INTERNATIONAL COUNCIL FOR OPEN AND DISTANCE EDUCATION

Models for online, open, flexible and technology enhanced higher education across the globe – a comparative analysis

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Foreword

Late 2014, a dialogue started in Rio de Janeiro, Brazil. I visited universities collaborating in a consortium for online education, and I took note of the fact that by using a collaborative model the universities were able to reach out to a hundred thousand students more than represented in their own campuses. This led to a dialogue with the consortium president: observing the partly disruptive and innovative development in online, open, flexible and technology-enhanced education (OOFAT), would it be possible based on an analysis of a number of institutional cases, to collapse these cases into models? Or as said in the report, to identify emerging models of provision?

The emerging post-2015 education agenda, now formalized through the Sustainable Development Goals (SDGs), gave more impetus to this idea. SDG 4 sets a clear objective for governments and educational providers to: "Ensure inclusive and quality education for all and promote lifelong learning". In particular, the Education 2030 Framework for Action (UNESCO, November 2015) emphasizes fully utilizing the opportunities offered by OOFAT: "A well-established, properly-regulated tertiary education system supported by technology, Open Educational Resources (OERs) and distance education modalities can increase access, equity, quality and relevance, and narrow the gap between what is taught at tertiary education institutions and what economies and societies demand." (Target 3, point 43.) Several partners of ICDE, international governmental institutions such as UNESCO and COL, governments and universities were consulted and invited to team up for a study. In spring 2016 the first partner meeting took place (see the acknowledgements for the listing of partners) and in August 2016 an open call for proposals was launched. And now, in April 2018, the results are here. This is very timely, as interest in changes to higher education in the digital era is rapidly increasing. The main insights that can be drawn from the process of comparing and contrasting cases from across the globe can be envisaged as core components in a three-stage rocket launch:

- First, the **planning blueprint**. This is the conceptual OOFAT model. Its aim is to distinguish design options.
- Second, the specific **design prototypes**. These emphasise different capabilities of the rocket. Here, they are the OOFAT types, and illicit the question: to which does your institution belong, and to which should it belong in the future?
- Third**, the five business strategies** as different routes into distant space. They highlight to what extent an institution aims for unchartered territory to achieve its ultimate goals.

In addition to the findings and very interesting analyses related to the findings, the report encompasses 69 comprehensive cases which can be studied in a searchable, open database. Who should read the report? This report particularly targets senior management in higher education institutions, but also policy makers in governments and companies engaged in higher education. Higher education institutions can use the report for strategic development, comparison, peer-learning, benchmarking and inspiration. Governments can gain insights on possible future directions for their educational frameworks and companies may detect potential innovative business opportunities for both provision and collaboration in the higher education space. The report finds that most higher education providers are just at the beginning of developing comprehensive strategies for harnessing digitalization. That makes this study and its findings well-timed. ICDE will follow up and facilitate further developments.

Great thanks to all that have contributed!
Gard Titlestad - **ICDE Secretary General**

Acknowledgements

ICDE would like to thank the whole research team from Fibs Research Institute for the Economics of Education and Social Affairs, and from the Institute of Educational Technology at the Open University UK for this comprehensive and timely report. The study captures a variety of institutional cases from all regions of the world, and at the same time it manages to describe the cases in a strategic context and condense them into identifiable delivery models for online, open, flexible and technology enhanced higher education.

The research team has consisted of:

- Dr. Dominic Orr, Fibs Research Institute for the Economics of Education and Social Affairs
- Dr. Martin Weller, Institute of Educational Technology, Open University UK
- Rob Farrow, Institute of Educational Technology, Open University UK
- Lena Wrobel, Fibs Research Institute for the Economics of Education and Social Affairs

A special acknowledgement goes to Dr. Dominic Orr, who has conducted the leadership of the study with a steady hand.

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Research Institute for the Economics of Education and Social Affairs

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We will also acknowledge the valuable contribution from ICDE partners and members of the reference group for this project. Their participation has secured a balanced geographical perspective of the study and the reference group members have been giving significant input to the discussions of findings and conclusions.

The reference group has consisted of:

- Peter Wells, Chief of Higher Education, UNESCO
- Muriel Joffe and Travis Durepo, Outgoing and incoming Executive Director for International Programs, UMUC – University of Maryland College, USA
- Sophie Touzé, French Ministry of Higher Education
- Sanjaya Mishra, Commonwealth of Learning
- Kristianti Puspitasari, Universitas Terbuka, Indonesia
- Li Wei, China Open University, China
- Elif Toprak, Anadolu University, Turkey
- Souma Aljah Ali, Hamdan Bin Mohammed Smart University, United Arab Emirates
- Torunn Gjelsvik, Head of Development, ICDE

Torunn Gjelsvik is also acknowledged as the project manager from ICDE.

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1 Executive summary

Digital technology has become near ubiquitous in many countries today or is on a path to reach this state in the near future. Across the globe the share of internet users, for instance, has jumped in the last ten years. In Europe most countries have a share of internet users near to or above 90% in 2016 (last year available for international comparisons), in China the current share is 53%, but this has grown from just 16% in 2007, even in Ethiopia the share has grown from 0.4% to 15.4% in the same period (data from ITU). At the same time expectations of widespread adoption of digital solutions in higher education have been rising. In 2017 the New Media Consortium's Horizon Report predicted that adaptive learning would take less than a year to be widely adopted (Adams Becker et al., 2017). And projects such as 'Virtually Inspired'[1] are showcasing creative examples of how new technologies are already being harnessed to improve the quality of teaching and learning. Furthermore, discussion of the United Nations' Sustainable Development Goals emphasise the key potentials that digital technology holds for achieving the goals for education in 2030 (UNESCO, 2017).

These developments lead university and college leadership to the question of how they should position their institution. What type of digitalisation initiatives can be found practice beyond best practices and future potentials? This is the question that this study attempts to answer. It sets out to analyse how higher education providers from across the world are harnessing digitalisation to improve teaching and learning and learner support and to identify emerging types of practice. For this, it focuses on the dimensions of flexibility of provision (in terms of time, place and pace) and openness of provision (in terms of who has access to learning and support and who is involved in the design of learning provision), as both of these dimensions can significantly benefit from integration of digital solutions.

The method of information collation used by the study was a global survey of higher education institutions (HEIs) covering all world continents, more than thirty countries and 69 cases. The survey found that nearly three-quarters of all HEIs have at least one strategic focus and typologies were developed based on this analysis to group HEIs with similar strategic focuses.

Overall, the findings suggest that most higher education providers are just at the beginning of developing comprehensive strategies for harnessing digitalisation. For this reason, the authors of this study believe that providers can benefit from the outcomes of this study's research, as it can be used by university and college leadership for benchmarking similarities and differences and for cooperative peer learning between institutions. The database of cases and the guidelines for reviewing current strategies, which accompany this study, aim to facilitate this learning and evaluation process.

1.1 The OOFAT model

The research group started out by developing a model to encapsulate the three core processes of higher education provision. This is termed in the study the 'OOFAT model'.

- **Content** – consisting of subject knowledge, support and guidance and learning analytics, which together make up the entirety of all didactical process.

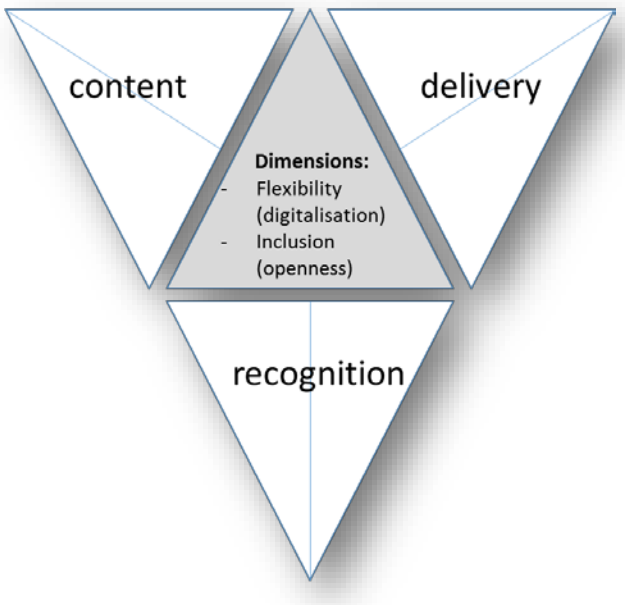
[1] See website: https://virtuallyinspired.org/

- **Delivery** – consisting of the qualities of place, pace and timing of delivery of the content; in other words, both the extent of physical and online provision and the question of the timing of key events (e.g. start and end points of learning processes).
- **Recognition** – consisting of both assessment and credentialization, which are formal processes leading to recognition of learning achievements. Assessment is a phase of evaluation at certain times in a learning process, whilst credentials are awarded on completion of formal learning units. In both cases, these evaluative processes entail a formal endorsement of learning and lead to recognition of achievement of the learner by third parties.

Using a global survey, each of these processes were evaluated along the two dimensions of flexibility and openness:

- **Organisational flexibility**: The quality of ***flexibility*** is a question of "what" and "how" and is likely to rely on how digital technology is harnessed to reduce the need for physical presence; from static to dynamic and changing due to specific circumstances. Each of the three central processes (and their sub-processes) can also be described by the extent to which they are delivered in a flexible manner, harnessing digital technology, i.e. online and technology-enhanced methods.
- **Procedural openness**: The quality of ***openness*** is a "who" question and likely to rely on how the principle of *openness* is integrated (in various ways) into the core processes; from closed group to open network. More open processes mean less limitations on who has access to and who delivers or controls contents, delivery, assessment and recognition. This quality is not reliant on digital technology, but may be enhanced by it. For instance, an open enrolment to higher education provision can be further enhanced through building a digitally-connected network of peers, who can also develop content and assessment together.

Figure 1 presents a visual illustration of the OOFAT model.

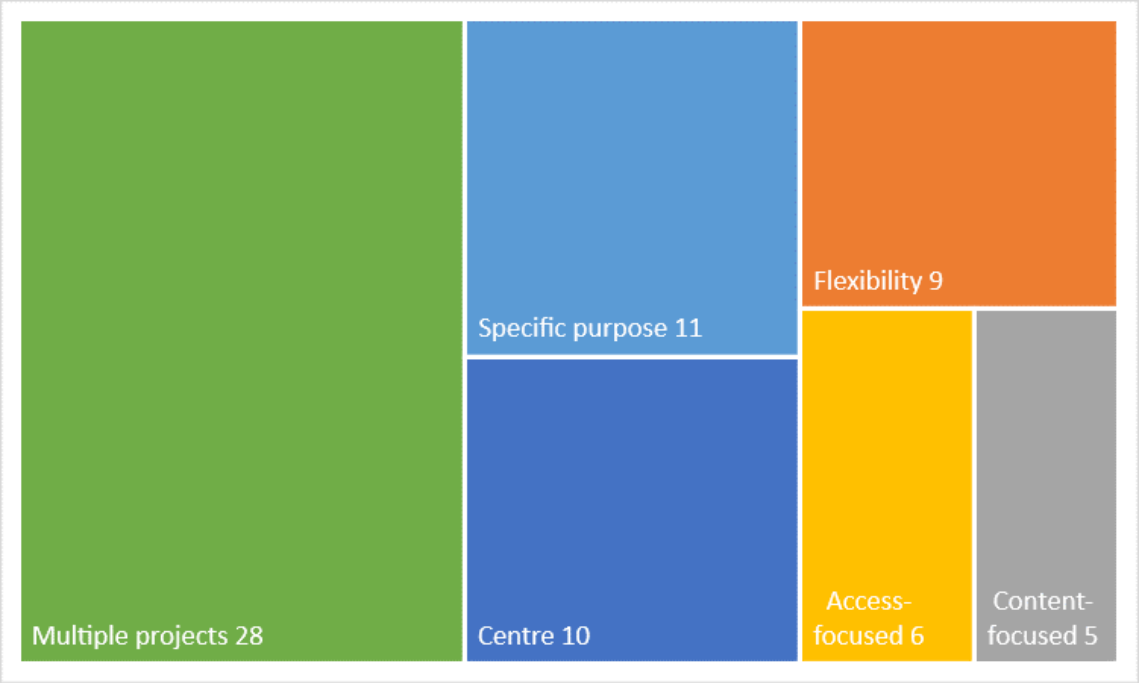


1.2 Six OOFAT types

On the basis of this scheme and analysis of the responses, six typologies were developed to which the cases could be aligned. Each one integrates the OOFAT model in a different manner into the practices and processes of a higher education provider:

- ***OOFAT at the centre***, where OOFAT is not implemented for one specific purpose, or market, but as an integral part of the institution's overall mission
- ***OOFAT for organisational flexibility***, where OOFAT supports flexibility of higher education provision across all aspects of the conceptual model
- ***content-focused OOFAT*** model, where providers concentrate on the element of content development and delivery specifically
- ***access-focused OOFAT*** model, where access to content and support is set as the focus of OOFAT implementation
- ***OOFAT for a specific purpose***, where OOFAT implementation is developed for one very specific function or market and not right across the institution
- ***OOFAT for multiple-projects***, where very different initiatives are undertaken by the provider, experimenting with different aspects of the OOFAT model and not as part of a unified strategy

Figure 2 shows the frequency of each of these types in the current data set.

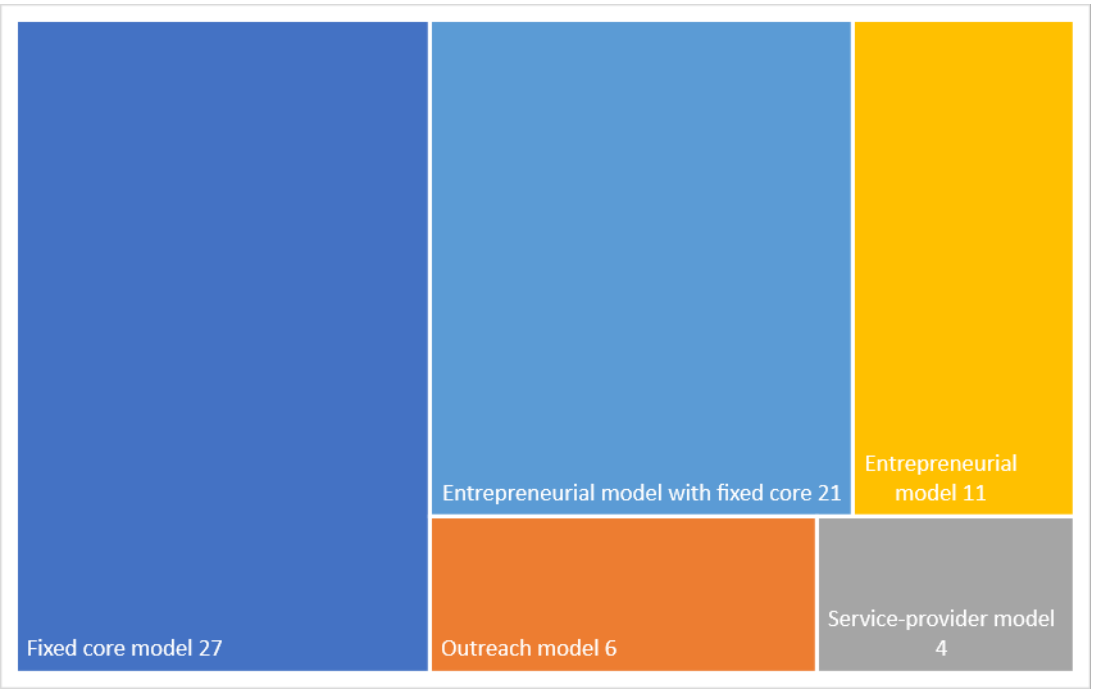


1.3 Five business strategies concerning OOFAT

A business strategy is the way an organisation (public or private) moves from setting goals to achieving objectives. This is highly relevant context information for a study on how higher education providers are changing in their efforts to harness digitalisation effectively and efficiently. Using Miles' and Snow's conceptualisation, the global survey sought to find out whether providers were aiming to become more efficient or more transformative through the adoption of their OOFAT model. Based on describing seven dimensions of their business models, the study uncovered five business strategies from the cases:

- ***Fixed core model***, where providers maintain a legacy approach to their products and services and to their target market, although they may be innovating in other areas
- ***Outreach model***, where providers maintain the same products and services, but are innovating in the dimensions of target group recruitment and utilising new communication channels
- ***Service-provider model***, where providers maintain a focus on their target group whilst particularly innovating in the areas of product and service and communication channels
- ***Entrepreneurial model***, where providers adopt innovative strategies for the areas product and service, target group and communication channel, i.e. they aim to be transformative in their services and provision
- ***Entrepreneurial model with fixed core***, where providers maintain a legacy focus to their core services (teaching and learning), but focus on being innovative in all other areas

Figure 3 shows the frequency of each of these types in the current data set.



1.4 Findings and their relevance

Universities – and by extension typical higher education providers – are a particularly complex type of organisation, so it is highly likely that reactions to change will be iterative and fragmented. This is because of the different departments throughout the university and their position within the total hierarchy of the organisation (e.g. IT-centres as service centres, faculties as the focus of teaching and learning) and because of the different views and behavioural norms, which tend to differ depending on subject disciplines and the focus of academics' work (e.g. research versus teaching). It is also because of the way various external governance instruments work inwardly, setting norms and incentives for certain activities. In most cases, even new higher education providers have to fit into this landscape.

The results of this study suggest that the majority of higher education institutions (HEIs) across the world are currently in the process of experimenting with digitalisation and applying new technologies to certain parts of their operation. They also suggest that most higher education providers have been – in their own understanding, since this was a self-assessment survey – innovating around the core of teaching and learning provision. The work reveals that there is no 'one size fits all' approach to the implementation of technology and openness. Rather it is highly dependent on context, institutional structure and is nuanced to meet needs of different learners and aims. This suggests that universities are not reluctant adopters of new technology, as some have suggested, but rather that it is deployed with a range of pedagogic, business and support models to meet specific needs. The 'disruption' model of technological change in education, which promotes one universal revolution in application does not seem to be borne out, but rather a mixed economy is emerging.

It is clear that the next phase of this development lies in the formulation and effective implementation of comprehensive institutional strategies, which provide clear focal points for where a university or college has chosen to integrate digitalisation into its key processes. HEIs can use the typologies developed in this study either to determine their current position or to decide which type of model they aspire to. To this aim, the report closes with a step-by-step guide to asking the key questions and reviewing existing strategies, based on the finding of this study.

For policy-makers and researchers of organisational change in higher education the message is that policy frameworks should be reviewed for whether and how they encourage experimentation and innovation alongside accountability and transparency. The typologies developed in this study highlight the areas where most change is likely to be in the coming years – and most review of policy and governance structures will be necessary.

2 Between enduring and maturing practice with technology in higher education

The tertiary education ecosystem is evolving at a rapid pace, as higher education providers seek to harness new technologies to serve current students better and reach new student populations. Over the past 20 years participation in higher education has been expanding rapidly across the globe (Dohmen, 2018). But also the expectations on higher education institutions to widen participation through reaching out to potential student groups while recognising their own personal circumstances puts new demands on the flexibility of time and place of studying. Whilst such considerations led to the establishment of specific national institutions in many countries in the late 1970s (e.g. the UK's Open University), the expectation is now for all or at least most higher education providers to contribute to widening participation.

In the context of this expansion and efforts to widen participation, it is vital that people in medium-low and low-income countries are not left behind both in the debate on developments and in their opportunities to participate (Salmi, 2017). Traditional open universities, new providers of online learning and conventional universities are increasingly harnessing the new digital technologies to improve their provision (Mapstone, Buitendijk, & Wiberg, 2014; Qayyum & Zawacki-Richter, 2017). Different types of collaborative models are used within or between institutions and new organisational models are emerging, such as national consortia, portals, combination of campus and online provision and even "unbundling" (detachment and separation) of elements of the provision of higher education (McGreal & Anderson, 2012). This study aims to include all these forms in its global review of higher education providers and how they are harnessing technology.

There is often rhetoric around revolution and disruption both in discussions on the impact of "game-changing" technological change to society and business (Brynjolfsson & McAfee, 2014; McAfee & Brynjofsson, 2017), but also to higher education itself (Barber, Donnelly, & Rizvi, 2013). For instance, Christensen took his analysis of the problem of established institutions adopting innovation and applied it to higher education. He suggested that new entrants to the market could serve learners better through less "fussiness" about formal educational prerequisites and more agility (Christensen, 1997; Christensen & Eyring, 2011).

However, this study starts out from the assumption that what is occurring is a more nuanced, specific implementation of the elements of open, online, flexible provision of technology-enhanced higher education (in short: OOFAT) and aims to capture it. One reason for this is that higher education institutions – and especially 'universities' – are a very specific type of institution. Commonly, they are referred to as hybrid institutions, which are both influenced by their external environment, but also isolated through their layers of institutional autonomy (Jongbloed, 2015). Whilst they could be described in the past as loosely coupled expert systems (Kogan & Becher, 1980; Weick, 1976), changes to their governance (including autonomy and funding) and their place in society, and the need for expanding higher education institutions to remain financially sustainable means they are moving away from this model. They need smart organisational strategies, which balance traditional legacy in some parts of the organisation with innovation and extension in others. This is a challenging time for the organisational design of universities and colleges.

We are at a point where a systematic view of HEIs' adoption of technology as part of their organisational strategy is necessary. That is the goal of this study. To better understand this complex and rapidly changing educational landscape, the study will map existing practice, collecting data on a range of different aspects and attempting to reduce these to a few simple models that can be used as typographical benchmarks by senior managers of higher education providers, policy-makers and others involved in higher education – both to indicate possible directions of travel and to identify effective practices.

In summary, the study aims to provide:

- A model for comparison and benchmarking of higher education institutions' digitalisation strategies
- Guidance for governments and governmental agencies in considering and planning for initiatives in higher education provision, which harness the opportunities of digitalisation
- Inspiration and guidance for new higher education providers in the OOFAT space

3 Prototyping how higher education is harnessing technology

The first phase of the project began with a rapid prototyping of key elements in the conceptual and analytical framework to distinguish key differences in OOFAT provision. This approach uses an idea from design and software production to build an early sample, model or release of a product to evaluate and learn from. In our study this prototype conceptual framework enabled us to evaluate the types of OOFAT provision that needed to be captured to ensure a wide coverage of practice and the identification of innovations.

The conceptual model needed to capture central processes in the higher education enterprise itself. These are the so-called "bundles", which make up the higher education provision package. Anant Agarwal, CEO of EdX has identified these as: clocks, content and credentials. In other words, provision is made up of how higher education is delivered ("clocks"), what is delivered ("content") and how achievement is made recognisable to third parties ("credentials") (Agarwal, 2016). In an alternative scheme, Wayne Macintosh from OERu identifies six services which make up the university package (Mackintosh, 2016). Following content services, he refers to teaching and learning as "interaction services" after Moore (Moore, 1993), identifies assessment and support services as additional distinct activities, which lead to credentialing services, and these are all supported by technology services (Miao, Mishra, & McGreal, 2016).

The first scheme can be seen as subsuming these six elements but is formulated on a higher aggregate level, since "clocks" is actually about place, pace and timing, as well as the form of delivery (online versus physical) and, if we follow Moore, "content" addresses the interaction between teachers, learners and content, including learning analytics.

With a slight reformulation for clarity and conciseness this study bases its basic conceptual model on the following three central processes:

- **Content** – consisting of subject knowledge, support and guidance and learning analytics, which together make up the entirety of all didactical process.

- **Delivery** – consisting of the qualities of place, pace and timing of delivery of the content; in other words, both the extent of physical and online provision and the question of the timing of key events (e.g. start and end points of learning processes).
- **Recognition** – consisting of both assessment and credentialization, which are formal processes leading to recognition of learning achievements. Assessment is a phase of evaluation at certain times in a learning process, whilst credentials are awarded on completion of formal learning units. In both cases, these evaluative processes entail a formal endorsement of learning and lead to recognition of achievement of the learner by third parties.

The aim of the study is to identify innovative examples of higher education provision, which are flexible and inclusive. According to the acronym of OOFAT it is assumed that these will involve Online, Open, Flexible and Technology-enhanced methods.

Besides the three central processes in the model, there are two further dimensions to each of these processes:

- **Organisational flexibility**: The quality of ***flexibility*** is a question of "what" and "how" and is likely to rely on how digital technology is harnessed to reduce the need for physical presence; from static to dynamic and changing due to specific circumstances. Each of the three central processes (and their sub-processes) can then also be described by the extent to which they are delivered in a flexible manner, harnessing digital technology, i.e. online and technology-enhanced methods.
- **Procedural openness**: The quality of ***openness*** is a "who" question and likely to rely on how the principle of *openness* is integrated (in various ways) into the core processes; from closed group to open network. More open processes means less limitations on who has access to and who delivers or controls contents, delivery, assessment and recognition (cf. Hegarty, 2015). This quality is not reliant on digital technology, but may be enhanced by it. For instance, an open enrolment to higher education provision can be further enhanced through building a digitally-connected network of peers, who can also develop content and assessment together.

The goal of this study is to be able to bring central qualities of diverse cases together in a simple model. To this aim, the researchers developed a triangle as visual representation for their concept – which comprises the three central processes of higher education provision at its corners and has the two qualities of flexibility and inclusiveness at its centre – see Figure 3.1. Each case will be described by how it implements the three central processes and by what role flexibility and the principle of inclusiveness play in execution and delivery.

With this rather comprehensive model of delivery of higher education products and services, a broad selection of providers can be captured and similarities and differences in their provision can be highlighted for comparison. This marks a difference to the approach taken by other researchers, such as Garrett for the Commonwealth of Learning, who distinguished his cases based on specific additions to a basic model of open distance learning – e.g. the emerging cases he analysed were additionally for-profit, had a focus on OER and MOOCs or focussed on adaptive learning (Garrett, 2016). The intention of this study is to capture a wide range of different types of providers in a standard classification scheme, which especially highlights how technical flexibility and the principle of inclusion are being implemented.

Figure 3.1: The OOFAT Conceptual Model

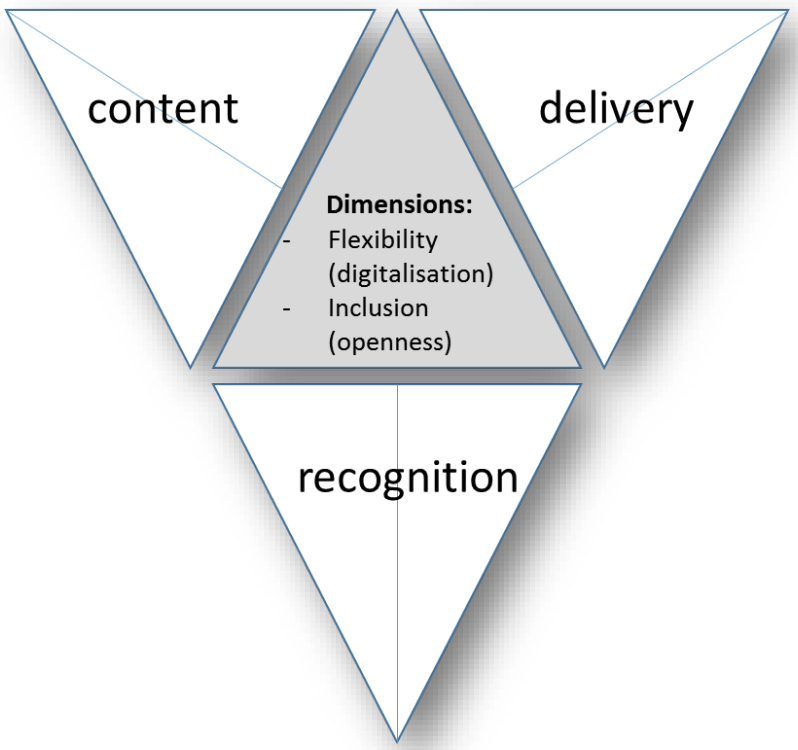


Table 3.1 provides the descriptive framework used to classify each case. These elements were elaborated for the design of the global survey used to capture key data from OOFAT cases across the globe.

Table 3.1: Descriptive elements in the OOFAT conceptual model

Category	**Sub-categories**	**Dimension:** **Flexible**/digital ***(What and how** – from static to dynamic and changing due to specific circumstances**)***	Dimension: **Inclusion**/open ***(Who** - from closed group to open network**)***
Delivery of HE (of "interaction services")	Access to content	How flexible is delivery by time/location/pace	How open is the institution to all learners?
	Access to guidance and support	How flexible is access to full support?	Who can access support? Who can provide support?
Content	Resources	How adaptable is the content to an individual learner?	How open is the provision of content?

Category	Sub-categories	Dimension: **Flexible**/digital ***(What and how** – from static to dynamic and changing due to specific circumstances**)***	Dimension: **Inclusion**/open ***(Who** - from closed group to open network**)***
	Assessment	Is assessment static, and one size fits all?	Are there restrictions on who can be assessed? Who does the assessing (eg peer review)?
Recognition	Content and process	Can different elements contribute to recognition? Are there flexible paths to recognition?	Is recognition available from multiple groups or one body?

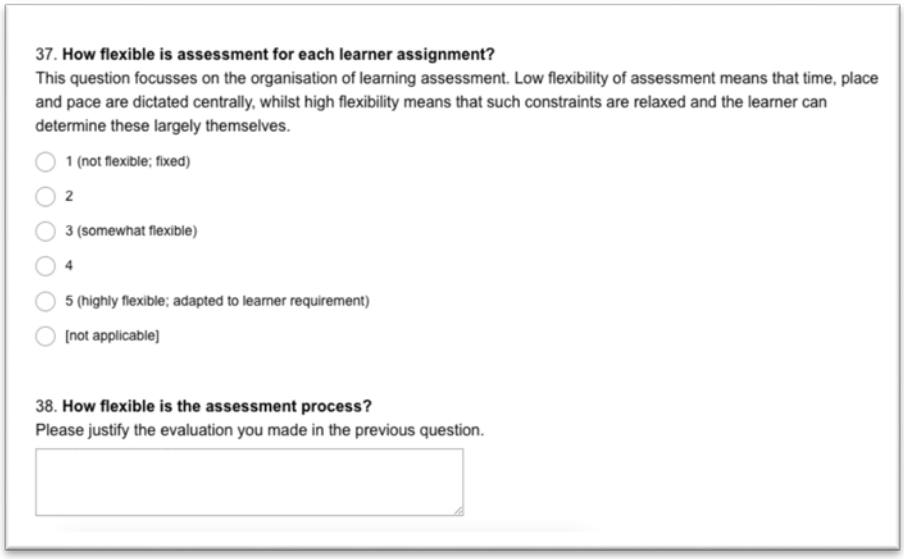
4 A global survey

4.1 Design

The process of implementing a global survey began with determining key criteria and data points that could provide a basis for modelling the delivery model (online, open, flexible and technology enhanced), the institutional framework of provider and the business model. This work went through several phases of iterative review with input from the project Reference Group, whose membership were leaders of open and online universities from across the globe (see Appendix 3). Key aspects considered included:

- *Organisational profile*: student enrolment; academic profile; campus/online/blended; institutional accreditation; leadership perspectives
- *Financial:* public-private funding mix
- *Teaching & learning*: pedagogy; method of delivery; curriculum design
- *Assessment*: recognition; quality assurance; accreditation
- *Technology*: specific types of digital technology applied
- *Business model strategy: elements of the business model as focus for strategy*

Figure 4.1: Sample questions from the OOFAT survey illustrating data gathering approach



37. **How flexible is assessment for each learner assignment?**
This question focusses on the organisation of learning assessment. Low flexibility of assessment means that time, place and pace are dictated centrally, whilst high flexibility means that such constraints are relaxed and the learner can determine these largely themselves.

- 1 (not flexible; fixed)
- 2
- 3 (somewhat flexible)
- 4
- 5 (highly flexible; adapted to learner requirement)
- [not applicable]

38. **How flexible is the assessment process?**
Please justify the evaluation you made in the previous question.

The questionnaire was designed to elicit responses, which would help to classify the cases acquired through this instrument. These were closed responses and required the respondent to make a choice within a fixed framework of options. To counterbalance this, the survey also asked for more detailed justification of the information provided. Figure 4.1 illustrates this approach: Question 37 asks for categorization on a Likert scale and Question 38 invites the respondent to provide a justification for the judgement made.

Limitations

It should be noted that throughout the survey, respondents made a self-assessment of their institution. There is no way of knowing how fully objective such respondents were. Furthermore, whilst in most cases the person filling out the survey was an institutional leader of the HEI s/he was entering responses for, this was not always the case. Therefore, the results should be interpreted as showing the breadth of strategies and practices across the globe and not taken as fully representative of parts of the world or specific types of institution. This survey has been explorative in nature. A further iteration would be able to start from the foundations of this first wave and be stricter in terms of who can fill out the survey.

4.2 Field phase

In February 2017 the global survey was launched to capture key information and data from higher education providers utilizing flexibility and inclusive processes in their provision models. The survey was implemented using survey monkey and a standardized questionnaire, which combined questions with set response options and comment fields for respondents to add further information justifying their response. Survey participation was promoted through multiple channels, including blog posts and the postings in the ICDE newsletter. The ‘universe’ under investigation comprised any university, but due to the focus of ICDE membership and the links of the authors it was particularly focused on established providers of distance and online education.

Cases were selected from all types of higher education providers according to the following selection criteria:

- ***Geographic***: A global balance with representation from around the world was sought
- ***Ownership***: Cases from both private and public-sector providers and mixed models
- ***Organisational***: Cases which describe collaborations between institutions, singular institutions and organizational subunits
- ***Themes***: with the goal of capturing emergent or interesting models:
    - a range of models for delivery
    - a range of models for openness of content
    - alternative recognition systems

Whilst the survey generated a lot of interest, in a large number of cases respondents did not complete all the questions. Therefore, during the field phase, which ran from February until the end of July2017, the authors also contacted specific people to encourage them to provide more complete responses.

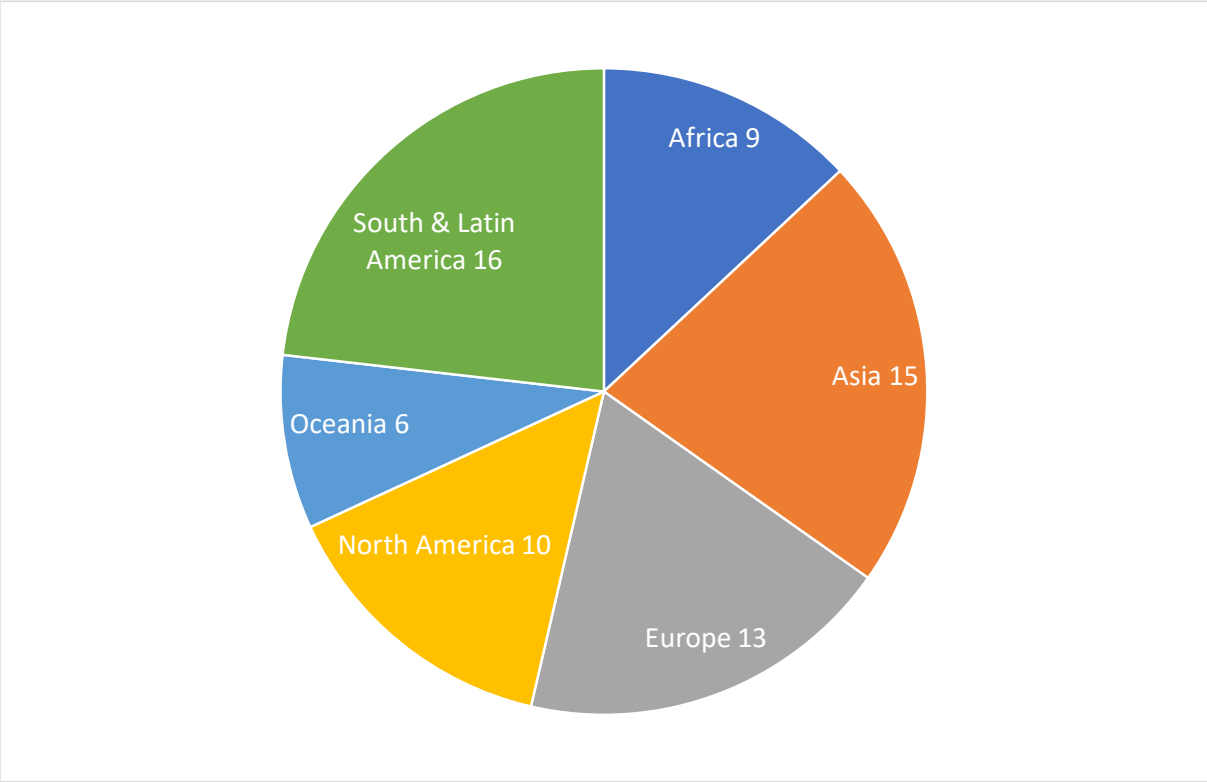
4.3 Coverage

The survey generated a lot of interest and elicited responses from over one hundred and fifty higher education institutions from across the globe. However, A key criterion for use of the data in this report was that each respondent described their OOFAT model by answering the required block of nine questions on their model of provision and seven on their business model strategy. Taking this as criteria for inclusion of HEIs in the main analysis, the study covers 69 HEIs from 36 countries.

Although this sample cannot be assured to be representative, it certainly highlights a broad spread of practices and therefore provides new insights into the development of higher education provision across the globe, which is often more focussed on showcasing the leading lights than on the broadness of difference.

Figure 4.2 shows the ***geographic spread*** of cases from across the globe based on the criteria of a full set of responses to the OOFAT block of questions. This sample covers all continents and 34 countries (see list of institutions in Appendix 1).

Figure 4.2: Higher education institutions included in the OOFAT data set by country



Data based on 69 cases, which also provided full details on their OOFAT model. See appendix for full list of institutions.

Table 4.1 shows the mode of studies by ***size of institution*** within the sample, where there is a tendency for mega-universities to be primarily online or distance providers, with campus-based HEIs more common in mid-sized institutions.

Table 4.1: Mode of provision by size of institution

Size of institution	Primarily online providers (n=21)	Primarily distance and correspondence providers (n=9)	Primarily campus-based providers (n=17)
More than 100 thousand (n=10)	5	5	0
20 – 100 thousand (n=20)	7	1	12
1 – 20 thousand (n=28)	11	3	14
no data (n=11)			

Data based on 69 cases, which provided full details on their OOFAT model and their prime mode of delivery.

Table 4.2 shows a good spread between HEIs by ***funding source***. In the sample, publicly funded HEIs are present in all three sectors by delivery modes, whilst privately funded HEIs are especially common as providers of primarily online programmes.

Table 4.2: Mode of provision by main funding source

Source of funding	Primarily online providers (n=21)	Primarily distance and correspondence providers (n=9)	Primarily campus-based providers (n=17)
Mainly private revenues (n=20)	12	1	7
Roughly balanced revenues from private and public sources (n=3)	2	0	1
Mainly public revenues (n=39)	11	8	20
no data (n=7)			

Data based on 69 cases, which provided full details on their OOFAT model and their prime mode of delivery.

5 Use of technologies

The survey responses highlight some general trends. The three most frequently mentioned technologies are those, which can be most directly aligned with the core functions identified in the OOFAT conceptual model: Online assessment (recognition), OER (content), and LMS (delivery). It is, furthermore, remarkable that all provider types mention the use of social media and mobile learning as part of their services – this suggests using new technologies to improve the interaction between learners and providers (something also highlighted in the business strategy chapter below).

Table 5.1: Use of various technologies by main mode of higher education provision

	Primarily online courses (n=28)	Primarily distance and correspondence courses (n=9)	Primarily campus-based courses (n=31)
Online Assessment	89%	44%	71%
Open Educational Resources (OER)	82%	78%	77%
Learning Management System (LMS)	79%	89%	81%
Mobile Learning	79%	78%	65%
Social Media	61%	78%	77%
Virtual Learning Environment (VLE)	75%	44%	45%
Massive Open Online Course (MOOC)	50%	56%	32%
Video conference	61%	56%	68%
Learning Analytics	50%	33%	32%
Eportfolios	32%	22%	42%
Bring Your Own Device (BYOD)	36%	11%	61%
Wikis	39%	11%	52%
Teleconference	39%	44%	42%
Blogging and micro-blogging	21%	0%	42%
Digital Badging	18%	0%	23%
Artificial Intelligence	7%	0%	10%

Legend: dark blue = used very frequently (i.e. by more than 75% of all HEIs in group); mid-blue = used frequently (i.e. by 50%-75% of HEIs); light blue = used selectively (i.e. by 25-50% of HEIs); pale blue = used rarely (i.e. by 1-25% of HEIs); white = not used.

Data based on 68 cases, which provided full details on their OOFAT model and their prime mode of delivery. Data ordered by frequency of deployment in primarily online course providers. Survey asked for multiple responses.

Overall, Table 5.1 suggests a pattern of cautious implementation across the board, with a range of educational technology being deployed but rarely all of them, and with a tendency towards the older ones.

There is a persistence of 'older' technology, for example Learning Management Systems (LMS) and Virtual Learning Environments (VLE) pervasive, and Wikis are still prevalent, especially in campus-based providers. Online providers are by their nature deploying many of the technologies in their core model. The more traditional distance education providers are likely to use technology to supplement their existing model rather than in pursuit of new innovations. Campus-based institutions tend to implement technologies for a specific need, such as trailing MOOCs in a specific discipline.

It should be noted that this study is not stating that HEIs are not adopting innovative practices around digitalisation and the project 'Virtually Inspired', which is funded by ICDE and hosted by Drexel Online

University, showcases cutting-edge practices.[2] Instead, the findings show that such innovations are seldom in mainstream practice. The survey only found two instances of use of Artificial Intelligence, although this is a technology (along with Blockchain), which has been dominating recent media. However, the NMC Horizon Report also suggests that the deployment of Artificial Intelligence is four to five years out for most of higher education (Adams Becker et al., 2017).

However, the results also suggest a shift in usage from specific tools to more generic, web-based ones. For example, the use of specific teleconference tools, which were often implemented in the 2000s, are likely to have been replaced by more lightweight, web-based video conference tools such as Google Hangouts. Similarly, Wikis, which have a very specific mark-up and interface, are likely to have been replaced by tools such as Google Docs for collaborative writing, or the use of shared file storage. These trends are in-line with the predictions of the NMC Horizon Report on emerging technologies in higher education - which sees a move away from closed learning media platforms to mobile learning and integration of additional services from commonly available apps (Adams Becker et al., 2017).

There is undoubtedly a lag between leading edge research and mainstream adoption, but the survey results suggest two further insights: that new tools must easily align to the core functions of a higher education provider and that tools that can be more readily added-on to core functions, but do not require wholesale organisational change, are more likely to be used frequently. Technology that requires a more fundamental shift in how these are conceptualised and implemented tends to be implemented more cautiously and for specific audiences or projects. This might be exemplified by the continued use of e-portfolios, which are often digital versions of the documentation of obtaining a formal certificate of learning, whilst the more flexible alternative – digital badging – is not yet frequently in use. Indeed, of the eight HEIs mentioning the use of badging, six can be described as having entrepreneurial business strategies (see Section 7.3).

Each HEI must align the use of technology to its OOFAT model and its business strategy for digital technologies to really improve teaching and learning. The specific OOFAT models and those for business strategy will be explored in the subsequent chapters below.

6 OOFAT Models

6.1 General picture

The questionnaire presented Likert scales (1-5) for the nine dimensions included in the OOFAT model and asked respondents to score their institution's provision according to these.

For example, the survey results for the Open University of Korea provide the following OOFAT model (see Appendix 2 for more information on this HEI) – see Figure 6.1.

[2] http://virtuallyinspired.org/

Figure 6.1: Dimensions of the OOFAT Model of Korea National Open University

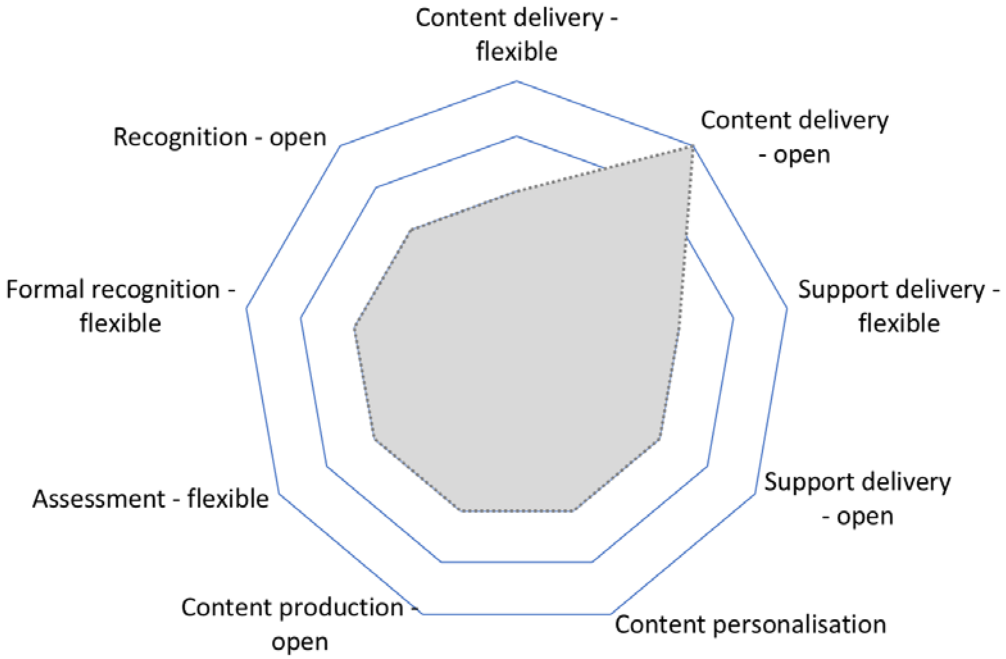
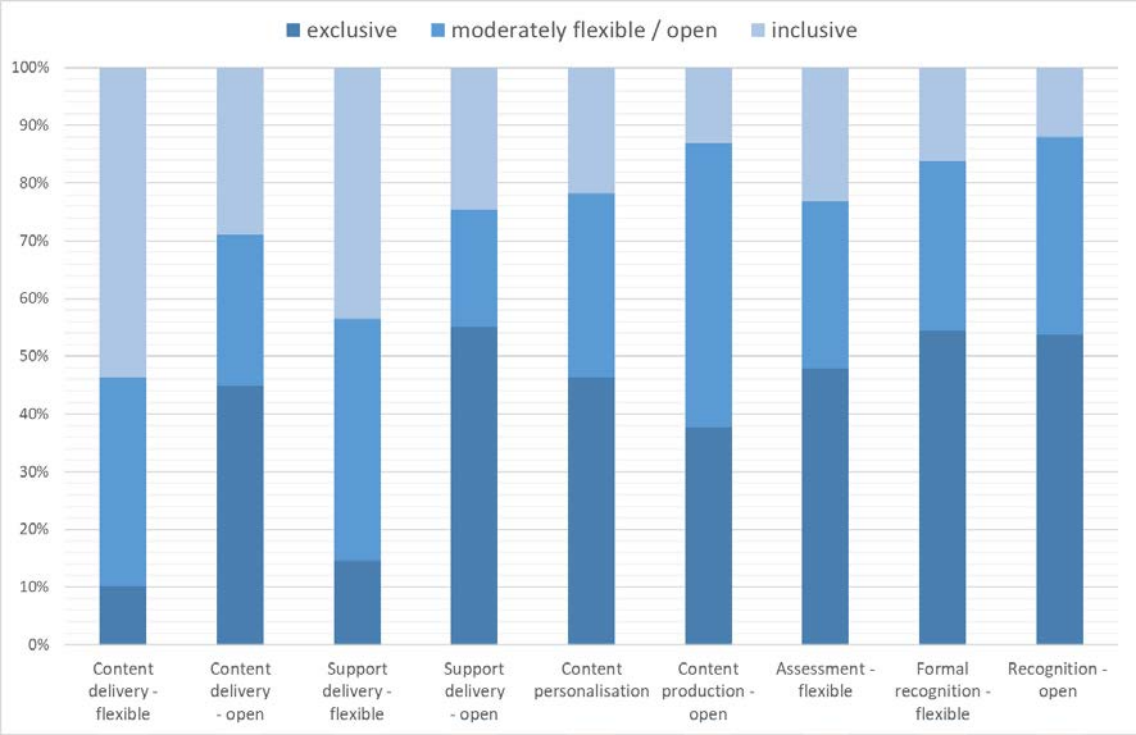


Figure 6.2 shows the aggregate results for all the HEIs, which provided complete data. For this, the scores were recoded as follows:

- Scores 1 and 2 = exclusive provision in terms of flexibility ("what" and "how") and limited openness of process ("who")
- Score 3 = moderately flexible / open
- Scores 4 and 5 = inclusive in terms of flexibility ("what" and "how") and openness ("who")

The chart highlights that many HEIs have OOFAT models with a high level of inclusive flexibility for delivery of content and, to a lesser extent, for provision of learning support. Content personalisation and more open recognition processes can be classified as emergent, but not common.

Figure 6.2: Dimensions of the OOFAT Models by the inclusivity and exclusivity of core processes



Data based on 69 cases, which provided full details on their OOFAT model.

Interpretational aid: For content delivery 7 HEIs stated that their content delivery was inflexible, whilst 37 stated that delivery was very flexible. The remainder stated their provision was moderately flexible.

From this graph the two areas where OOFAT is most widely deployed are in flexible content delivery and support delivery. The ones where there are the lowest levels of adoption are in openness in terms of recognition and support delivery, flexibility in recognition and content personalisation. For most other aspects, there was reasonable uptake across the sample.

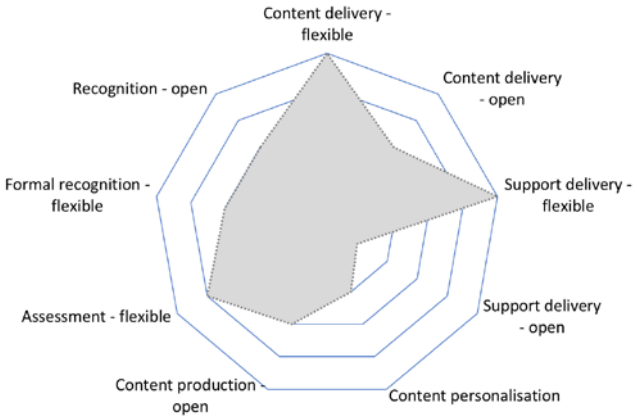
Looking at these individual aspects in more detail:

- For content delivery nearly 60% of providers characterised organisational access to their course materials as very to highly flexible, meaning there are few constraints to access in terms of time and place. The share is similar for access to course support. In contrast, only 30% of providers could say the same about the process openness of course materials and support, i.e. this group say that in most cases a student does not have to be officially enrolled in a programme to gain access to contents or support. Three institutional examples in this latter group are: the OERu from New Zealand, the University of Applied Sciences (Fachhochschule) Lübeck from Germany and the Open University of Nigeria (NOUN), which all focus on OER to provide such open processes of content development.
- In contrast, assessment and recognition tend to be neither technically flexible (e.g. anytime and anywhere) nor open in terms of who determines the conditions for assessment and recognition. This is not surprising, since higher education tends to be highly regulated for assessment, often as part of external (e.g. state-led) quality assurance procedures. Examples of leaders in making

assessment more flexible are Amity Online University from India, the Open University of Tanzania, which is implementing an examination on demand system, and Athabasca University from Canada, which focuses on challenge exams (see Figure 6.3). However, comments to the survey indicate the many HEIs are working on this area and it is an emerging practice.

- The question on content production focused on who is involved in the process – from purely in-house design and implementation, to external collaboration, to some learner-generated content (which is an argument often used in connection with OER). The survey shows that around one third of HEIs are generating content in-house, whilst the larger share collaborates on content design and production. It is noticeable that particularly the community colleges from the USA, which took part in this study, are moving towards more externally generated materials and combining these with the opportunities for adaptation in-house. Typical for this development was the following comment from the College of the Canyons (USA): "We are in early stages of a shift from centralized publisher produced content to decentralized OER content. At this time, OER is a combination of in-house and external production and sharing. OER is used by 12% of all students. This has doubled in the past year. It is expected to double again this coming year."

Figure 6.3: Example of HEI focussing on new forms of assessment - Athabasca University, Canada



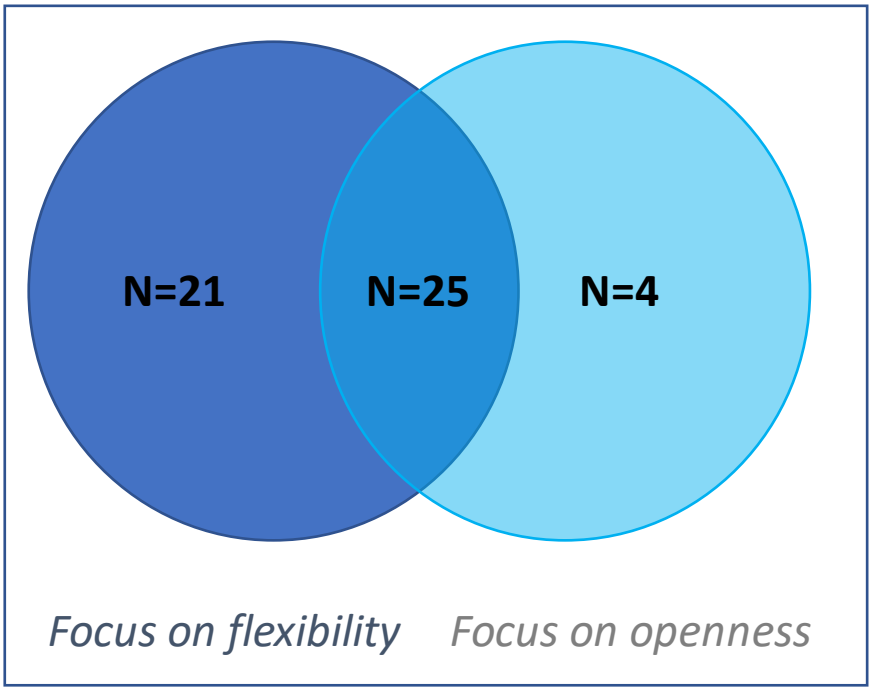
Established in 1970, Athabasca University (AU), located in Athabasca, Canada, is one of four comprehensive academic and research universities in Alberta and specialised in online distance education. With its Challenge for Credit option, AU is currently pioneering a new assessment approach. This option allows students to demonstrate their proficiency in the subject matter of specific AU courses without having to complete the entire course. Using a predetermined process, this option allows students to challenge courses based on their knowledge of the course content.

6.1.1 Strategic focus on flexibility and openness

The scoring on the OOFAT model can be used to find whether the strategic focus on flexibility (from an organisational perspective) or openness (from a procedural perspective). Indeed, nearly three-quarters of all HEIs have a value of over 3 (see description of scoring in 6.1) for at least one dimension in their OOFAT model – suggesting that their individual OOFAT profile has at least one strategic focus.

Figure 6.4 shows the result of reviewing all HEIs' strategies. It demonstrates, firstly, that there are some institutions only focussed on the flexibility dimension of provision. Secondly it shows that a few counterparts are only focussed on the dimension of openness. Thirdly, however, it shows that around half of all HEIs in the data set have profiles, which have a focus on *both* flexibility and openness of higher education provision. It should be noted that the four HEIs which focus most on openness also have moderate levels of flexibility, but their scores suggest that openness of delivery and support is their primary focus.

Figure 6.4: Number of HEIs by profile focus



Note: n=69 HEIs providing complete responses on OOFAT model, of which 50 have a clear strategic focus (i.e. at least one dimension with a rating higher than 3 on a scale of 1-5).

6.1.2 Clustering HEIs' OOFAT models

An advantage of the methodology used in the OOFAT study is that the conceptual model can be used to provide simple visual representations of the OOFAT models being employed by HEIs in the data set. These reveal distinctive patterns when converted to spider diagrams which can be clustered to form categories of OOFAT usage. The specific aspects of an individual HEI's OOFAT model may vary (i.e. which index shows a peak), but the strategy direction is similar.

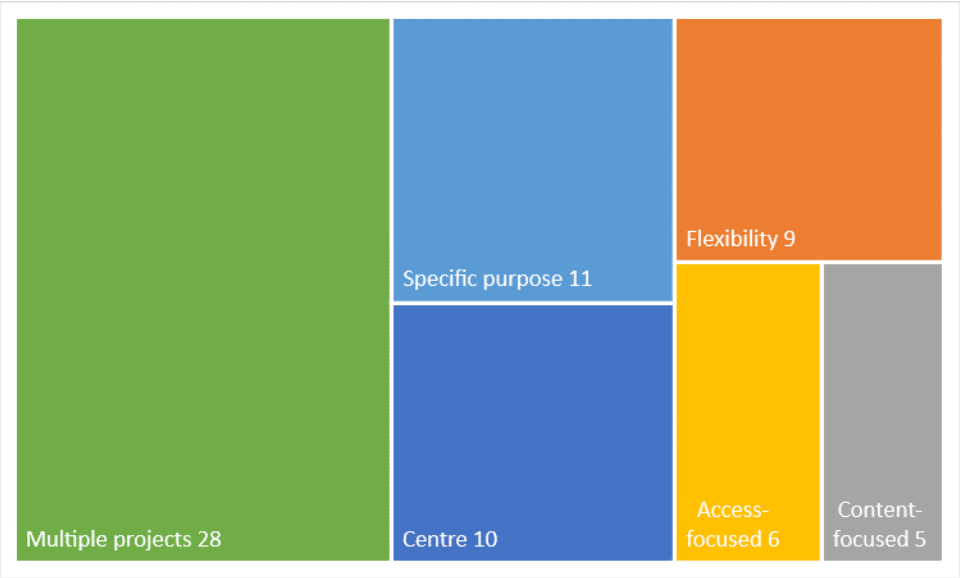
Overall, 69 out of the HEIs gave information from which their respective OOFAT model could be deducted. There are six different categories of OOFAT usage, which are described and illustrated below:

- OOFAT at the centre
- OOFAT for organisational flexibility
- OOFAT for a specific purpose
- content-focused OOFAT model
- access-focused OOFAT model
- OOFAT for multiple-projects

The model 'OOFAT for multiple projects' was the most frequent profiles as shown in Figure 6.5. This reflects the way that HEIs are adjusting their activity profiles by addressing several dimensions simultaneously in response to diverse external pressures. However, the models 'OOFAT at the centre', 'access-focused OOFAT' and ' OOFAT for organisational flexibility' are clearly visible in the data set and it is likely that such focused strategies across major sectors of the OOFAT processes will become

increasingly frequent, as HEIs adopt more developed and comprehensive strategies.

Figure 6.5: Spread of OOFAT models in the data set



Note: n=69 HEIs providing complete responses on OOFAT model.

6.1.3 OOFAT at the centre

This presents as a perfect, or near perfect, nonagon (with a scoring of 3 or higher on each criteria), suggesting that OOFAT is not implemented for one specific purpose, or market, but as an integral part of the institution's overall mission. Overall, ten HEIs follow this approach to OOFAT usage such as, for example, the OERu from New Zealand (Figure 6.6). For further HEIs with OOFAT at the centre see Appendix.

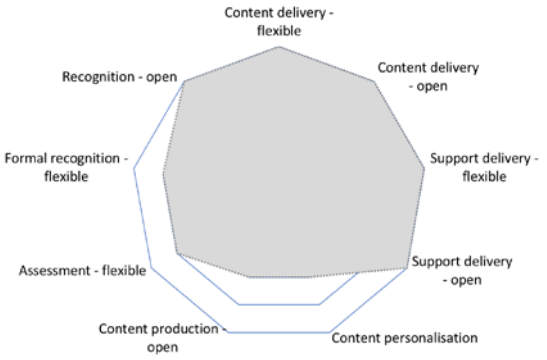


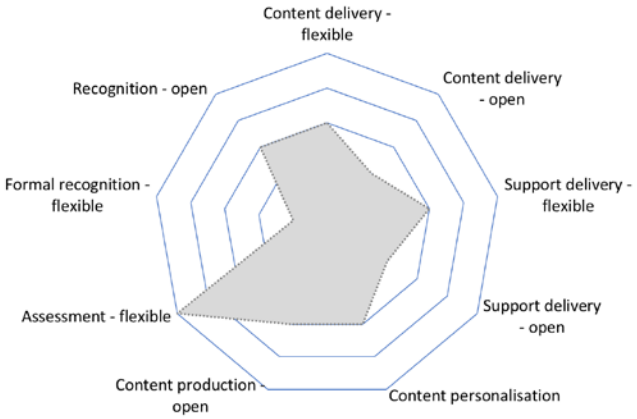
Figure 6.6: Example of OOFAT at the centre - OERu, New Zealand

The OERu network of institutions offers free online courses for students worldwide. OERu partners also provide affordable ways for learners to gain academic credit towards qualifications from recognised institutions. The OERu uses open source software, makes all its content available as OER, and allows some pathways where students can study their first year of an undergraduate course for free, and this will then be formally recognised, allowing transfer into the formal education system. Open practice across all elements of the OOFAT model sits at the core of the OERu mission.

6.1.4 OOFAT for organisational flexibility

This indicates that OOFAT is important in how it supports flexibility for the institution across all aspects of the conceptual model. In total, nine HEIs follow the flexibility approach to OOFAT usage, including the College of the Canyons (Figure 6.7). For further HEIs with OOFAT for organisational flexibility see Appendix.

Figure 6.7: Example of OOFAT for organisational flexibility - College of the Canyons, USA

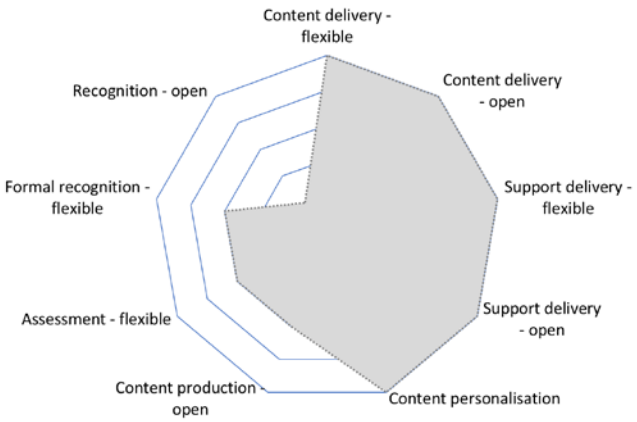


Established in 1969, the College of the Canyons (COC) is a public two-year community college that operates within the Santa Clarita Community College District. In terms of content, it is currently shifting from in-house content production to decentralized OER content. For delivery, students can choose between various schedule formats (16, 12, 8 or 5 week terms, on campus, online, hybrid etc.). Within these classes, the majority of students can choose time and place of assessments. Enrolment is open to anyone, no qualifications or selection process. Student authentication in online and hybrid classes is via a centralized and closed learning management system. Most learners earn a traditional credential (associate degree) recognized by within the formal education system. In addition, a growing group of students earn credentials (certificates) designed with input from industry groups and are aligned with industry standards (for example, welding inspector certificate, water technology certificate).

6.1.5 Content-focused OOFAT model

In contrast to the flexibility model which emphasizes the flexibility dimension across all aspects of the OOFAT model, other providers concentrate on the element of content specifically. With only five HEIs, the content-focused approach is the smallest category of OOFAT usage. One example of HEIs using this approach is the National Open University of Nigeria (NOUN) (Figure 6.8). For further HEIs with content-focused OOFAT models see Appendix.

Figure 6.8: Example of content-focussed OOFAT - National Open University of Nigeria (NOUN)

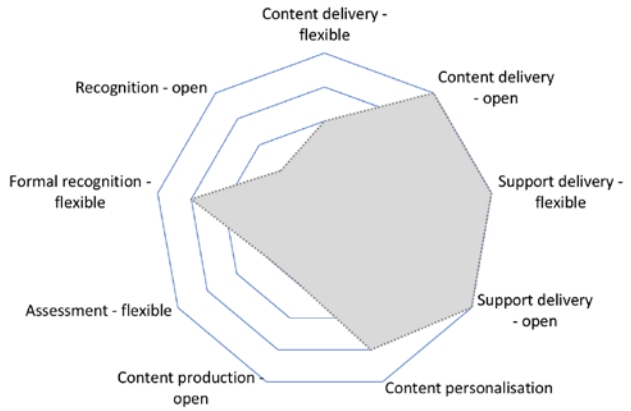


Established in 1983, the National Open University of Nigeria (NOUN) is a federal open and distance learning institution (ODL) located in Abuja. NOUN is the first of its kind in the West African sub-region and Nigeria's largest tertiary institution. Learning content is interactive and peer reviewed. NOUN encourages its staff to utilise OERs in their lessons and create OER for publication. Contents are available online and in print and learners work at their own pace. There are no restrictions to the contents on the web, which are free for all to view and use. With a focus mainly on adult learners, support is also flexible and offered when needed.

6.1.6 Access-focused OOFAT model

Some providers deploy OOFAT models, which target elements of access. Overall, six HEIs follow the access-focused approach to OOFAT usage, including Odisha State Open University from India (Figure 6.9), for example. For further HEIs with access-focused OOFAT model see Appendix.

Figure 6.9: Example of access-focused OOFAT - Odisha State Open University, India

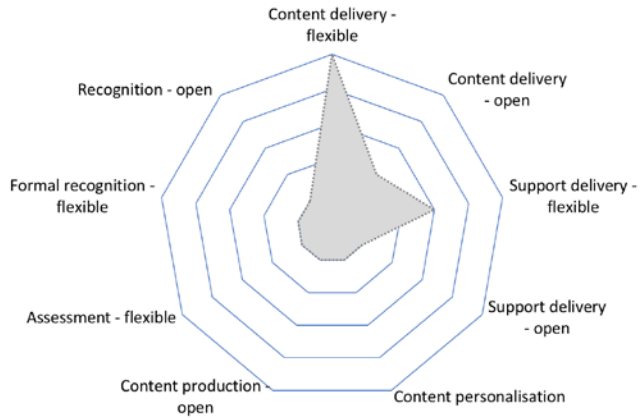


Established in 2015, Odisha State Open University (OSOU) is a distance learning state university located in Sambalpur, Odisha, India. They have a distance education approach, but are particularly exploring the use of OOFAT elements in terms of improving access. The university has an OER policy with CC-BY-SA licence thereby giving free hand for adoption, adaptation, contextualisation and even translation of content. Content is free for all but, for certification a nominal fee is charged from eligible learners. Faculty and part-time counsellors provide learning support at Study Centres. Academic Counsellors also evaluate the learners. The system is open and flexible for learners to pace their learning path in terms of time and pace.

6.1.7 OOFAT for a specific purpose

Regardless of their ranking on other criteria, many providers demonstrated a clear single peak, showing that OOFAT implementation was being developed for one very specific function or market. This was the case for 11 HEIs such as, for example, Universitas Terbuka from Indonesia (Figure 6.10). For further HEIs with OOFAT for a specific purpose see Appendix.

Figure 6.10: Example of OOFAT for a specific purpose - Universitas Terbuka, Indonesia

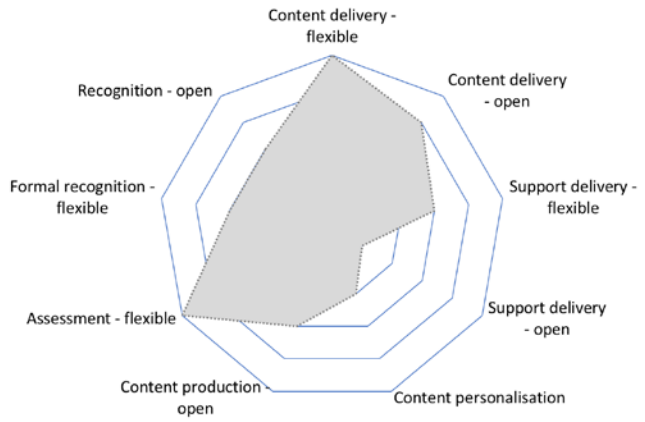


Universitas Terbuka (UT) is Indonesia's 45th state university and employs open and distance learning (ODL) system to widen access to higher education to all Indonesian citizens, including those who live in remote islands throughout the country as well as in various parts of the world. Only recently (since 2017), Universitas Terbuka provides digital learning materials starting 2017 and gives free internet access via wifi.id to students as well as provides cloud file storage for students.

6.1.8 OOFAT for multiple projects

Lastly, some patterns revealed multiple peaks, which were related to very different initiatives within the institution, often experimenting with different aspects of the OOFAT model and not necessarily as part of a unified strategy. There are 28 HEIs following the multiple-projects approach which makes it the largest category in terms of OOFAT usage, relating to more than one third of the respondents. The HEIs in this category include, for example, Thompson Rivers University from Canada (Figure 6.11).

Figure 6.11: Example of OOFAT for multiple projects - Thompson Rivers University, Canada

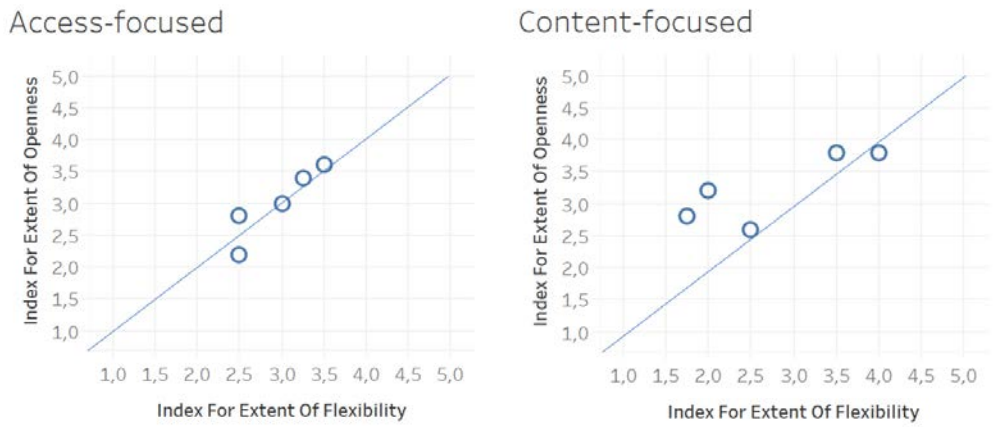


Established in 1970, the Thompson Rivers University (TRU) is a public university offering undergraduate and graduate degrees and vocational training. Its main campus is in Kamloops, British Columbia, Canada, it has a large online, open education programme also. A highly innovative university, it deploys a wide range of technologies at strategic and small-scale level. For instance, students may choose own assignments or projects in many instances and frequent use is made of blogging platforms for assessment. Open textbooks are an increasing part of content development. Their delivery is often available as start any time with up to 30 weeks to complete. Recognition is flexible in their extensive use of a well-established prior-learning accreditation scheme.

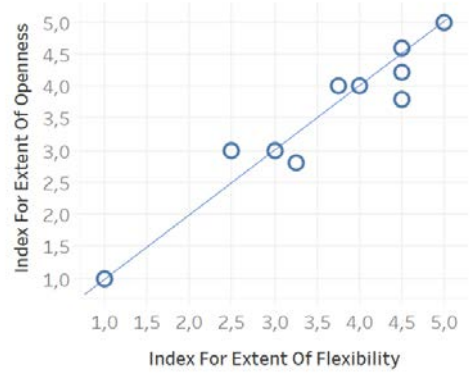
6.2 Strategic focus by type

The chart below (Figure 6.12) displays all 69 cases according to their OOFAT model type alongside their average score for flexibility and for openness (between 1 and 5 – see Section 6.1). This comparison shows that it is particularly the OOFAT models 'Centre and 'Content-focussed', which emphasise process openness in their teaching, learning and recognition activities. For the other models, organisational flexibility dominates.

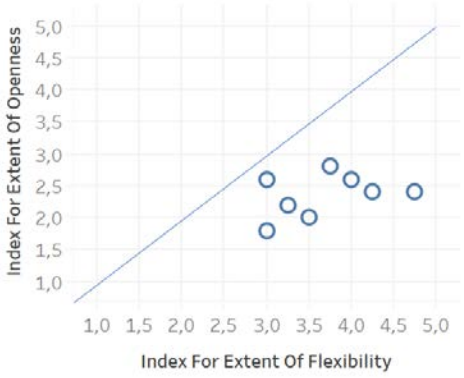
Figure 6.12: OOFAT model type by average score for flexibility and openness



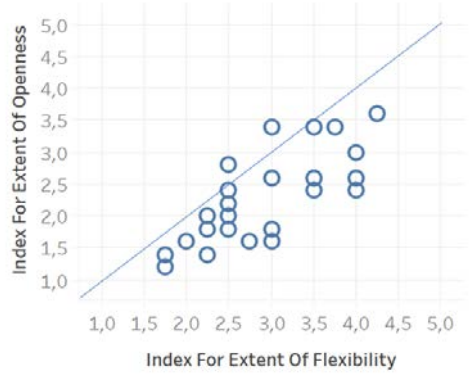
Centre



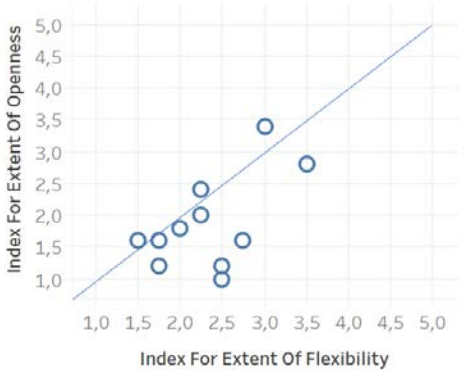
Flexibility



Multiple projects



Specific purpose



7 Business models

7.1 Approach

The global survey also required responding HEIs to classify their business model based on a simplified typology adapted from Taran, Boer and Lindgren (Taran, Boer, & Lindgren, 2015). This allowed responding HEIs to classify their business model by characterising it along seven dimensions. For each of the seven dimensions, two response options were offered, which together provided an insight into whether an institution is focussing its energy on developing existing activities or breaking into new markets. Table 7.1 presents the dimensions.

The typology goes back to an original concept of organisational design from Miles and Snow, which is still referred to frequently in the organisational design literature (Brown & Iverson, 2004; Miles & Snow, 1978; Sollosy, Guidice, & Parboteeah, 2015). Raymond Miles and Charles Snow suggest that business strategies generally fall into one of four categories: prospector, defender, analyser and reactor, with the first two being the two extremes on a continuum. An organization that follows a **prospector strategy** is a highly innovative firm that is constantly seeking out new markets and new opportunities and is orientated toward growth and risk-taking. In contrast, an organisation which follows a **defender strategy** focuses on improving the stability and efficiency of its core activities whilst serving its existing market domain (see Box 6.1). The typology developed by Taran et al. provides a simple manner of measuring how close to a prospector or defender strategy an institution (here an HEI) is.

Table 7.1: Dimensions of a business model

Core aspects	Defender-like approach	Prospector- like approach
Products and services	We deliver and/or support core institutional provision	We offer something different, complementary or alternative to the main provision
Target group	We target an existing market	We are targeting a new (or non-traditional) market
Communication channels	We interact with learners through traditional channels	We interact with learners through new or innovative relationship channels (physical or virtual)
Legacy or new value chain	We develop, produce and deliver the provision by making the most of legacy knowledge	We develop, produce and maintain our offering through exploration of new approaches and innovation
Competitive advantage	Our competitive advantage comes from traditional competences (e.g., market knowledge, expertise, improvement of existing technology)	Our competitive advantage comes from new, unfamiliar, competences (e.g., new or emerging technologies, innovation in working practices)
Networks	We operate primarily within traditional institutional or cultural parameters	We operate primarily in non-traditional or (dynamic) networks (e.g., alliance, joint-venture)

Core aspects	Defender-like approach	Prospector- like approach
Profitability and sustainability	We maintain profitability through incremental cost cutting and efficiencies	We maintain profitability through new processes to generate revenues, or cost-cutting in existing processes

Note: Adapted from Taran et al. for the global questionnaire by authors.

Box 6.1: Defender and Prospector organisations according to Miles and Snow

In their book entitled "Organisational Strategy Structure and Process", Miles and Snow proposed a new way of seeing organisational design. They argued that organisations must undertake an ongoing process of alignment to their environment and failure to do so makes organisations ineffective. Adjusting to environmental dynamics is a complex process involving change and development of a myriad of internal activities. However, Miles and Snow offered a conceptual model for recognising the fundamental focus of organisations and classifying them into one of four basic business strategy models. Their approach has been applied to analysing many organisations across the world. The book was first published in 1978 but recently republished to celebrate its 25-year anniversary and discuss its continued relevance in the organisation design field.

The authors break the adaptive cycle into three main strategic problems:

- The entrepreneurial problem is focussed on which product or service should be chosen to reach which target market.
- The engineering problem is about creating a system and choosing technologies to transform the entrepreneurial idea into a concrete product or service.
- The administrative problem is finally about reducing uncertainty within the organisation by setting up routines to rationalise and stabilise activities and decision-making.

Within this framework, the most innovative organisations are given the name Prospector by the authors. These organisations are constantly searching for new markets and new growth opportunities, whilst encouraging organisation-wide change and risk-taking. These organisations follow a 'first-in' strategy for market entry or market innovation. Today, they might be classified as organisations with a start-up mindset. The counterpart to this organisational type is given the name Defender which concentrates on protecting its current markets, maintaining stable growth, and serving its current customers. It aims to improve efficiency and cost-effectiveness and so is largely focussed on the engineering and administrative problems.

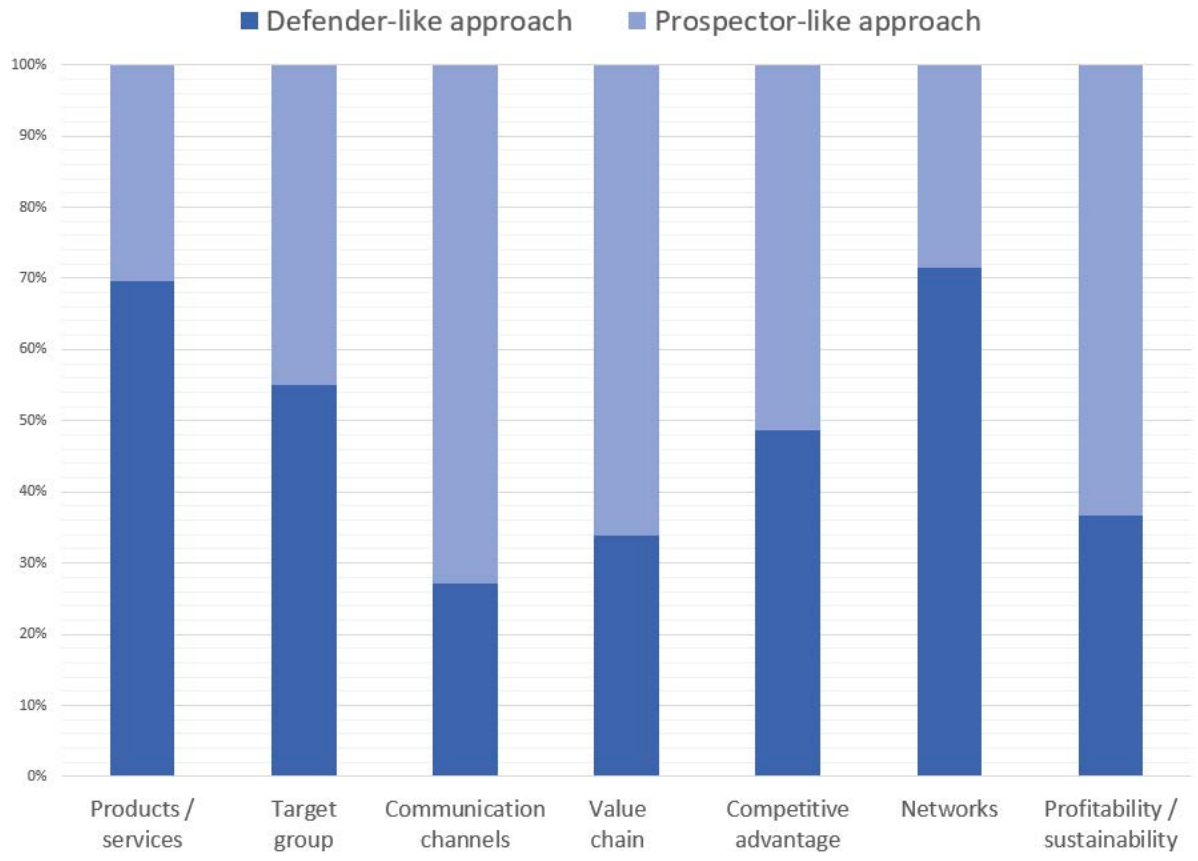
Aside from these basic forms are the two additional types: Analyser and Reactor. These types have less of a consolidated singular strategy, but are agile in some areas and reactive in others. This may be the result of coping strategies and transition in organisational form due to external stimulus. The difference between the two is that Analysers still have a clear selective strategy, whilst the Reactor is not proactive or strategic in its actions. It has been argued that the Analyser position may be the archetypical one for dealing with a changing and fluid landscape. This is of interest to the analysis of institutional strategies in the higher education area, since universities are often described as hybrid organisations, adapting to some external stimuli, whilst buffering from others.

7.2 General picture

The aggregate results for the data set are presented in Figure 7.1. The data shows that higher education institutions are most likely to be adopting a more innovative approach – a Prospector-like approach - with respect to stakeholder communication, making the most of social media and other opportunities for outreach. Nearly three-quarters of HEIs in the data set have taken this stance. Interestingly, the 'networks' parameter indicates that more than two-thirds of respondents from HEIs across the globe agree to the statement 'We operate primarily within traditional institutional or cultural parameters'. This suggests that new methods are being used to operate within existing networks.

Another area where there seems to be more emphasis put on innovative approaches going beyond legacy knowledge within the HEI to reach new markets (parameter: value chain). Established institutions are often limited in their ability to monetise legacy knowledge within legacy systems for enrolment, tuition and examination, so it is unsurprising that this is an area where HEIs are adopting a more innovative approach.

Figure 7.1: Types of strategy adopted in the business model by dimension



Note: n=69 HEIs who provided full data on their OOFAT model.

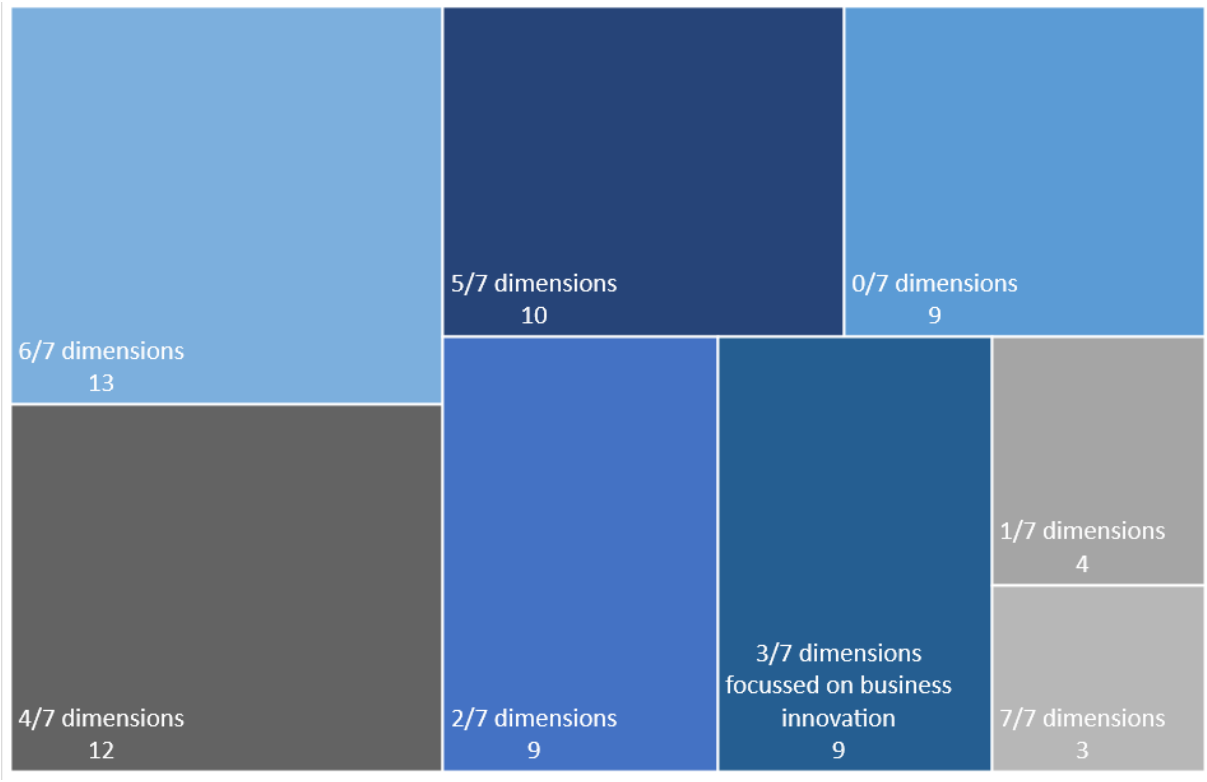
7.3 Clustering HEIs' business model strategies

Taking a similar approach to the one adopted for the OOFAT profiles, clustering of the HEIs in the data set can provide insights into business models and whether institutions tend to be focussing more on

chasing new innovative approaches or adapting within their normal business environment. The first view is presented in Figure 7.2 showing numerically how many HEIs take a Prospector-like approach to how many dimensions in the business model typology. The overview shows how HEIs' strategies vary from cautious (Defender-like) to ambitious (Prospector-like):

- 5 HEIs in the sample display Defender-like tendencies, i.e. do not choose innovation over legacy approaches to any part of their business strategy. These institutions would be assumed to be focussing on maintaining their market position and focussing on efficiencies in delivery by concentrating on core markets with core products and core technologies. So, when they use digital technologies, it is with this purpose in mind. This does not mean that they are reactionary to new technologies and all five mention applying MOOCs and OER in their learning provision.
- Equally cautious, but perhaps with a clearer forward-looking strategy are the group, which are innovating on two dimensions of their business strategy (9 HEIs). These HEIs display little in common with one another, except that they are unlikely to be innovating around products and services, i.e. they are maintaining the traditional core of their business strategy.
- A larger group are the 17 HEIs which are innovating on four or five dimensions. They tend to have strategies focussed not on changing product or service (i.e. the core), but in reaching out to new target groups and using new communication channels.
- Finally, another large group are the 13 HEIs which are innovating on six or seven dimensions. These are truly showing Prospector-like characteristics. In this group it is interesting to note that around half are innovating in all areas apart from their products and services (i.e. not in the core area).

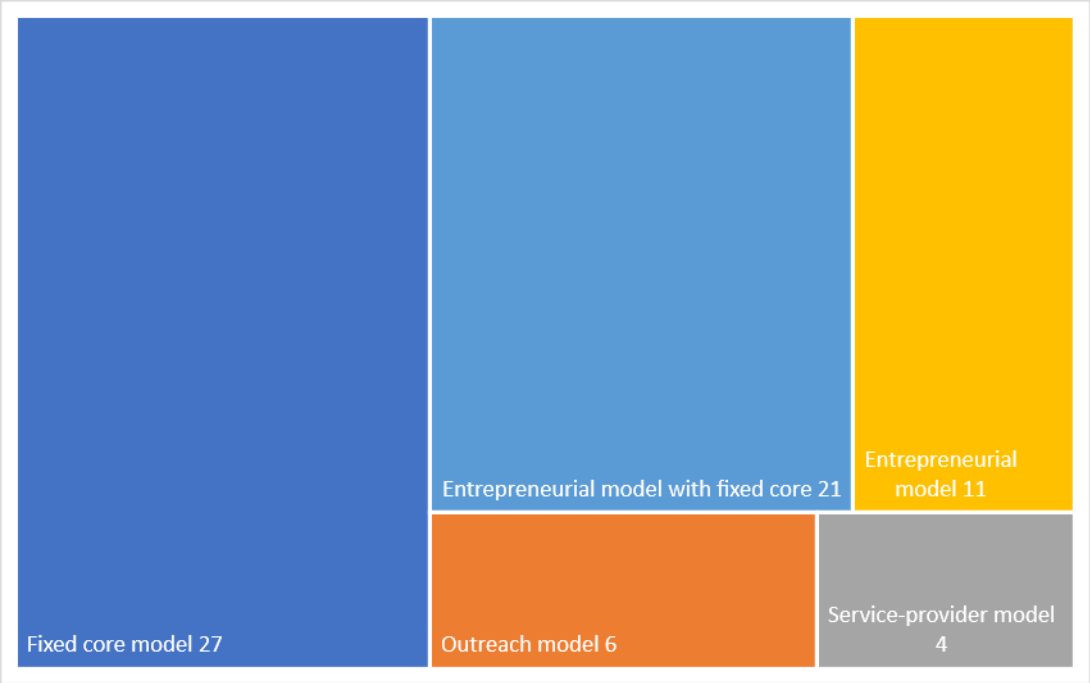
Figure 7.2: Complexity of business strategy model - number of 'prospector-like' components to HEIs' business models



Note: n=69 HEIs who provided full data on their OOFAT model.

A closer look at individual strategies of institutions gives rise to five business strategy patterns, the first two of which are Defender-like, whilst the other two are Prospector-like – see Figure 7.3.

Figure 7.3: Spread of Business model strategies in the data set



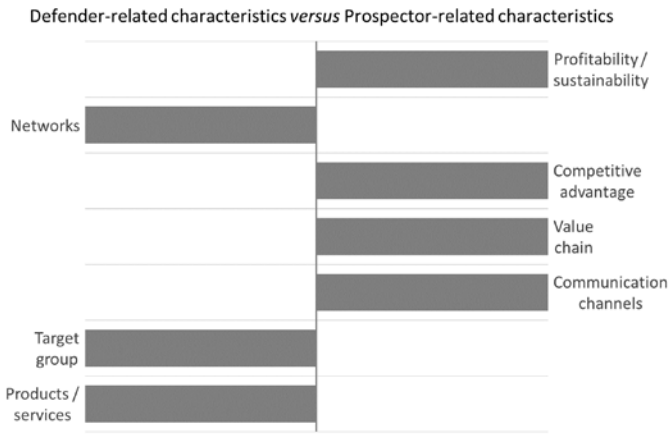
Note: n=69 HEIs who provided full data on their OOFAT model.

Defender-like strategies

7.3.1 The fixed core model

In this model, 27 HEIs are maintaining a more traditional legacy approach to their products and services and to their target market, although they may be innovating in other areas. An example of this model is the Open University of China (Figure 7.4). For further HEIs with fixed-core models see Appendix

Figure 7.4: Example of fixed core model - Open University of China

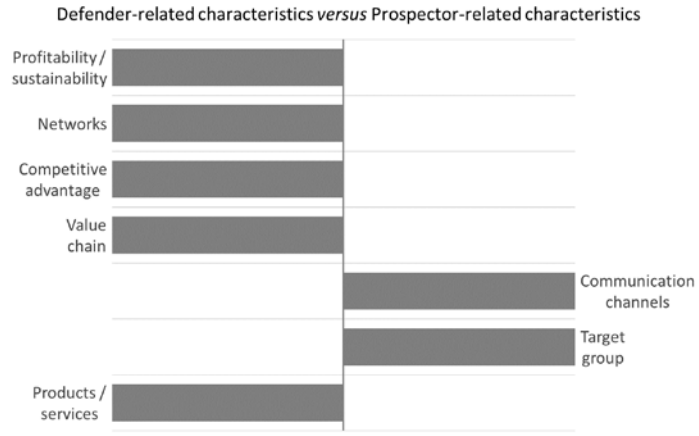


The Open University of China (OUC) was established in Beijing in 1979 and operates under the direct supervision of the Ministry of Education. Using a mixed approach of face-to-face and online distance education, OUC caters to a heterogeneous student body of roughly three million pupils with a special focus on disabled students, minority groups, migrant workers and students from rural areas. Recent years have seen reforms, which are outlined in the Strategic Plan for the OUC 2010-2020. One of these reforms refers to expanding the university's learning platform. The new learning platform will use big data to trace students' learning pathways to support individual learners. This will give the OUC an advantage, since it can better service students' needs. With this, it aims to become one of the main online platforms in a national lifelong learning system with the idea of a national learning "supermarket".

7.3.2 The outreach model

In this model, six HEIs maintain the same products and services, but are innovating in the dimensions of target group recruitment and utilising new communication channels. One example of this model is Athabasca University from Canada (see Figure 7.5). For further HEIs with outreach models see Appendix.

Figure 7.5: Example of outreach model – Athabasca University, Canada

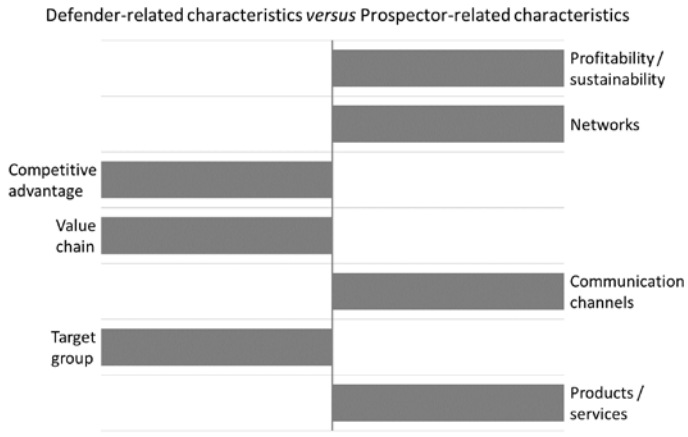


Established in 1970, Athabasca University is one of four comprehensive academic and research universities in Alberta and specialised in online distance education. The university has recently been further developing its outreach strategy with innovations around recognition and assessment.

7.3.3 The service-provider model

In this less frequently found model, the four HEIs maintain a focus on their target group whilst particularly innovating in the areas of product and service and communication channels. An example of this model is the Association of Universities for Digital Education in Economics and Management (AUNEGE), which is one of thematic digital universities and focuses on harnessing a network structure to provide better teaching and learning opportunities for its students (Figure 7.6). For further HEIs with service-provider models see Appendix.

Figure 7.6: Example of service-provider model – AUNEGE, France



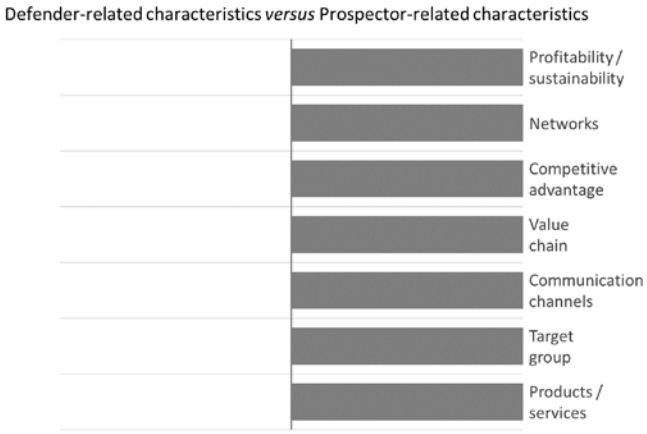
AUNEGE is one of the eight Université Numérique Thématique (UNT), founded in 2005 by the French Ministry for Higher Education, which offers content from its associated member universities. It was founded to promote collaboration between universities in provision of digital education around economics and management and to offer new access to digital content for learners.

Prospector-like strategies

7.3.4 The entrepreneurial model

This group of 11 HEIs adopt innovative strategies for the areas product and service, target group and communication channel. An example of a more cautious entrepreneur in this group is the OERu from New Zealand (Figure 7.7) which innovates along all seven dimensions. For further HEIs with entrepreneurial models see Appendix.

Figure 7.7: Example of entrepreneurial model – OERu, New Zealand

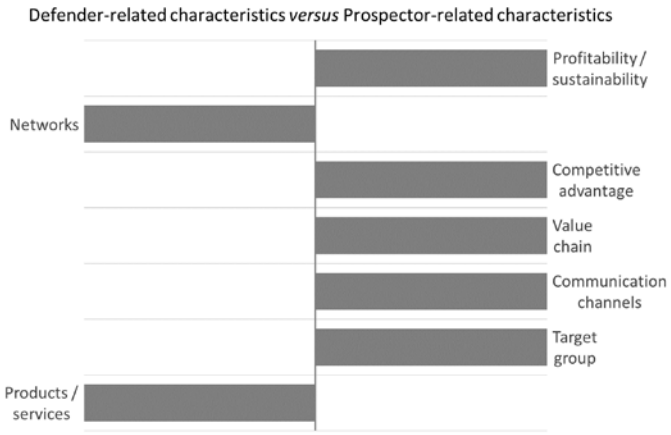


The OERu network of institutions offers free online courses for students worldwide. OERu has developed an open business model that generates a sustainable income: the costs for hosting OERu courses are covered by a nominal membership fee from OERu partners. In return, OERu partners derive institutional value for their membership: by reaching a global audience, raising brand awareness, increasing access to more diverse markets, influencing OERu planning, and better achieving community service goals. Through the OERu network, members also have the chance to gain access to world-class expertise in open source, cloud based technologies for cooperative design, development and delivery of open courses. Learners pay for assessment, if and when they are able to.

7.3.5 The entrepreneurial model with fixed core

This group of 21 HEIs has a strategy focussed on a fixed core, but building innovation around this. This approach is taken, for instance, by Hamdan Bin Mohammed Smart University in the Arab Emirates (Figure 7.8). For further HEIs with entrepreneurial models with fixed core see Appendix.

Figure 7.8: Example of entrepreneurial model with fixed core - Hamdan Bin Mohammed Smart University, Arab Emirates



Established in 2002, Hamdan Bin Mohammed Smart University (HBMSU) is a research-based university located in Dubai with a focus on smart learning. Currently, HBMSU is the only accredited online university in the United Arab Emirates (UAE) and keen to promote this approach as a viable business model, planning to expand operations to the Gulf and MENA regions in the coming years. According to the classification of its business model, HBMSU is innovating in 7 from 8 dimensions. Similar to many other HEIs, whilst it innovates, its activities are largely developed and delivered within its own institutional network. In order to meet

individual demands of specific learners' profiles, HBMSU has developed four learners' categories, making up four different target groups:

- Casual Learners are those who need short courses and opportunities to gain basic knowledge. This group is targeted in the context of lifelong learning and general societal impact. The open access programmes are usually designed as general or sector-related courses, which are short, often not formally accredited and fully online.
- Committed learners include professionals in specialized fields. The programmes designed for this segment are competency-based and seek to enhance knowledge and develop skills for meeting the industry-specific needs. The courses are between one and nine months in duration and often involve blended-learning methods. Graduates receive a professional diploma, which is recognised by the respective industry partner.
- Concentration learners include those who need research-driven academic qualifications to improve their knowledge and career prospects. For this category of learners, accredited undergraduate, graduate and doctoral degree programmes are offered. These are formally accredited by the Ministry of Education, UAE.
- Continuing learners include executives involved in making strategic and tactical decisions in their organizations. The courses address selected topics that meet the needs of these executives and are offered in a flexible format to suit their schedules. There are no entry requirements and courses are often fully online and highly individualised, in some cases involving one-on-one mentoring.

7.4 Strategy, not technology, drives digital transformation

The focus of this study has been to investigate how digitalisation is impacting on higher education provision. However, in contrast to other studies, its focus has been less on the technologies themselves and more on the changes being facilitated through digitalisation technologies. In this, the study focussed on the dimensions of flexibility and openness. The study has also turned its attention to strategic focus of higher education providers in line with the MIT study from 2015, which emphasised that it is not technology, but strategy that determines the extend of digital transformation (Kane, Palmer, Philips Nguyen, Kiron, & Buckley, 2015).

Universities are a particularly complex type of organisation, so it is highly likely that reactions to change will be iterative and fragmented. This is because of the different departments throughout the university and their position within the total hierarchy of the organisation (e.g. IT-centres as service centres, faculties as the focus of teaching and learning) and because of the different views and behavioural norms, which tend to be different depending on subject disciplines and the focus of academics' work (e.g. research versus teaching) (cf. Trowler, 2014). It is also because of the way various external governance instruments work inwardly, setting norms and incentives for certain activities. For instance, the Hamdan Bin Mohammed Smart University had initial problems having its online courses recognised by the external quality assurance agency, until the quality assurance procedures were adapted to include digital provision. Furthermore, performance-based funding mechanisms in many countries are using performance measures very much focussed on classic on-campus, fixed duration courses with a clear route to graduation for allocating public monies thereby promoting these organisational behaviours instead of widening participation and flexibility (Orr & Usher, 2018).

The approach from Miles and Snow talks about the important of organisational design being coherent and contingent to the way an organisation wants to and does work. Each strategy has to include an organisation's approach to the problems of which product or service (i.e. teaching and learning) for which target market (i.e. type of student) and how to stabilise reactions to environmental change and to organise decision-making. The approaches to these problems, include the utilisation of technologies to bring the product or service to the target market. This approach can be innovative or legacy-based and risk-averse.

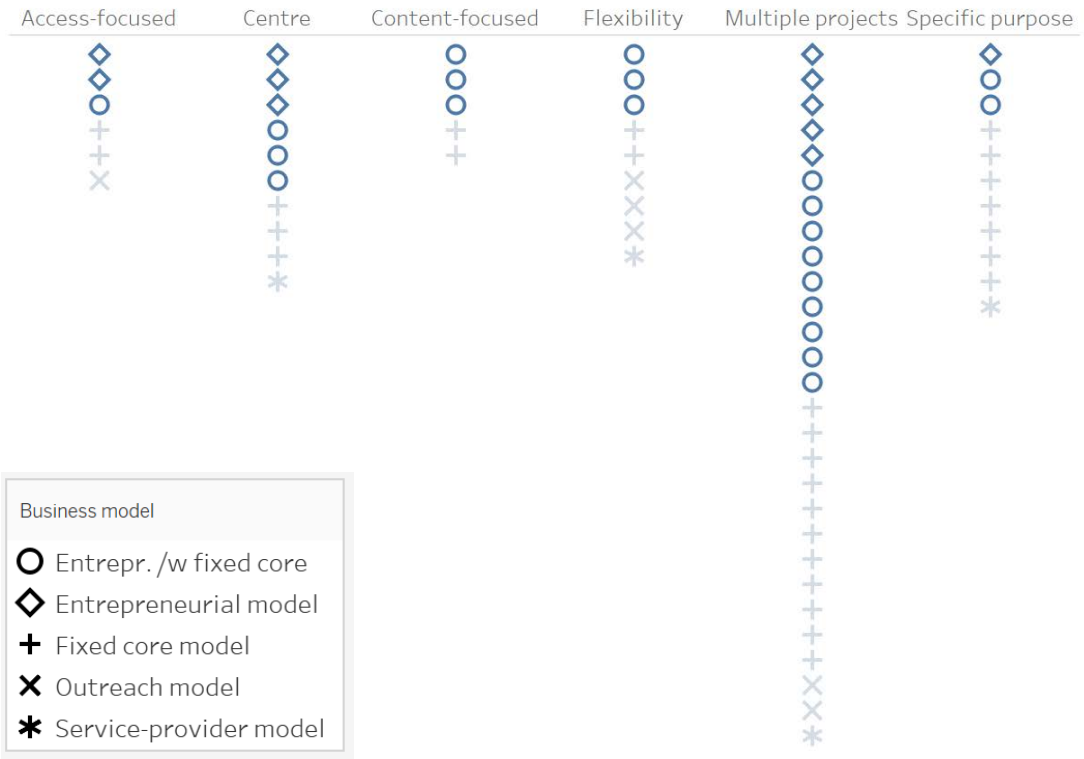
The data set for this study finds three-quarters of the HEIs to have a strategy, which does not aim to be innovative in the area of 'products and services', which we have called 'the core' of higher education provision in this chapter (Figure 7.3). This suggests that 'the core' is an area, which is much less amenable to reform – unless a university wants to follow a more ambitious (and perhaps disruptive) route. This mirrors previous studies in this area, which have focussed on organisational change and technological adaptation in higher education (cf. Marshall, 2010).

To go deeper into this connection, Figure 7.9 shows the connection between business model and OOFAT strategy. Here it especially emphasises the 27 HEIs with 'entrepreneurial' models, i.e. those which tend to choose the innovative approach over the legacy-approach in most strategic dimensions (Section 7.1). It is interesting to note:

- On the one hand, that the most entrepreneurial business strategies (i.e. those without a fixed core – diamond shaped) are found where OOFAT is being at the centre and for access-focussed models. But such strategies are also evidently being implemented piecemeal for multiple projects rather than as a whole institutional strategy. Perhaps this is the initial (experimental) stage before greater implementation.
- On the other hand, an entrepreneurial strategy with a fixed core appears to be the one most conducive to many different types of OOFAT model.

These results, therefore, give further evidence for the assertion that HEIs are particularly innovative around their core products and services, rather than being innovative with them.

Figure 7.9: Business model strategies aligned to OOFAT models



Note: n=69 HEIs will clear ascriptions to both schemes.

8 Next steps for more comprehensive OOFAT approaches

8.1 Key findings

The results of this study suggest that the majority of HEIs across the world are currently in the process of experimenting with digitalisation and applying new technologies to certain parts of their operation. It is clear that the next phase of this development lies in the formulation and effective implementation of comprehensive institutional strategies, which provide clear focal points for where a university or college has chosen to integrate digitalisation into its key processes.

This study has had a focus on teaching and learning and has therefore defined these key processes as content development, delivery of learning and recognition of learning and has assumed that the changes emerging from digitalisation will especially bring improvements to the organisational flexibility and the procedural openness of these key processes. Harnessing these opportunities for change will make teaching and learning more accessible and more inclusive for all.

In order to help HEIs place themselves in the landscape of possible strategies for change, the study provides two typologies – one for the model of higher education provision, which is called the OOFAT model, and one for the type of strategy, where Defender and Prospector approaches are distinguished. HEIs might use these either to determine their current position or to decide which type of model they aspire to have.

For the OOFAT model, a goal for many HEIs would be to reach the 'OOFAT at the centre' model, where digitalisation is being harnessed to give a high level of organisational flexibility and a high degree of procedural openness. Any learner can participate at any time, and part of this learner experience is the development of content for others, supporting others' in their learner and contributing to endorsement of others through peer assessment. However, this need not be the goal of all HEIs. Other HEIs might decide that their strategic objective is less radical, and they will focus on making participation more accessible, without new initiatives around recognition. Perhaps over time, they will progress past this and look to new recognition initiatives, which can support the accessibility agenda by enabling learners to start and stop learning periods more frequently – each time gaining credits or badges, which will be recognised when they return to the learning process at a later period.

The business model is not directly linked to the OOFAT model, but instead typifies the approach taken by the HEI in order to reach their strategic goal. Some institutions will decide that for parts of their key processes, the OOFAT objective is only reachable from where they are now if they become more entrepreneurial, call existing routines into question and take some risks. Others will take more cautious approaches, building partly on their legacy of existing processes, but also looking to others in the field to learn from them.

A key finding from this work is that HEIs are complex organisations with a good deal of heterogeneity, and simple technology solutions will not suffice. The core functions of HEIs are robust, and change takes place slowly at the kernel of operations, which given the longevity of universities, is unsurprising. This research illustrates that technology, open and online approaches are adopted in a variety of ways to meet a diverse set of needs, and this myriad set is a more beneficial way to view the sector than a one size fits all technological stance.

8.2 Next steps for higher education institutions

HEIs can use the typologies developed in this study either to determine their current position or to decide which type of model they aspire to have. To this aim, next steps for HEIs are covered in greater detail in Chapter 8 which provides a step-by-step guide to asking the key questions and reviewing existing strategies.

Peer learning between HEIs would also be helpful in developing appropriate OOFAT strategies. ICDE and other such membership organisations can aid this process of peer learning between HEIs through workshops and mentoring programmes – and they can use the types developed here as a first orientation on differences and similarities between institutions. A network of practice, using the OOFAT model as a common representational framework, will allow HEIs to learn effective and different models of implementation.

8.3 Next steps for policy-makers

This study also entails a message for policy-makers. They form the policy and regulatory framework in which HEIs can develop and implement new strategies. Higher education is at a key juncture in considerations of how to fully benefit from the new opportunities for learning offered by digitalisation. The early MOOC hype has shown that – at least for the mainstream – there are no quick fixes and adding on digital elements to a normal university or college will not foster digital transformation or large-scale improvements in teaching and learning. If digital transformation is to happen in higher education, the types of possible implementation of digitalisation in key processes of higher education provision must be promoted and facilitated in policy and regulatory frameworks. This will include reviewing governance structures, which are often based on a simple administrative model of higher education. There is a criticism that governance reforms of the last decade have been based on an administrative understanding of higher education (Dougherty & Natow, 2015; Stahlke & Nyce, 1996), leading to the question of whether governance and monitoring initiatives capture and encourage the appropriate types of student performance through the tools which they use (Orr & Usher, 2018). Policies in higher education can actively work against some of the innovation seen in OOFAT, for instance using the number of students completing a degree study as a quality metric may inhibit the use of OOFAT to reach new audiences where degree completion is likely to be less important. Policy frameworks should therefore encourage experimentation and innovation alongside accountability and transparency. The typologies (especially for OOFAT) highlight the areas, where most change is likely in the coming years – and most review of policy and governance structures will be necessary.

8.4 Next steps for researchers

The dynamism of developments in digital technology and the experiments in how best to benefit from them are ongoing and the pace of change is unlikely to slow in the near future. As with other organisations, HEIs will want to learn from good examples and from what went wrong. This study was only able to skim the surface to pick out strategies and types, but was not able to investigate how reforms are developed and implemented in individual cases. In contrast to the peer learning between HEIs this is likely to be a more conceptual programme of research.

Ethnographic and psychological approaches may be helpful to understand the behaviour of members of higher education providers in the context of a changing environment. Certainly, approaches

influenced by didactics and learning theory should be used to understand how learning arrangements (and the relationships between students, teachers and administrators) change in the context of digital solutions. A central need is to harness further organisational research to understand how opportunities for new organisational forms might lead to new types of higher education provider and to investigate the business case for digital solutions and how to assure operational sustainability in the context of new costs and alterations to revenue structures. Finally, looking at change to higher education providers and provision is a question for governance research to understand how the regulatory framework around the activities of a HEI constrain or encourage certain actions. Taken together, this is a classic remit for research on organisational design, which aims to seek out the most conducive organisational form in order to achieve the best performance in these various areas. Since the business model strategy strand of this study was developed based on an organisational design framework (Miles & Snow, 1978), there may be opportunities for using the typologies developed in this study as cornerstones for this research.

9 Step-by-step guide to review an OOFAT strategy

Having set out models for how HEIs are deploying OOFAT and business model strategies, this section will provide some guidelines for deploying them within the context of developing new institutional strategies. The guidelines are framed around a series of questions which can be used as prompts to guide strategic development.

What this study has illustrated is that there is no single desirable goal for the application of OOFAT, but rather that is a complex, highly adaptive approach, implemented according to local context and goals. There is therefore no prescriptive set of rules. However, it is also the case that most HEIs are constantly evolving their strategy, and elements of OOFAT are either the direct focus of this, or a significant contribution to it. It is therefore useful to provide a tool which offers a way to see the current position of any HEI within the OOFAT-landscape, and to provide prompts on future directions, which might seem desirable. To this aim, this section describes a 3-stage process of question and response, which can form the basis of a collaborative discussion in an HEI.

9.1 Where are we now? – Analysis of current OOFAT position

Use the OOFAT questions from the questionnaire (the full set is in Appendix 4, but the key questions are reproduced below for convenience) to rate your current OOFAT provision. This is a subjective measure and if conducting this exercise in a group, it is likely that opinion will vary. Discussion around the reasons for this variation will provide a more comprehensive perspective on OOFAT practice in your HEI. Aim to arrive at a consensus for each of the scores.

1. How flexibly is content delivered according to differences in time and location?

This question focuses on delivery of learning content. Low flexibility of delivery means that time, place and pace are dictated centrally, whilst high flexibility means that such constraints are relaxed and the learner can determine these largely themselves.

Scoring: 1 (not flexible/fixed) to 5 (highly flexible)

2. How "open" is access to the content for learners?

This question understands openness in terms of who can access the learning content. A low level of openness means that a specific closed group of learners can access the content (e.g. those formally enrolled on a course), whilst a high level of openness means that anyone can access it, if they choose to.

Scoring: 1 (not open / entry requirements) to 5 (completely open to all potential learners)

3. How flexible is access to support for learners?

This question focuses on delivery of learning support. Low flexibility of delivery means that time and place are dictated centrally, whilst high flexibility means that such constraints are relaxed and the learner can determine when to access support themselves.

Scoring: 1 (not flexible/fixed) to 5 (completely flexible)

4. How open is access to support for learners?

This question focuses on who can access the learning support. A low level of openness means that a specific closed group of learners can access the support (e.g. those formally enrolled on a course), whilst a high level of openness means that anyone can access it, if they choose to.

Scoring: 1 (not open / accessible only to certain groups) to 5 (completely open to all learners)

5. How personalised is the content to an individual learner?

Learner-centred forms of learning and digital adaptability facilitate a high level of personalisation of learning content. This question asks you to evaluate this dimension for the provision you are describing.

Scoring: 1 (fixed content) to 5 (completely adapted to the individual)

6. How open is the process of content production?

Who develops the content? Is this a closed group or the result of sharing and collaboration (either directly or via openly licenced content from others, e.g. OER)?

Scoring: 1 (in-house production only) to 5 (high level of learner-generated content)

7. How flexible is assessment for each learner assignment?

This question focusses on the organisation of learning assessment. Low flexibility of assessment means that time, place and pace are dictated centrally, whilst high flexibility means that such constraints are relaxed and the learner can determine these largely themselves.

Scoring: 1 (not flexible; fixed) to 5 (highly flexible; adapted to learner requirement)

8. Who is responsible for assessing learners/learning?

How flexible is the process for achieving formal recognition of learning? *Please indicate the extent to which there is flexibility within pathways to recognition.*

Scoring: 1 (fixed) to 5 (student self-determined learning pathway)

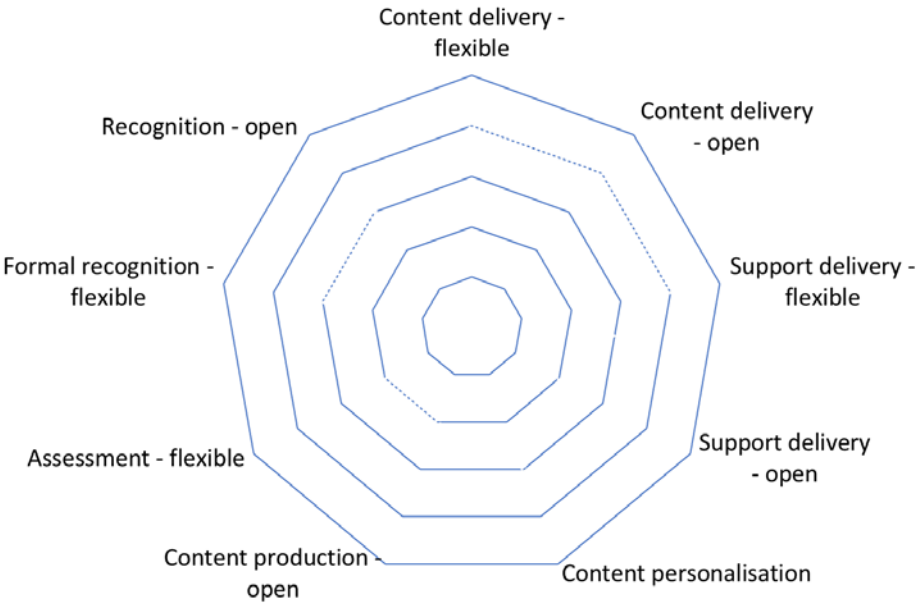
9. How open are the elements in final recognition of learning?

What elements of the learning process can be recognised in the final assessment of learning outcomes? Only those provided by the institution you are describing or also learning provided by other organisations?

Scoring: 1 (Institutional recognition only) to 5 (Recognition only; all elements from other providers)

Starting from *Access to Content – flexibility*, and working clockwise, these 9 scores can now be plotted to provide a spider diagram that represents OOFAT currently at the institution.

Figure 9.1: Template for plotting individual OOFAT model



9.2 Where do we want to get to? – Determine future strategy

Your HEI is now able to determine which areas it wishes to develop. To do so, the following set of questions should be answered.

1) **Which of the six OOFAT models detailed in Section 5 does the existing HEI most closely resemble?**
   From this examine similar institutions, using the case studies provided in the database.
2) **Is the intention to expand OOFAT as a core strategic approach?**
   Then examine *Core-model* institutions from the database. This will likely involve expanding openness and flexibility in some aspects (e.g. recognition). Find good examples of these and prioritise development in the low scoring areas first.
3) **Is the intention to serve a new target group?**
   If so, then consider what aspects of OOFAT will appeal to that target group. In the database find *Specific Purpose* examples that have explicitly addressed those aspects, and consider the technology and strategy used.
4) **Is the aim to increase one OOFAT aspect such as flexibility, content or openness?**
   Then find appropriate examples in the database and explore these, examining the institution's own web site and documentation where possible.
5) **Do you want to encourage bottom up innovation around OOFAT?**
   It may be that while a focus on OOFAT has been determined as objective, a top-down, directive strategy may not be suitable. In this case developing a culture that supports innovation in OOFAT through technology infrastructure, staff development and rewards may be more appropriate. The *Multiple Projects* category of OOFAT case studies is applicable here.

9.3 Which strategy to get there? – Alignment with a business model strategy

Having determined the desired OOFAT model, and analysed similar institutions, the next step is to ensure this is allied to the business model approaches outlined in Section 6. As with step 1, the first stage is to determine the current business model. This can be achieved by determining which of the five strategies described in section 6.3 best match the current HEI position. Again, this should be a collaborative, discursive exercise.

The next stage then is to determine if a Defender- or Prospector-like strategy is appropriate to achieve the desired OOFAT model identified in 7.2. If the aim is to reach a new audience, or significantly expand one aspect of OOFAT, then it may be that a Prospector-like strategy is appropriate. Encouraging development of OOFAT to better meet the needs of existing (if increased) learner populations will indicate a Defender-like strategy.

Five key business strategies were mapped against OOFAT models in Figure 6.8. By using this figure, it is possible to determine which business approach best suits the desired model. For example, if the desired OOFAT model is for a specific purpose, then most HEIs with this model deploy an entrepreneurial model with fixed core. Having identified the appropriate business model it is then possible to find relevant cases in the database and determine which aspects of current business strategy need to be changed.

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11 Appendix 1 – List of institutions

Country	Institution	Nearest aligned OOFAT model	Nearest aligned business model
Argentina	National Technological University - Virtual Training Programme for Researchers	Multiple projects	Fixed core
Argentina	Instituto Universitario en Ciencias de la Salud (Fundación H. A. Barceló)	Flexibility	Service-provider
Australia	Curtin University	Access-focused	Outreach
Australia	People's Open Access Education Initiative (Peoples-uni)	Flexibility	Entrepreneurial with fixed core
Australia	Australian National University - College of Engineering & Computer Science	Specific purpose	Fixed core
Bangladesh	Bangladesh Open University	Multiple projects	Fixed core
Brazil	Universidade Federal do Rio Grande do Norte: Laboratório de Inovação Tecnológica em Saúde	Centre	Entrepreneurial with fixed core
Brazil	Methodist University of Sao Paulo	Multiple projects	Outreach
Brazil	Universidade Positivo	Flexibility	Outreach
Brazil	University of Campinas (Unicamp)	Specific purpose	Fixed core
Burkina Faso	Université Norbert ZONGO	Multiple projects	Fixed core
Canada	Thompson Rivers University	Multiple projects	Entrepreneurial with fixed core
Canada	Athabasca University	Flexibility	Outreach
Canada	Justice Institute of British Columbia (JIBC)	Multiple projects	Entrepreneurial with fixed core
Chile	Instituto Profesional IACC	Access-focused	Entrepreneurial
Chile	Universidad Arturo Prat del Estado de Chile	Specific purpose	Entrepreneurial
China	Open University of China	Specific purpose	Fixed core
China	Yunnan Open University	Multiple projects	Entrepreneurial
Colombia	Institución Universitaria Politécnico Grancolombiana	Multiple projects	Entrepreneurial
Colombia	Universidad del Norte	Multiple projects	Entrepreneurial with fixed core

Costa Rica	Universidad Estatal a Distancia	Centre	Entrepreneurial with fixed core
Ecuador	Pontificia Universidad Católica del Ecuador	Multiple projects	Service-provider
Ecuador	Universidad Técnica Particular de Loja (UTPL)	Multiple projects	Entrepreneurial with fixed core
Ethiopia	Mekelle University	Centre	Fixed core
France	Association of Universities for Digital Education in Economics and Management (AUNEGE)	Flexibility	Outreach
France	Université de Bourgogne	Multiple projects	Entrepreneurial with fixed core
Germany	Fachhhochschule Lübeck oncampus	Access-focused	Entrepreneurial with fixed core
Germany	Westsächsische Hochschule Zwickau	Multiple projects	Entrepreneurial
India	Indira Gandhi National Open University	Content-focused	Entrepreneurial with fixed core
India	Netaji Subhas Open University	Multiple projects	Outreach
India	Periyar University	Centre	Entrepreneurial
India	Odisha State Open University	Access-focused	Entrepreneurial
India	Amity University - Directorate of Distance & Online Education	Multiple projects	Entrepreneurial
India	Maulana Azad National Urdu University	Centre	Fixed core
Indonesia	Universitas Terbuka	Specific purpose	Entrepreneurial with fixed core
Italy	Università Telematica Internazionale (UNINETTUNO)	Flexibility	Entrepreneurial with fixed core
Malaysia	Taylor's University Lakeside Campus	Specific purpose	Service-provider
Malaysia	Kolej Poly Tech Mara	Multiple projects	Entrepreneurial with fixed core
Malaysia	Universiti Sains Islam Malaysia	Centre	Entrepreneurial with fixed core
Mexico	Universidad Nacional Autonoma de Mexico	Multiple projects	Entrepreneurial with fixed core
Mexico	Universidad Abierta y a Distancia de México	Multiple projects	Entrepreneurial
Mozambique	Higher Institute of Distance Education Sciences (ISCED)	Flexibility	Fixed core
Netherlands	Open University of the Netherlands - Welten Institute	Flexibility	Fixed core
New Zealand	OER Foundation (responding for OERu)	Centre	Entrepreneurial
New Zealand	Open Polytechnic of New Zealand	Specific purpose	Fixed core
New Zealand	University of Canterbury	Specific purpose	Fixed core
Nigeria	National Open University of Nigeria (NOUN)	Content-focused	Fixed core
Nigeria	Santos Creations Educational Foundation	Multiple projects	Entrepreneurial with fixed core

Norway	University College of Southeast Norway	Multiple projects	Fixed core
Rwanda	Mahatma Gandhi University Rwanda	Centre	Entrepreneurial
Rwanda	University of Rwanda	Content-focused	Fixed core
South Korea	Korea National Open University	Specific purpose	Entrepreneurial with fixed core
Spain	Universidad Nacional de Educación a Distancia (UNED)	Specific purpose	Fixed core
Sri Lanka	The Open University of Sri Lanka	Multiple projects	Fixed core
Tanzania	Open University of Tanzania	Multiple projects	Entrepreneurial with fixed core
Turkey	Anadolu University Open Education System	Multiple projects	Fixed core
Turkey	Maltepe University	Multiple projects	Fixed core
UK	University of Warwick	Content-focused	Entrepreneurial with fixed core
United Arab Emirates (UAE)	Hamdan Bin Mohammed Smart University	Content-focused	Entrepreneurial with fixed core
United Kingdom (UK)	Manchester Metropolitan University	Centre	Fixed core
United Kingdom (UK)	University of Edinburgh	Centre	Service-provider
United States of America (USA)	Tidewater Community College	Multiple projects	Fixed core
United States of America (USA)	Saylor Academy	Multiple projects	Fixed core
USA	Pasadena City College	Access-focused	Fixed core
USA	MiraCosta College	Access-focused	Fixed core
USA	Central Virginia Community College	Specific purpose	Fixed core
USA	College of the Canyons	Flexibility	Entrepreneurial with fixed core
USA	University of Maryland University College	Multiple projects	Fixed core
Venezuela	Central University of Venezuela	Multiple projects	Fixed core

12 Appendix 2 - Institutional profiles of HEIs in the sample

These are presented in an online database to be found here: https://oofat.oerhub.net/OOFAT/.

13 Appendix 3 – Members of the Project Reference Group

Member and institution
Peter Wells *Head of higher education unit, UNESCO*
Muriel Joffe and Travis Durepo *Outgoing and incoming Executive Director for International Programs, UMUC – University of Maryland College, USA*
Sophie Touzé *Mission de la Pédagogie et du Numérique pour l'Enseignement Supérieur (MIPNES) (Digital Pedagogy Mission for HE, French Ministry of Higher Education).*
Sanjaya Mishra *Commonwealth of Learning*
Kristianti Puspitasari *Universitas Terbukas, Jakarta, Indonesia*
Li Wei *China Open University, Beijing*
Elif Toprak *Anadolu University – Turkey*
Dr. Souma Alhaj Ali *Director of Center for Excellence and Governance, Hamdan Bin Mohammed Smart University - HBMSU, Dubai*
Torunn Gjelsvik *Head of Development, International Council for Open and Distance Education, ICDE*

14 Appendix 4 - Global questionnaire

Introduction

Thank you for agreeing to participate in this survey which has been designed to collect information on the provision by higher education institutions (HEIs) of Open, Online, Flexible and Technology Enhanced Learning (OOFAT). The research is being conducted on behalf of the International Council for Open and Distance Education.

The questions cover existing practice of OOFAT in higher education across the globe, with a focus on exemplary distance provision models which have become common practice for some providers, and could be achieved through a pathway to innovation for many others. Part of the study's remit is to identify exemplars of possible pathways to innovative and sustainable practices or "future-proofing".

Your data:

- By taking part in this survey you consent to sharing information with us so we can use information about your institution in our research.
- Some of this data will be made available on an open licence so that other researchers can also work with the data.
- Data made available in this way will only be shared once it has been anonymized.

No individually identifiable information or information regarded sensitive by the data provider will be released or shared with any other organization or individuals.

Outputs from the research will be published under an open licence, (e.g. published under a Creative Commons Attribution-ShareAlike 4.0 International licence (CC BY SA 4.0).

Any data sets made publicly available they will be published under an open licence (CC0). By taking this survey you declare your informed consent to your data being used in this way.

This survey has 44 questions and is expected take about 35-40 minutes to complete. There are no compulsory questions. You are encouraged to complete the questions even if you are only involved with select aspects of OOFAT provision (e.g. within a department rather than responsible for your institution as a whole).

Please include your contact details as the researchers may wish to contact you for clarification on the information you have provided.

Prof. Martin Weller (The Open University, UK)

Dr. Dominic Orr (Forschungsinstitut für Bildungs- und Sozialökonomie (FIBS))

Dr. Robert Farrow (The Open University, UK)

For queries about the survey in the first instance contact Dr. Dominic Orr.

Your name: __

Your role: __

Your email address: __

In which country are you resident? __

What is the name of your institution? __

Please provide the name of the institution which you are describing. If you are only describing part of an institution, please provide the name of the host institution for the organisational unit you are describing. From here this will be your 'OOFAT' example.

This survey is concerned with interesting sustainable models of OOFAT, which can be at a whole institution or other institutional units (e.g. departments or affiliated organisations) but not single courses. (You may have more than one example for which you wish to provide information. If so, please complete the survey separately for each.)

Models for Online, Open, Flexible And Technology Enhanced Higher Education (OOFAT)

About your institution

6. Student numbers at your OOFAT institution (or institutional unit)

Please provide the total headcount for student (or learner) numbers.

- Academic year 2015/2016: __
- Academic year 2014/2015: __
- Academic year 2013/2014: __

7. How do these student/learner numbers translate to full time equivalence (FTE)?

We assume that not all students will be studying full-time. Therefore, please also provide a full-time equivalent, where 1 full-time student = 1 and 1 part-time student whose study time is roughly ½ of that of a full-time student = 0.5. Please provide further details in the comments box, if necessary.

- Academic year 2015/2016: __
- Academic year 2014/2015: __
- Academic year 2013/2014: __

Comments: __

8. Provision offered

Please estimate the share of teaching activities provided on-campus. If these are not provided on-campus for some or all enrolled students, your example is using a form of distance learning provision (either correspondence or online).

- ▫ Primarily campus provision
- ▫ Primarily distance learning provision (correspondence)
- ▫ Primarily online provision

- Estimated percentage share of teaching activities provided on campus: __

9. What qualification awards does the institution or institutional unit you are describing offer?

Which formal qualifications are awarded by the institution you are describing (if any)?

- Associate degree or equivalent (ISCED 5)
- Undergraduate degree or equivalent (ISCED 6)
- Masters degree or equivalent (ISCED 7)
- Doctoral degree or equivalent (ISCED 8)
- Informal recognition (e.g. badges)
- No formal/non-formal credits or qualifications / independent study
- Other (please specify)

10. Elements of technology-enhanced learning used

Select all that apply

Massive Open Online Course (MOOC)

- Open Educational Resources (OER)
- Digital Badging
- Learning Analytics
- Artificial Intelligence
- Eportfolios
- Blogging and micro-blogging
- Social Media
- Virtual Learning Environment (VLE)
- Wikis
- Videoconference
- Teleconference
- Learning Management System (LMS)
- Mobile Learning
- Bring Your Own Device (BYOD)
- Online Assessment
- Other (please specify)

11. Please describe the approach taken to technology-enhanced learning in more detail

Does the institution or division you are describing have an overall strategy on how it wants to provide technology-enhanced learning now and in the next 5-10 years? If so, please describe briefly or provide a link to the document (in any language).

12. What subject areas does the institution or institutional unit you are describing cover?

Please provide information on the subjects covered by your higher education provision. The fields are taken from the ISCED 2013 subject categories classification.

- Generic programmes and qualifications
- Education
- Arts and humanities
- Social sciences, journalism and information
- Business, administration and law

- Natural sciences, mathematics and statistics
- Information and communication technologies
- Engineering, manufacturing and construction
- Agriculture, forestry, fisheries and veterinary
- Health and welfare
- Security, transport, hygiene and public health services
- Other (please specify)

The OOFAT Model

The main purpose of the study is to develop models that demonstrate different practice in terms of how one or more elements of OOFAT are used to offer flexible learning in a sustainable model. Our interest lies in identifying models that have evidence of sustainability - or can demonstrate a viable business model - rather than to highlight emergent trends which have yet to prove themselves sustainable in practice.

According to the acronym of OOFAT it is assumed that these will involveOnline, Open, Flexible and Technology-Enhanced methods. We focus on three core processes:

- Content – consists of subject knowledge, support and guidance and learning analytics, which together make up the entirety of the didactical process
- Delivery – consists of the qualities of place, pace and timing of delivery of the content, in other words both the extent of physical and online provision and the question of the timing of key events (e.g. start and end points of learning processes).
- Recognition and assessment – consists of both assessment and credentialization, which are formal processes leading to recognition of learning achievements. Assessment is a phase of evaluation at certain times in a learning process, whilst credentials are awarded on completion of formal learning units. In both cases, these evaluative processes lead to recognition of achievement of the learner by third parties.

The quality of flexibility is a question of what and how and is likely to rely on how digital technology is harnessed to reduce the need for physical presence; from static to dynamic and changing due to specific circumstances. So each of the three central processes (and their sub-processes) can also described by the extent to which they are delivered in a flexible manner, harnessing digital technology, i.e. online and technology-enhanced methods.

The quality of openness is a who question and likely to rely on how the principle of openness is integrated (in various ways) into the core processes; from closed group to open network. A more open quality means less limitations on who has access to and who delivers or controls services. This quality is not reliant on digital technology, but may be enhanced by it. For instance, a classic open enrolment higher education provider uses the principle of openness, but may still be using low-interaction correspondence methods for delivery.

OOFAT: Business Model

Since the emphasis of this survey is to identify models that have evidence of sustainability - rather than to highlight emergent trends - we would now like to know more about your business model. In this section you will asked to typify your business models by telling us more about aspects of your business model. At the end of this section, you will have the opportunity to describe the model in your own words.

13. Describe the scale of the OOFAT example

Please tell us about the scope of the provision you are describing. Does it cover the whole institution or is it part of a division or a separate company?

- ▫ Whole institution
- ▫ Department (within an institution)
- ▫ Specific project
- ▫ Subsidiary company/organization
- ▫ Other (please specify)

14. Is your example formed through a consortium?

Some distance learning provisions are the result of inter-institutional collaboration through the legal form of a consortium or similar. Is this true in the case you are describing?

- ▫ No
- ▫ Yes (please add details)

15. In terms of core funding: is your OOFAT institution or institutional unit dependent on public funding?

Please choose the option best describing the importance of public funding for your services (n.b. not including infrastructure and investment costs).

- ▫ Mainly Public (0-19% privately funded)
- ▫ Mainly Public (20-39% privately funded)
- ▫ Balanced (40-59% privately funded)
- ▫ Mainly Private (60-79% privately funded)
- ▫ Mainly Private (80%+ privately funded)

Please add any relevant detail, including information on which (parts of) services are funded through grants and which on user fees __

16. Please select the option that better reflects the business model of your OOFAT example

In terms of our products and services...

- ▫ We deliver and/or support core institutional provision
- ▫ We offer something different, complementary or alternative to the main provision

17. Please select the option that better reflects the business model of your OOFAT example

In terms of our target learner/customers...

- ▫ We target an existing market

- We are targeting a new (or non-traditional) market

18. Please select the option that better reflects the business model of your OOFAT example

In terms of our interactions with learners...

- We interact with learners through traditional channels
- We interact with learners through new or innovative relationship channels (physical or virtual)

19. Please select the option that better reflects the business model of your OOFAT example

In terms of our value chain...

- We develop, produce and deliver the provision by making the most of legacy knowledge
- We develop, produce and maintain our offering through exploration of new approaches and innovation

20. Please select the option that better reflects the business model of your OOFAT example

In terms of our core competences...

- Our competitive advantage comes from traditional competences (e.g., market knowledge, expertise, improvement of existing technology)
- Our competitive advantage comes from new, unfamiliar, competences (e.g., new or emerging technologies, innovation in working practices)

21. Please select the option that better reflects the business model of your OOFAT example

In terms of our partnership networks...

- We operate primarily within traditional institutional or cultural parameters
- We operate primarily in non-traditional or (dynamic) networks (e.g., alliance, joint-venture)

22. Please select the option that better reflects the business model of your OOFAT example

In terms of our sustainability...

- We maintain profitability through incremental cost cutting and efficiencies
- We maintain profitability through new processes to generate revenues, or cost-cutting in existing processes

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OOFAT: Delivery

23. How flexibly is content delivered according to differences in time and location?

This question focuses on delivery of learning content. Low flexibility of delivery means that time, place and pace are dictated centrally, whilst high flexibility means that such constraints are relaxed and the learner can determine these largely themselves.

- 1 (not flexible/fixed)
- 2
- 3 (somewhat flexible)

- 4
- 5 (highly flexible)

24. Please now describe how this content delivery varies according to differences in time and location

Please justify the evaluation you made in the previous question.

25. How "open" is is access to the content for learners?

This question understands openness in terms of who can access the learning content. A low level of openness means that a specific closed group of learners can access the content (e.g. those formally enrolled on a course), whilst a high level of openness means that anyone can access it, if they choose to.

- 1 (not open / entry requirements)
- 2
- 3 (somewhat open)
- 4
- 5 (completely open to all potential learners)

26. Describe the ways in which learners can access the content

Please justify the evaluation you made in the previous question.

27. How flexible is access to support for learners?

This question focuses on delivery of learning support. Low flexibility of delivery means that time and place are dictated centrally, whilst high flexibility means that such constraints are relaxed and the learner can determine when to access support themselves.

- 1 (not flexible/fixed)
- 2
- 3 (somewhat flexible)
- 4
- 5 (completely flexible)
- [Not applicable]

28. Describe this support model in more detail

Please justify the evaluation you made in the previous question.

29. How open is access to support for learners?

This question focuses on who can access the learning support. A low level of openness means that a specific closed group of learners can access the support (e.g. those formally enrolled on a course), whilst a high level of openness means that anyone can access it, if they choose to.

- 1 (not open / accessible only to certain groups)
- 2
- 3 (somewhat open)
- 4
- 5 (completely open to all learners)

- [Not applicable]

30. Who provides academic support to learners?

Select all that apply.

- Appointed academic/teaching staff
- Other institutional staff (library, IT, etc.)
- Peer (learner) support
- Open community
- Other (please specify)

31. Describe the learner support model in more detail

Please justify the evaluation you made in the previous question.

OOFAT: Content

32. How personalised is the content to an individual learner?

Learner-centred forms of learning and digital adaptability facilitate a high level of personalisation of learning content. This question asks you to evaluate this dimension for the provision you are describing.

- 1 (fixed content)
- 2
- 3 (somewhat personalised)
- 4
- 5 (completely adapted to the individual)
- [not applicable]

33. Describe processes of content adaptation or personalisation in more detail

Please justify the evaluation you made in the previous question.

34. How open is the process of content production?

Who develops the content? Is this a closed group or the result of sharing and collaboration (either directly or via openly licenced content from others, e.g. OER)?

- 1 (in-house production only)
- 2
- 3 (combination of in-house content and content developed through external collaboration and sharing)
- 4
- 5 (high level of learner-generated content)
- [Not applicable]

35. Describe the approach used in content provision

Please justify the evaluation you made in the previous question.

36. Please describe any use of open licences and/or openly licensed materials

OOFAT: Recognition & Assessment

37. How flexible is assessment for each learner assignment?

This question focusses on the organisation of learning assessment. Low flexibility of assessment means that time, place and pace are dictated centrally, whilst high flexibility means that such constraints are relaxed and the learner can determine these largely themselves.

- 1 (not flexible; fixed)
- 2
- 3 (somewhat flexible)
- 4
- 5 (highly flexible; adapted to learner requirement)
- [not applicable]

38. How flexible is the assessment process?

Please justify the evaluation you made in the previous question.

39. Who is responsible for assessing learners/learning?

This question focusses on who is doing the assessing - is it the teacher or members of the learning community (peers)?

- Appointed academic/teaching staff
- Other institutional staff (library, IT, etc.)
- Peer support
- Open community
- Other (please specify)

40. Describe aspects of openness and flexibility in the assessment process

Please justify the evaluation you made in the previous question.

41. How flexible is the process for achieving formal recognition of learning?

Please indicate the extent to which there is flexibility within pathways to recognition.

- 1 (fixed)
- 2
- 3 (combination of fixed and optional elements)
- 4
- 5 (student self-determined learning pathway)
- [not applicable]

42. Describe your reasons for the description provided in the previous question

Please justify the evaluation you made in the previous question.

43. How open are the elements in final recognition of learning?

What elements of the learning process can be recognised in the final assessment of learning outcomes? Only those provided by the institution you are describing or also learning provided by other organisations?

- 1 (Institutional recognition only)
- 2
- 3 (Some recognition of learning from other providers)
- 4
- 5 (Recognition only; all elements from other providers)
- [not applicable]

44. Describe the process through which learning is recognised

Please justify the evaluation you made in the previous question.

That's the last question - many thanks for contributing to this study!