in the Economist, as being '…developed to pick up any changes made to a physical model of a product and reflect those changes back into the digital model, or vice versa[74].'

Integration with other breakthrough technologies - such as 3D-printed electronics - could further enhance the capability of ReForm. For example, it could produce prototypes and even one-off products that are more functional[75]. The impacts of new technology, whilst sometimes complex, will almost certainly redraw the required skillsets and competencies of practitioners. Growth areas are likely to appear alongside a lesser need for other design positions and skillsets.

Table 2: Adapted from FastCoDesign

Design jobs that could boom	
Virtual Interaction Designers	Virtual and augmented reality (together known as mixed reality) is set to become a $150 billion industry by 2020.
Algorithmic/AI Design Specialists	AI will create new design opportunities. The challenge for the designers is to tie the coding of algorithms with the experiences they enable.
Post-Industrial Designers	As every object becomes connected, the need for connected experiences rises – and someone should design for these connections.
Design Strategists	The importance of design strategy will grow. Future design strategists will need the ability to understand and model increasingly complex systems.
Organisation Designers	As organisations realise that the need for change is holistic, as opposed to cosmetic; organisation change designers will become popular.

The wider design industry is at an inflection point; the talent model is shifting and will continue to do so. Design is being taught in business schools and in general, there is an increase in the number of individuals working across the traditionally siloed sectors of business, design and technology[76]. As a result, creativity and design are being democratised – and traditional designers will need to evolve their contributions in multidisciplinary environments. Design's central role in furthering innovation and providing clear financial gain is almost too important to leave to traditional designers alone.

Key questions and takeaways:

- Do we have a talent pipeline capable of sourcing needed talent?
- Is our organisation capable of capitalising on the latest technologies?
- What do we need to do to put design thinking at the heart of our organisation?

Conclusion

Design thinking has become a key tool in driving differentiation, aligning technology to business objectives and in raising customer experience levels. It is also emerging as a key driver of organisational renewal and talent acquisition and retention; indeed, as a tool it needs to be embraced holistically rather than by department if its benefits are to fully accrue.

Almost all of the key issues for tomorrow's business, from data provenance through internal processes to customer experience can all be designed for in innovative ways that are already starting to distinguish winning organisations.

Innovation itself is increasingly being designed for – most obviously via the creation of platforms. Uber, Amazon and a host of other digital companies show this most obviously, but perhaps the bigger change could occur when companies start platformising aspects of their own approach.

HR, finance and talent stand out as some of the areas where design thinking could create major gains – not just in terms of bottom line efficiency but in helping these areas do different things. In fact, it could be argued that in the future, via key metrics, that what a department (or even a company) makes or offers will not be as important as what that they do to serve and how they go about it[77].

If the design revolution is to succeed it is important that it is not left to designers alone to see its implementation. Its democratisation across the enterprise will require a change in mindset, but it is also aided by a changing talent model and advances in technology that could further upend how and where design occurs and more importantly, who is driving the design process.

Design alone is not a panacea; it cannot overcome poor strategy, structure or compensate for inadequate services or products. Used strategically, coherently and aligned to various business outcomes it does however represent a viable medium for helping build the business of the future.

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About Global Futures and Foresight

Global Futures and Foresight is a research and consulting organisation that helps organisations be better prepared to embrace change, innovate and develop new strategies and solutions and helps clients to avoid the risk of being blindsided by external disruptive change.

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