

UNIVERSITY OF ANTWERP**FACULTY OF APPLIED ECONOMICS**

Company reactions to disruptive innovation: an exploratory study of service industries

Luca De Ridder

Master's Thesis submitted to obtain the degree of:

Master of Applied Economic Sciences: Business Engineering
in Management Information Systems

*Master in de toegepaste economische wetenschappen:
handelsingenieur in de beleidsinformatica*

Promoter:

Prof. dr. Liselore Berghman

UNIVERSITY OF ANTWERP**FACULTY OF APPLIED ECONOMICS**

Company reactions to disruptive innovation: an exploratory study of service industries

Luca De Ridder

Master's Thesis submitted to obtain the degree of:

Master of Applied Economic Sciences: Business Engineering
in Management Information Systems

*Master in de toegepaste economische wetenschappen:
handelsingenieur in de beleidsinformatica*

Promoter:

Prof. dr. Liselore Berghman

Acknowledgements

Without the support of many persons along the road that this study has been, I would probably be still stuck somewhere in the middle of it.

I am especially grateful to my supervisor, professor dr. Liselore Berghman, who guided me tirelessly through the course of this study and through to the process of scientific research in general, for the valuable time and effort she has invested in supporting me. Her comments could turn obstacles and dead ends into pieces that almost solved themselves – I am still wondering how someone can coach so effectively and set me on track with such ease.

Secondly, I am indebted to the many persons who helped me to look for potential interviews, and to the interviewees of this study, who took their valuable time to guide me through their worlds. Great contributions came from Laga, deJuristen (Lee&Ally), and many others whose names I would like to mention explicitly, but unfortunately, I cannot do so because of promised anonymity. I am very grateful to all of these persons and I sincerely hope that this research can provide something useful back to them.

Finally, I am deeply grateful to my parents and family, who made it possible for me to get as much out of this study and out of my education in general as I could, and to Marie, for all the support, love, patience and inspiration she provided to me. Most of all, she provided me the hope to go on and eventually reach the end of this road.

My thoughts are with diabetes type 1 patients, and all persons who could benefit from disruptive innovation in health care.

Abstract

Disruptive innovations have major impacts on companies, business models and industries in general. Moreover, the pace of disruptive developments is believed to be high and accelerating. This makes it relevant for companies of many sorts to know how to respond to disruptive innovation. To make such response decisions, it could be useful for firms to have a broad overview of possible reaction options. This may help to broaden thinking, but also to estimate in which way competition may react, which is useful for the determination of corporate strategy.

Nevertheless, a systematic literature review of disruptive innovation conducted in this study, revealed that the disruptive innovation theory to date has not established a full account of possible company reactions to disruptive innovation. Moreover, the theory on disruptive innovation has hardly been tested in service industries, while these industries have many characteristics that differ significantly from their manufacturing counterparts.

Addressing this gap, the purpose of this study was to explore in which ways companies may react to disruptive innovation in service industries. Sixteen interviews distributed over the staffing services industry and the legal services industry revealed fourteen response approaches, fitting in a broad spectrum. This spectrum was organized along two dimensions. Firstly, company reactions differed along an attitude dimensions, ranging from conservative to open-to-disruption. Secondly, an activity dimensions ranged from passive to either friendly/collaborative or hostile/competitive.

Alongside these dimensions, the fourteen response approaches could be clustered. Furthermore, possible reaction influencing factors and evolution paths were observed. Finally, this study provided further remarks on the responses of specific company types and the effects of service industry characteristics on the process of disruption and company reactions.

Executive summary (Dutch)

In deze Nederlandstalige samenvatting zullen eerst de probleemstelling en het doel van gevoerde onderzoek, de onderzoeksmethodologie en de belangrijkste bevindingen meegegeven worden. Op die laatste zal vervolgens dieper ingegaan worden tijdens de bespreking van de bijdragen van het onderzoek aan de wetenschap en aan de praktijk. Tenslotte zullen de beperkingen van het onderzoek toegelicht worden, alsmede suggesties voor toekomstig onderzoek.

1. Probleemstelling, doel van het onderzoek en onderzoeksvraag

Deze studie beoogde te onderzoeken welke reacties bedrijven kunnen vertonen wanneer ze geconfronteerd worden met disruptieve innovaties in dienstensectoren. De redenen voor deze focus worden hieronder toegelicht.

Ten eerste wordt innovatie in het algemeen gezien als een belangrijke hoeksteen in het streven naar toenemende bedrijfsprestatie, zowel in productiesectoren als in dienstensectoren (Prajogo, 2006; Cornell University - SC Johnson College of Business, INSEAD, & World Intellectual Property Organization, 2017).

Daarbij komt dat het tempo waarmee innovatieve ontwikkelingen zich voordoen in diverse sectoren, erkend wordt hoog te zijn en steeds toe te nemen (The Boston Consulting Group, 2016; McGrath, 2013; Jurvetson, 2010). Zo was 2016 bijvoorbeeld een recordjaar voor internationale patentaanvragen volgens de World Intellectual Property Organization (2017).

Een bepaalde soort innovatie die een zeer grote impact kan hebben op ondernemingen, bedrijfsmodellen en sectoren in het algemeen, is disruptieve innovatie (Christensen, 1993). Deze vorm van innovatie heeft dan ook bijzonder veel aandacht gekregen zowel in de wetenschappelijke literatuur als in de praktijk (Danneels, 2004). Ondanks de afwezigheid van een welomlijnde definitie in de wetenschappelijke literatuur (Danneels, 2004; Weeks, 2015), kan het concept van disruptive innovatie (DI) worden omschreven als volgt.

Een disruptieve innovatie introduceert een set van prestatieattributen die verschilt van die van een traditioneel product of een traditionele dienst. De nieuwe set van prestatieattributen is inferieur aan de traditionele set met betrekking tot de variabelen waarop traditioneel geconcentreerd werd (i.e. de concurrentiebasis). Desalniettemin is de DI superieur wat betreft een of meer secundaire karakteristieken. Op die manier kan de DI, ondanks zijn gedeeltelijke inferioriteit, toch aansluiting

vinden bij een bepaalde niche die de secundaire karakteristieken bijzonder apprecieert. Ondernemingen die de traditionele producten of diensten aanboden, zullen die niche in het algemeen te klein vinden om in te investeren. Echter, na verloop van tijd neemt de performantie van de DI met betrekking tot de concurrentiebasis toe. Klanten uit de hoofdmarkt die *te goed* bediend worden door het traditionele aanbod, stappen over naar de DI eens die *goed genoeg* is naargelang hun noden wat betreft de concurrentiebasis. Hierbij worden zij aangetrokken door de voordelige secundaire kenmerken van de DI. Uiteindelijk kunnen marktleiders zo mogelijks vervangen worden in hun positie door de initiatiefnemers van de DI. (Christensen & Bower, 1996; Danneels, 2004; Govindarajan & Kopalle, 2006a)

Gekende voorbeelden van DI's zijn minicomputers ten opzichte van mainframes en digitale fotografie ten opzichte van analoge fotografie, waarbij Kodak zijn dominante positie verloor (Christensen, 1997a; Brachmann, 2014).

Vanwege deze grote impact op de concurrentiële dynamiek in sectoren en op de positie van bedrijven tot marktleiders toe, is een goed begrip van de mechanismen en gevolgen van disruptieve innovatie essentieel voor bedrijven die ermee geconfronteerd kunnen worden. Hierbij kan het nuttig zijn voor bedrijven om een breed overzicht van mogelijke opties voor reacties te hebben, zodat men in de breedte kan overwegen op welke manier te reageren. Voorts kan men zo ook beter kan inschatten op welke manier concurrenten zullen omgaan met een DI. Ook disruptieve initiatiefnemers kunnen baat hebben bij een breed overzicht van hoe andere spelers op hun innovatie kunnen reageren. Voor consultants, sectorfederaties en overheden tenslotte kan een dergelijk overzicht van nut zijn bij het adviseren van klanten of leden en bij bepalen van hun beleid.

Dit belang wordt verhoogd door het toenemende tempo waaraan innovatieve ontwikkelingen plaatsvinden, zoals hierboven beschreven, zeker gezien het aantal disruptieve innovaties ook gepercipieerd wordt als stijgend (EY, n.d.; McKinsey & Company, 2015). Dit laatste wordt mogelijks gevoed door de huidige 'digitale revolutie' (Brynjolfsson & McAfee, 2012).

Sinds de intiele ontwikkeling van de theorie van disruptieve innovatie door Christensen en zijn collega's (Christensen, 1993; Rosenbloom & Christensen, 1994; Christensen & Rosenbloom, 1995; Christensen & Bower, 1996), hebben onderzoekers een waardevolle theorie ontwikkeld over de effecten van disruptie op de concurrentiedynamiek in sectoren en over hoe bedrijven op disruptive innovaties kunnen reageren. Echter, ondanks het belang van deze theorie en ondanks de populariteit ervan, heeft ze twee relevante beperkingen.

Een eerste beperking heeft betrekking op de empirische basis van de theorie. De *disruptive innovation theory* (DIT) is initieel ontwikkeld tegen de achtergrond van de kapitaalintensieve productiesector van

harde schijven (Christensen, 1993). Latere ontwikkelingen van de oorspronkelijke DIT, noch recente, empirische literatuur, testen de externe validiteit van de theorie op uitgebreide wijze in dienstensectoren. Desalniettemin beslaat de tertiaire sector van de economie grote delen van het bbp van diverse landen – meer dan 70% voor een gemiddeld OESO-land en meer dan 60% van het wereldwijde bbp (Central Intelligence Agency, 2018). Daarnaast verschillen dienstensectoren van productiesectoren op tal van eigenschappen (Wolak, Kalafatis & Harris, 1998). Als gevolg kunnen verscheidene anomalieën verwacht worden bij het toepassen van de DIT binnen een dienstensector.

De tweede beperking is inhoudelijk. De huidige stand van de DIT heeft namelijk nog geen breed overzicht gegeven van de mogelijke manieren waarop bedrijven op disruptie kunnen reageren. De oorspronkelijke DIT vermeldde voornamelijk het interne ontwikkelen van een DI als reactieoptie (e.g. Christensen & Bower, 1996). Wanneer er empirisch onderzoek werd gedaan in sectoren met andere eigenschappen, werden er nieuwe types van reacties vastgesteld. Zo observeerde Wagner (2016) het gebruik van overnames van DI-initiatiefnemers door traditionele firma's in minder kapitaalintensieve sectoren.

Er kan besloten worden dat er nog mogelijke reacties van traditionele bedrijven op disruptieve innovaties vast te stellen zijn. Dit geldt zeker in dienstensectoren, die nauwelijks onderzocht zijn en toch afwijkende structurele eigenschappen vertonen (Wolak, Kalafatis & Harris, 1998).

Voorts hebben DI-studies tot nu toe nog niet onderzocht wat de reacties kunnen zijn van andere spelers dan gevestigde firma's op disruptie. Zo kunnen nieuwe bedrijven toetreden tot een sector in reactie op de opportuniteit die een DI biedt. Deze bedrijven kunnen zelf nieuwe ondernemingen zijn (toetreders *de novo*) of gevestigde spelers uit andere sectoren (toetreders *de alio*). Voor elke soort kunnen verschillende reacties verwacht worden, bijvoorbeeld omdat toetreders *de alio* doorgaans meer middelen ter beschikking kunnen stellen.

Samengevat neemt de frequentie waarmee het impactvolle fenomeen van disruptieve innovatie zich voordoet toe en wordt het steeds meer noodzakelijk voor bedrijven om te weten hoe ermee dient te worden omgegaan. Hiervoor zou het voor verschillende partijen nuttig kunnen zijn om een breed overzicht te hebben van de verschillende manieren waarop bedrijven op disruptieve innovatie kunnen reageren. Desondanks heeft de wetenschappelijke theorie tot nu toe geen dergelijk breed overzicht kunnen geven. Een van de voornaamste hiaten in de huidige kennis betreft de manieren waarop bedrijven kunnen reageren in dienstensectoren, aangezien die sectoren nauwelijks onderzocht zijn, maar toch afwijkende kenmerken hebben en in vele landen een meerderheid van het bbp uitmaken.

Deze overwegingen hebben geleid tot de volgende onderzoeksvraag: *“Hoe kunnen bedrijven reageren op disruptieve innovatie dienstensectoren?”*

Bedrijven kunnen in deze context zowel gevestigde spelers in een sector zijn, als toetreders de novo of de alio.

Het onderzoek dat werd opgezet om op deze onderzoeksvraag te antwoorden, wordt besproken in de volgende sectie.

2. Over de onderzoeksopzet en de bevindingen

Om op de onderzoeksvraag uit de vorige sectie te antwoorden, werd een exploratief, niet-generaliseerbaar onderzoek opgezet. Eerst werd een literatuuronderzoek uitgevoerd, besproken in hoofdstuk 2, om de theoretische achtergrond van de studie vast te leggen en om de huidige staat van de DIT met betrekking bedrijfsreacties en dienstensectoren na te gaan (deels hierboven besproken). In hoofdstuk 3 wordt de methodologie besproken. Hoofdstuk 4 bevat een analyse van de resultaten; een bespreking van deze resultaten is gegeven in het vijfde hoofdstuk. Hoofdstuk 6 concludeert, geeft de belangrijkste bijdragen en beperkingen van het onderzoek aan en geeft suggesties voor verdere studies. De belangrijkste punten uit deze hoofdstukken worden hieronder besproken, beginnend met het literatuuronderzoek.

2.1. Literatuurstudie

In een eerste fase van het literatuuronderzoek werden alle peer-reviewed publicaties waarvan Clayton Christensen, de ontwikkelaar van de oorspronkelijke DIT, (co)auteur was, systematisch opgehaald en geanalyseerd. Het doel was om de theoretische achtergrond van deze studie te bepalen en om na te gaan tegen welke theoretische achtergrond de oorspronkelijke DIT ontwikkeld is.

Om een vollediger overzicht van de DIT te bekomen, werden in een tweede fase ook de kritieken op de oorspronkelijke theorie, die opkwamen kort na de doorbraak ervan, opgenomen in de literatuurstudie.

In de derde en laatste fase werden alle recente, empirische onderzoeken over de DIT systematisch verwerkt. Op deze wijze werden er, over alle fases heen, 40 artikels opgenomen, gelezen en geanalyseerd in het literatuuronderzoek.

De hoofdbevindingen van de literatuurstudie relateren aan beperkingen in de veralgemeenbaarheid van de DIT, onder andere tot dienstensectoren, zoals hierboven besproken. Empirische contexten die afwijken van de degene van de oorspronkelijke DIT, leiden tot afwijkende resultaten. Verder was er geen aandacht voor reacties van toetreders de novo of de alio, die in een sector kunnen verschijnen in reactie op het opkomen van een disruptieve innovatie aldaar. Deze bevindingen worden verder besproken in sectie 3 en in hoofdstuk 2.

2.2. Empirische studie

Vanwege de nagenoeg afwezigheid van eerdere empirische studies in dienstensectoren, werd gekozen voor een exploratieve onderzoeksstrategie.

Op basis van desk research werden twee sectoren uitgekozen voor verdere bestudering. Deze waren de staffingsector en sector van de juridische dienstverlening. Deze sectoren werden geselecteerd vanwege de beschikbaarheid van onderzoekbare disruptieve innovaties.

Bestuurde disruptieve innovaties binnen staffing waren geautomatiseerde externe matching (van kandidaten met vacatures) en videorecruitment. In de juridische sector werden alternatieve juridische dienstverleners en juridische, front-end chatbots geselecteerd als DI's.

Binnen deze sectoren werden medewerkers van DI-initiatiefnemers, gevestigde spelers (zowel marktleiders als kleinere ondernemingen) en sectorfederaties geïnterviewd. Deze medewerkers hadden steeds kennis van de DI in kwestie en van de concurrentiële dynamieken waar hun firma's of sectoren zich op dat moment in bevonden. In totaal werden er zestien interviews afgenomen (twaalf in de staffing sector en vier in de sector van de juridische dienstverlening). Meer details over deze verdeling zijn opgenomen in hoofdstuk 3.

Elke geïnterviewde persoon werd bevraagd over het standpunt van zijn of haar organisatie en over andere concurrentiële dynamieken: de acties van gevestigde ondernemingen uit de sector, van toetreders de novo en de alio enzovoort. Deze informatie werd aangevuld via bijkomende desk research. De resultaten zijn weergegeven in hoofdstuk 4, de bespreking van de resultaten in hoofdstuk 5.

Hoofdbevindingen hebben betrekking op de algemene manieren waarop bedrijven reageerden op disruptieve innovaties, de specifieke gevallen van specifieke bedrijfstypes (bijvoorbeeld de reacties van gevestigde spelers) en hoe specifieke karakteristieken van dienstensectoren reacties beïnvloeden. Deze bevindingen worden verder toegelicht in de volgende sectie.

3. Bijdragen van het onderzoek aan de wetenschap en aan de praktijk

In deze sectie worden de hoofdbevindingen van de literatuurstudie en van het empirisch onderzoek besproken, alsook hun bijdragen aan de wetenschap en aan de praktijk.

3.1. Bijdrage aan de wetenschap

Dit onderzoek begon met een literatuurstudie over disruptieve innovatie, bedrijfsreacties en de rol van dienstensectoren binnen de ontwikkeling van de DIT.

Besloten werd dat Christensen en zijn collega's een waardevolle theorie ontwikkeld hebben over hoe gevestigde bedrijven omgaan met disruptieve technologische discontinuïteiten in op technologie gerichte productiesectoren. Vervolgens is deze theorie veralgemeend om ook andere sectoren te bevatten, inclusief een aantal dienstensectoren. Onder andere deze veralgemening heeft geleid tot het opkomen van een aantal kritieken, zoals hierboven vermeld. Sommige van deze kritieken (bijvoorbeeld Danneels, 2004) menen dat de DIT zodanig veralgemeend is dat haar bevindingen niet altijd meer geldig zijn. Aangezien zo een oververalgemening waarschijnlijk zou leiden tot afwijkende resultaten als de DIT zou worden hertest in nieuwe empirische contexten, werd vervolgens in een derde fase van het literatuuronderzoek de recente, empirische DI literatuur bestudeerd.

Eindconclusies waren dat wanneer sectoren met eigenschappen verschillend van die van de context van de oorspronkelijke DIT onderzocht werden, afwijkende resultaten werden vastgesteld. Bijvoorbeeld, waar Christensen & Bower (1996) focusten op het intern ontwikkelen van DI's door gevestigde ondernemingen, stelde Wagner (2016) het gebruik van overnames vast in minder kapitaalintensieve sectoren. Ook de recente, empirische literatuur vertoont een gebrek aan onderzoek in dienstensectoren. Ten slotte werden de reacties van toetreders (de novo zowel als de alio) nooit expliciet onderzocht.

De empirische fase van dit onderzoek (volledig besproken in hoofdstuk 5) exploreerde vervolgens op welke manieren bedrijven kunnen reageren op disruptieve innovaties in de sectoren van staffing en van juridische dienstverlening.

Een hoofdbevinding was dat algemene bedrijfsreacties kunnen worden ingedeeld volgens twee dimensies. Een eerste dimensie betrof de attitude (conservatief vs. progressief) ten opzichte van de DI in kwestie. De tweede betrof het niveau van activiteit (passief vs. hetzij vriendelijk/meewerkend, hetzij vijandig/competitief). Sommige reactietypes beschreven in de literatuur werden opnieuw vastgesteld

(zoals interne ontwikkeling – Christensen & Bower, 1996). Andere geobserveerde reactietypes waren nieuw, zoals het pogen om de DI te laten mislukken op een andere manier dan via directe concurrentie (bijvoorbeeld door juridische actie).

Ingedeeld volgens deze dimensies, konden de verscheidene reactietypes van bedrijven ingedeeld worden in vier clusters: progressief-meewerkende ‘collaborators’, progressief-competitieve ‘parallel movers’, conservatief-vijandige ‘distractors’ en conservatief-passieve ‘inerts’. Andere combinaties kwamen niet voor in de empirische gegevens.

Voorts werden factoren vastgesteld die bedrijven aanstuurden binnen de bovenvernoemde dimensies, om voor bepaalde reactieopties te kiezen in plaats van andere. Deze hadden voornamelijk betrekking op industrie- en firmakaracteristieken op zich, maar ook op interacties tussen firmakaracteristieken en DI-karakteristieken.

Als laatste punt binnen de bespreking van algemene reacties, werden patronen vastgesteld in het gedrag van bedrijven die schakelden tussen reactievormen: wanneer bedrijven de ene reactiestrategie opgaven om een andere in te zetten, was dat meestal in de richting van meer progressief, meer meewerkend gedrag.

Met betrekking tot de reacties van specifieke bedrijfstypes, kon worden vastgesteld dat gevestigde spelers een groter aanbod aan opties hadden dan toetreders. Voorts waren marktleiders erg progressief en meewerkend, in tegenstelling tot eerdere theorie (bijvoorbeeld Christensen & Bower, 1996). Potentiële verklaringen liggen de beschikbaarheid van grotere budgetten ter experimentatie en de visie van het topmanagement, maar mogelijks waren marktleiders ook niet dermate beperkt door hun meest invloedrijke klanten (zoals in de originele DIT) dat ze volledig geen investeringen meer konden doen in DI's.

Voorts gingen gevestigde firma's relatief snel over tot samenwerkingen met DI-initiatiefnemers, in tegenstelling tot Marx, Gans & Hsu (2014), die stelden dat deze firma's eerder zouden afwachten tot de technologische onzekerheid afgenomen was. Een mogelijke verklaring is dat in deze contexten, het risico van mislukking minder impactvol is door lagere kapitaalvereisten.

Tenslotte werd nog vastgesteld dat DI's niet uitsluitend voortkomen uit *low-end* niches of uit *noncustomers* (Christensen & Raynor, 2003), maar mogelijks ook uit niches van klanten die reeds vertrouwd waren met de technologie waar de DI op gebaseerd is en daardoor sneller naar de DI overschakelden. Tenslotte zijn sommige DI's initieel gegroeid uit een beperkt aantal niches, die als enige in de markt minder afgeschermd waren door regulering.

Tenslotte bleken de specifieke karakteristieken van dienstensectoren de impact van disruptie vooral af te remmen, hetgeen voor bedrijven mogelijks de perceptie gaf dat er minder nood was aan reactie. Deze specifieke eigenschappen hadden betrekking op het bestaan van meerdere performantieattributen die tegelijkertijd relevant waren voor klanten, het bestaan van bijkomende groepen van stakeholders die overtuigd moeten worden om de DI te gebruiken (buiten klanten zelf – bijvoorbeeld jobkandidaten in staffing), beperkingen in schaalbaarheid van de DI en regulering die grote delen van de markt mogelijks vrij definitief kan blokkeren voor de DI.

3.2. Bijdrage aan de praktijk

Praktijkbijdragen van dit onderzoek worden hieronder besproken.

Ten eerste heeft dit onderzoek een model voorgesteld dat mogelijke bedrijfsreacties op DI's in dienstensectoren oplijst en indeelt volgens een attitudedimensie en een activiteitsdimensie, zodat hun relatieve posities duidelijk worden. Voorts wordt aangegeven welke factoren op welke soorten reacties kunnen aansturen. Tenslotte wordt aangehaald op welke manier bedrijven hun reactiestrategie kunnen wijzigen.

Dit geeft een kader aan gevestigde ondernemingen die op deze manier op een brede manier kunnen nadenken over welke opties ze hebben wanneer ze geconfronteerd worden met een bepaalde DI. Voorts kunnen ze aan de hand daarvan ook een inschatting maken op welke manier hun concurrenten geneigd kunnen zijn om te reageren, hetgeen relevant kan zijn in het bepalen van hun concurrentiestrategie. Ook toetreders de novo en de alio kunnen gebaat zijn bij dergelijke inschattingen. Verder kunnen DI-initiatiefnemers aan de hand van dit model inschatten op welke manieren bedrijven op hun innovatie zullen reageren. Tenslotte kan dit gebruikt worden door consultants, sectorfederaties en overheden, voor het bepalen van advies en beleid.

Een verdere aanbeveling op basis van dit onderzoek is dat bedrijven mogelijks verder dienen te kijken dan enkel naar *low-end* segmenten en *noncustomers* als ze uitkijken voor DI's. Deze kunnen namelijk ook groeien vanuit niches die meer ervaren zijn met de basistechnologie van de DI of niches die meer open zijn dan de hoofdmarkt vanwege regulering.

Gezien de evolutiepaden die werden opgemerkt, dienen initiatiefnemers er rekening mee te houden dat er initieel concurrentiëler en conservatiever op hun DI gereageerd kan worden dan later in de tijd. Het kan dan ook de moeite lonen om te proberen gevestigde spelers te overtuigen van de

mogelijkheden tot samenwerking. Wel dienen deze initiatiefnemers in dienstensectoren rekening te houden met mogelijke vertragingen van disruptie bij het inschatten van hun toekomstige groei.

4. Beperkingen en suggesties voor verder onderzoek

Deze studie was ontworpen ter exploratie van bedrijfsreacties ten opzichte van DI's in dienstensectoren. In die vorm heeft ze geleid tot verscheidene bevindingen. Desalniettemin waren er ook meerdere beperkingen aan de vorm van dit onderzoek, die een basis kunnen vormen voor verdere studies.

Vooreerst was het door een gebrek aan middelen niet mogelijk om het interviewproces verder te zetten tot het einde van het theorievormingsproces. Bijkomende interviews leidden steeds nog tot nieuwe categorieën en bemerkingen. Toekomstig onderzoek kan daarom het exploratieve proces voortzetten.

Ten tweede zijn er geen kwantitatieve methoden gebruikt die in staat geweest zouden zijn om tot veralgemeenbare bevindingen te komen. Daarom dienen alle bevindingen van dit onderzoek ook gezien te worden als niet-representatief. Vervolgstudies kunnen dan ook bevindingen van (voortgezet) exploratief onderzoek op een kwantitatieve manier testen.

Ten derde, aangezien dit onderzoek ernaar streefde om bedrijfsreacties in een brede zin exploratief te onderzoeken, werd de studie gericht op diverse casussen, in plaats van slechts een beperkt aantal casussen meer in de diepte uit te werken. Hierdoor kon niet elke individuele casus altijd in zijn volledige complexiteit bestudeerd worden. Om dit enigszins tegemoet te komen, werden regelmatig directe concurrenten geïnterviewd, om een casus vanuit meer van elkaar verschillende, subjectieve standpunten waar te nemen.

Voorts was dit onderzoek niet gericht op het vaststellen van de performantie van reactiestrategieën. Dit kan inhoudelijk nog een zinvolle afhankelijke variabelen zijn in toekomstig onderzoek

Ten vierde moet het worden erkend dat dit onderzoek exclusief op de aanbodzijde gefocust was. Desalniettemin kan een onderzoek naar DI's (deels) vanuit het standpunt van de klant tot interessante, nieuwe bevindingen leiden, zoals aangetoond werd door bijvoorbeeld Guttentag & Smith (2017). Dit kan eveneens een mogelijkheid zijn voor toekomstig onderzoek.

Tenslotte is deze studie uitgekomen op enkele exploratieve bevindingen in verband met hoe bedrijven hun reactiestrategie kunnen aanpassen doorheen de tijd. Longitudinale studies kunnen deze bevindingen verder uitdiepen.

List of tables

Table 3.1	Properties of the research methods deployed.....	19
Table 3.2	Firm types interviewed.....	21
Table 4.1.	Reactions to disruptive innovations observed in the staffing industry	33
Table 4.2.	Reactions to disruptive innovations observed in the legal services industry.....	43
Table 5.1.	Additional comments on selected reaction types and their position within the attitude-activity model.....	47
Table 5.2.	Factors influencing attitude / activity levels	52
Table 5.3.	Summary of specific remarks concerning incumbent reactions	62
Table 5.4.	Possible explanations for slowdown and eventually halting disruption within a service industry	65

List of figures

Figure 3.1	Research timeline.....	18
Figure 4.1.	Primary activities of the staffing value chain.	24
Figure 4.2.	The strived-for offering levels of the main value attributes in the traditional staffing services industry (strategy canvas)	26
Figure 4.3.	The comparison of automated, external matching to the traditional way of matching within the staffing industry (strategy canvas).....	29
Figure 4.4.	The comparison of asynchronous video interviewing to the traditional way of telephone interviewing in recruitment (strategy canvas)	31
Figure 4.5.	The strived-for offering levels of the main value attributes in the traditional legal services industry (strategy canvas)	37
Figure 4.6.	Comparison of traditional law firms to alternative legal service providers (strategy canvas)	39
Figure 4.7.	Comparison of traditional law firms to a service model based on the use of a front-end, legal chatbot (strategy canvas)	41
Figure 5.1.	Company reaction options with respect to disruptive innovation in a service industry (incl. qualitative clusters).	46
Figure 5.2.	Clusters in the attitude-activity model.....	49
Figure 5.3.	Evolution paths: how companies may substitute one reaction approach for another over time	56

List of abbreviations

AI: artificial intelligence

bbp: bruto binnenlands product (Dutch)

DEC: Digital Equipment Corporation

DI: disruptive innovation

DIT: disruptive innovation theory

PC: personal computer

R&D: research and development

RFID: radio-frequency identification

SME: small or medium-sized enterprise

WLAN: wireless local area network

Table of contents

Acknowledgements.....	4
Abstract	i
Executive summary (Dutch).....	ii
1. <i>Probleemstelling, doel van het onderzoek en onderzoeksvraag.....</i>	<i>ii</i>
2. <i>Over de onderzoeksopzet en de bevindingen</i>	<i>v</i>
2.1. Literatuurstudie	v
2.2. Empirische studie.....	vi
3. <i>Bijdragen van het onderzoek aan de wetenschap en aan de praktijk</i>	<i>vii</i>
3.1. Bijdrage aan de wetenschap	vii
3.2. Bijdrage aan de praktijk	ix
4. <i>Beperkingen en suggesties voor verder onderzoek</i>	<i>x</i>
List of tables.....	xii
List of figures.....	xii
List of abbreviations	xiii
Table of contents	xiv
Chapter 1: Introduction: problem statement and research question.....	1
Chapter 2: Theory: a literature review of disruptive innovation, service industries and company reactions....	5
2.1. <i>Methodology of the literature review.....</i>	<i>5</i>
2.1.1. Phase 1: literature by Christensen	5
2.1.2. Phase 2: early critiques on the original DIT.....	6
2.1.3. Phase 3: recent, empirical disruptive innovation literature.....	6
2.2. <i>Contents of the literature review</i>	<i>7</i>
2.2.1. Literature review findings relating to the DI concept, service industries and the generalizability of the studies.....	7
2.2.2. Literature review findings related to company reactions to disruptive innovation	11
2.3. <i>Conclusion.....</i>	<i>16</i>
Chapter 3: Methodology: set-up of the qualitative study.....	18
3.1. <i>Research strategy and design</i>	<i>18</i>
3.2. <i>Research methods.....</i>	<i>18</i>
3.3. <i>Properties of the research methods.....</i>	<i>19</i>
3.4. <i>Data and analysis.....</i>	<i>20</i>
Chapter 4: Results from data collection	22
4.1. <i>The staffing services industry.....</i>	<i>22</i>
4.1.1. Industry profile.....	23
4.1.2. Disruptive innovations in the staffing services industry	27

4.1.3.	Company reactions to disruptive innovations in the staffing industry	32
4.2.	<i>The legal services industry</i>	36
4.2.1.	Industry profile.....	36
4.2.2.	Disruptive innovations in the legal services industry.....	38
4.2.3.	Company reactions to disruptive innovations in the legal services industry	42
Chapter 5:	discussion	45
5.1.	<i>The “attitude-activity” model of company reactions to disruptive innovation in service industries..</i>	45
5.1.1.	Matrix axes and clarifications of selected positions	46
5.1.2.	Qualitative clusters of reaction options.....	49
5.1.3.	Influencing factors	51
5.1.4.	Evolution paths	55
5.2.	<i>Specific remarks depending on firm type</i>	58
5.2.1.	Specific remarks regarding incumbent reactions to disruptive innovation	58
5.2.2.	Specific remarks regarding reactions of other company types to disruptive innovation	63
5.3.	<i>The potential effects of service industry characteristics on disruption</i>	63
5.4.	<i>Conclusion</i>	66
Chapter 6:	Conclusion	68
6.1.	<i>About the research and its findings</i>	68
6.2.	<i>Contributions to theory and practice</i>	70
6.2.1.	Contributions to theory	70
6.2.2.	Contributions to practice	72
6.3.	<i>Limitations and future research</i>	73
References	75
Appendices	83
	<i>Appendix A – Summary of peer-reviewed literature by Clayton M. Christensen on disruptive innovation</i>	83
	<i>Appendix B – Summary of a selection of critiques on the original DIT</i>	98
	<i>Appendix C – Summary of recent, empirical literature on disruptive innovation</i>	103
	<i>Appendix D – Company reactions to (potentially) disruptive innovations in the staffing industry – as perceived by initiators</i>	115
	<i>Appendix E – Company reactions to (potentially) disruptive innovations in the staffing industry – as perceived by incumbents</i>	117
	<i>Appendix F – Company reactions to (potentially) disruptive innovations in the staffing industry – as perceived by trade associations</i>	119
	<i>Appendix G – Company reactions to (potentially) disruptive innovations in the legal services industry – as perceived interviewees</i>	122
	<i>Appendix H – generic interview guide (Dutch)</i>	125

Chapter 1: Introduction: problem statement and research question

The purpose of this study was to investigate how companies may react to disruptive innovations in service industries. This purpose emerges from the problem statement described in the subsequent paragraphs.

Innovation is widely regarded as a cornerstone for the increase of business performance, having a positive correlation with sales growth and with profitability of firms in manufacturing industries as well as in service industries (Prajogo, 2006; Cornell University - SC Johnson College of Business, INSEAD, & World Intellectual Property Organization, 2017). This is also acknowledged by firms' decision makers around the world (McKinsey & Company, n.d.) as well as by governments seeking to provide incentives for economic growth (e.g. Eurostat, 2017; Vlaamse Regering, 2014; The White House, 2015). For example, PwC (2013) found that only 3% of CEOs included in their global study believed that innovation was not a priority of their company.

In addition, it is broadly accepted that the pace of innovative developments is high and accelerating (The Boston Consulting Group, 2016; McGrath, 2013; Juvetson, 2010). As an illustration, 2016 has been a record year for international patent applications according to World Intellectual Property Organization (2017) and the innovation performance of many EU Member States has steadily improved during the last five years (European Commission, 2016).

One form of innovation that may have major impacts on industries and that has received an unusually high amount of attention both in academics and in practice is disruptive innovation (Christensen, 1993; Danneels, 2004). Although a well-constrained definition of this concept is absent in literature (Danneels, 2004; Weeks, 2015), it is described as innovation that presents a different set of performance attributes compared to a traditional product or service, inferior concerning the dimension along which is traditionally competed, and nevertheless superior along (a) secondary dimension(s). This way, disruptive innovations (DIs) may initially appeal only to a niche (that highly values the secondary characteristic), which is deemed too small to invest in by traditional incumbents. However, over time, performance of the DI on the traditional basis of competition may improve and gradually, customers overserved by the traditional product or service may switch to the DI, appealed by its advantageous secondary characteristic. Eventually, traditional, market-leading incumbents may find themselves replaced by the initiator of the DI. Common examples are minicomputers relative to mainframes or digital photography relative to film (whereby Kodak was replaced as market leader –

Brachmann, 2014). (Christensen & Bower, 1996; Danneels, 2004; Govindarajan & Kopalle, 2006a)

Because of this major impact on competitive dynamics and market leadership, a good understanding of the dynamics and consequences of disruptive innovation may be vital for companies of all sorts confronted with this phenomenon. This need is even urged by the previously described increasing pace of innovation – certainly as the amount and impact of disruptive innovations is believed to increase as well (EY, n.d.; McKinsey & Company, 2015), possibly fueled in part by the current ‘digital revolution’ (Brynjolfsson & McAfee, 2012).

As firms require this good understanding of the phenomenon of DI, researchers have been developing a valuable, normative and analytical theory on the competitive effects of disruptive innovation and how companies may respond to it, ever since the DIT was originally developed by Christensen and his colleagues (Christensen, 1993; Rosenbloom & Christensen, 1994; Christensen & Rosenbloom, 1995; Christensen & Bower, 1996). However, despite its importance and its popularity, the disruptive innovation theory (DIT) has a number of limitations, two of which are particularly relevant for this study.

Firstly, regarding empirical evidence, the DIT has been founded against the background of the hard disk drive industry - a capital-intensive manufacturing industry (Christensen, 1993). Neither in further developments of the original DIT or in recent, empirical DI literature, service industries have been taken into account extensively. Nevertheless, the tertiary sector of the economy accounts for large parts of the GDP of countries - over 70% on average for OECD countries and over 60% of the world GDP (Central Intelligence Agency, 2018). Moreover, service industries differ on a considerable number of characteristics to manufacturing industries (Wolak, Kalafatis & Harris, 1998). In sum, the DIT to date is missing the largest subset of the economy, while this services subset is likely to exhibit anomalies when one applies the DIT to it.

The second limitation – regarding content – increases this expectation. As in recent, empirical literature on disruptive innovation, other contexts than the traditional ones (such as the hard disk drive industry) were researched, deviations from the theory were found. A prominent one of these deviations was the existence of incumbent reactions different compared to those described and explained in the original theory. For example, where the original DIT focuses on exclusively competitive moves from incumbents towards DI initiators, Hüsiger and Hipp (2009) reported on more cooperative approaches. This may imply that the DIT to date has not accounted for all possible reactions that incumbents may exhibit towards the introduction of a DI in their industry, and that certainly reactions

in service contexts are missing, as services are generally excluded from empirical evidence and still have extensively different characteristics.

Moreover, the theory to date hardly accounts for the reactions of other companies besides incumbents, such as new entrants de novo (startups) or new entrants de alio (incumbents from another industry) that enter an industry after a DI is introduced therein¹.

Still, having a complete overview of possible reactions from all sorts of companies may be relevant to know for many sorts of organizations. Primarily, the initiator of a DI find it valuable to anticipate responses to its innovations, while responding companies (incumbents, new entrants de novo or de alio) may want to know what possible reactions they have, and to estimate the possible reactions of competitors as input for their competitive strategy. Furthermore, such an overview may be relevant for consultants assisting these firms, and for trade associations and governments to support their members and to develop policies.

Thus, organizations of all sorts encounter a high and increasing need to assess in which way companies will react to a disruptive innovation. Nevertheless, there has been no extensive research investigating the possible company reactions to disruptive innovation in service industries, although it appears that this phenomenon may lead to other dynamics compared to the manufacturing contexts wherein the DIT was originally developed and services account for the majority of the GDP in many countries. Therefore, research is required to assist various organizations in assessing company reactions to disruptive innovation in service industries.

This study aims to provide for this requirement and is directed by the following main research question: *“How may companies react to disruptive innovation in a service industry?”*

For the purpose of this question, a company can either be an incumbent of the industry (defined here as firms that also sold the previous generation of services – in analogy with Chandy & Tellis, 2000), a new entrant de novo (a startup) or a new entrant de alio (an incumbent from another industry).

¹ The distinction between both sorts of new entrants can be relevant with respect to company reactions, as a large corporation may accede an industry in response to a DI in a completely different way compared a small startup. For example, a new entrant de alio may enter on a larger scale because it may be able to make larger upfront investments.

This main research question can be broken down into the following partial research questions:

- Which reaction options may be followed by incumbents?
- How do these reaction options relate to each other?
- Under which conditions may incumbents prefer certain reaction options above others?
- To which extent are these possible incumbent reactions in line with the current DIT?
- These partial research questions can be repeated for new entrants *de novo* and *de alio*.

To provide answers to these questions, an exploratory study has been conducted. First, a literature review has been conducted (summarized in chapter 2) to provide a theoretical background and to assess the current state of the DIT with respect to company reactions and service industries (partly discussed above). In chapter 3, the methodology of this study is overviewed, while the results are analyzed in chapter 4. Chapter 5 contains the discussion of the results; chapter 6 concludes on this research.

Chapter 2: Theory: a literature review of disruptive innovation, service industries and company reactions

This chapter discusses a literature review on disruptive innovation (DI). A specific focus is placed on company reactions to DIs and the role of service industries within the examined literature. The literature review consists of three parts or phases. One phase focuses on the research conducted by Clayton M. Christensen, giving an overview of the original disruptive innovation theory (DIT). A second phase extends this theoretical background by discussing the main critiques on the original DIT that emerged shortly after its breakthrough. Finally, the third phase of this review examines the recent, empirical studies on the concept of disruptive innovation (DI) by other authors.

The three phases of this literature review will be discussed after a methodological overview.

2.1. Methodology of the literature review

The methodologies of each of the three phases of the literature review will be discussed below.

2.1.1. Phase 1: literature by Christensen

The objective of this part of the literature review was to gather and analyze all peer-reviewed articles written by Clayton M. Christensen, as author as well as co-author.

To collect these publications, the Web Of Science search engine was used through the following search string:

*AU=(Christensen CM OR Christensen, Clayton * OR Clayton * Christensen OR CM Christensen)*

From the results of this search string, all articles with a publication date in 1975 - the year during which Christensen obtained his first academic degree (Harvard Business School, 2018) - or later were retained.

To assess whether this list of results was exhaustive, it was compared to the bibliography of Christensen's personal webpage on the website of Harvard Business School (Harvard Business School, 2018). Missing publications were retrieved from other sources.

This search string resulted in 182 entries. Subsequently, a manual control was executed for the following criteria in order to assure that exclusively relevant articles were retained:

- whether the article was effectively (co-)authored by the intended person (94 articles removed);
- whether the article was published in a peer-reviewed journal (75 articles subsequently removed); and
- whether the article was related to the domain of disruptive innovation (one article subsequently removed).

The application of these criteria resulted in the retainment of fourteen articles for analysis.

2.1.2. Phase 2: early critiques on the original DIT

One important article from the first phase of the literature review – Christensen (2006) – was written as a response to critiques on the DIT that emerged shortly after its breakthrough. To discuss this article, it was deemed necessary to include these critiques as well.²

These critiques were selected based on the content and the references of Christensen (2006), rendering into six articles attained for analysis.

2.1.3. Phase 3: recent, empirical disruptive innovation literature

Mirroring the methodology structure of the first phase of the literature review, the methodology of the third phase starts with an automated search, followed by a manual application of relevancy criteria.

Purpose was to retrieve all recent, empirical DI research papers. Again, the search engine of Web Of Science was used, to secure a minimum level of quality for the articles retained. The following search string was applied:

TS=("disruptive innovat" OR "disruptive tech*" OR "C* Christensen" OR "Christensen, C*" OR "disrupt* of tech*" OR "theory of disrupt*" OR "disrupt* theory" OR "innovator's dilemma") AND TS=("empiric*")*

² Other reasons to include these critiques were that they contained relevant findings and nuances with respect to the research question and because a considerable amount of studies from the last part of the literature review referred to those critiques.

This search string covers common names and concepts related to the DI concept as well as an excluding restriction to empirical research³. To focus exclusively on recent studies, only articles published during the last ten years were considered.

This resulted in a retrieval of 87 articles. To these results, the following criteria were manually applied:

- whether the article contained indeed an empirical study on disruptive innovation (47 articles removed); and
- whether the article was published in a peer-reviewed journal - excluding conference proceedings (20 articles subsequently removed).

Finally, 20 articles were retained for analysis.

2.2. Contents of the literature review

The findings of the three parts of this literature review will now be analyzed. This analysis logically follows the research question. First, providing a theoretical background for the DI concept, the emergence and evolution of the concept itself will be discussed. This will include a discussion of the role of service industries in the DI literature, as well as a discussion of the generalizability of the findings. In a second subsection, the literature findings and implications concerning company reactions to DIs will be reviewed. A summary of the studies included in this analysis can be found in appendix A (concerning the literature by Christensen, i.e. methodological phase 1), appendix B (concerning the critiques on the DIT that emerged shortly after its breakthrough – phase 2), and in appendix C (concerning the recent, empirical literature on disruptive innovation – phase 3).

2.2.1. Literature review findings relating to the DI concept, service industries and the generalizability of the studies

Starting from Schumpeter (1934), there has been a long tradition of research on innovation and its effects on competitive dynamics. One notion often studied, is the failure of incumbents in the face of

³ A specific focus on empirical research is maintained because a conclusion from phase 2 of the literature review was that the original DIT may be limited in external validity and therefore, DI research conducted in other empirical contexts than the original DIT may result in anomalies (amongst others concerning incumbent reactions). The goal of phase 3 is to review and summarize these deviating findings.

technological discontinuities. Christensen (1997a) notes that besides rather trivial explanations such as bureaucracies reacting too slow to innovation, Tushman and Anderson (1986) established the concept of competence-destroying innovations. These authors described how new technologies may destroy the value of incumbents' existing capabilities. This requires incumbent firms to build new ones, in which they are likely to fail, or at least are disadvantaged compared to new firm that can start acquiring capabilities without an impeding legacy. Furthermore, Christensen (1997a) notes that Henderson and Clark (1990) studied how architectural innovation may cause incumbents to lose market leadership, as shifting product architectures may require shifts in organizational structures and processes as well, rendering an advantage to new entrants (*de novo*) who can build their organizations without legacy and thus free from resistance to change.

These well-supported explanations for incumbent failure focus on technological properties and organizational dynamics (Christensen & Rosenbloom, 1995). Christensen (starting from 1993), instead focused on a market-based explanation. He provided a normative and analytical theory explaining in detail how firms may fail when confronted with innovations that initially seem inferior compared to their own offering (such as, for example, digital photography compared to film, initially lagging in quality) – even if they are able to overcome the difficulties described above. His theory states that incumbents react too late to such innovations (labeled 'disruptive') because initially their main customers are not interested (resulting from the inferior characteristics of DIs). Over time, however, these characteristics improve, attracting incumbents' main customers.

Customers switch to a DI because it has a favorable secondary characteristic (e.g. higher reliability although mean performance is lower compared to the traditional product, with the latter being the traditional basis of competition and thus the focus of traditional firms). This secondary characteristic initially appeals to a niche and becomes the new basis of competition after disruption⁴. In Christensen's original work, this niche is the low end of the market; later, Christensen and Raynor (2003) called DIs in such situations low-end DIs and add in their book (not subject to peer review) that this niche can also be a market that previously lacked the money or skill to purchase or use the traditional product. In this last situation, the DI was called a new-market DI.

When disruption is occurring, incumbents turn around and decide to adopt the DI to save their customer base, but they are not able anymore to catch up with initiators of the DI and lose their dominant market position.

⁴ Disruption is considered here as the moment when the DI starts appealing to the main market and thus interrupts the traditional performance trajectory. Therefore, it is not seen as the moment of initiation of the DI, i.e. the moment it 'breaks away' from the traditional performance trajectory, which would match closer to the etymology of the word of 'disruption'.

Despite these findings, Danneels (2004) – see also Weeks (2015) – remarks the absence of clear criteria defining disruptiveness. Christensen refers to typical characteristics, nevertheless, he does not add defining ones that could be stable across industry boundaries⁵. Still, Danneels (2004) believes that the change in basis of competition (from the traditional basis to the favorable secondary characteristic of the DI, as described above) should be at the core of any future definition.

Geographically, the DIT seems to be generalizable to a large extent as Christensen's original work took into account data from multiple regions from across the world (Christensen, 1993). In addition to that, recent, empirical literature seems to emerge as well from a globally diverse set of countries. However, regarding industries, concerns arise, which will be discussed in the next paragraphs.

The original DIT has been developed against a manufacturing and technological background - initially the concept of disruptive innovation was even called *disruptive technology* instead and many times texts refer to 'products' as if 'services' are not taken into account. Christensen (1997b) mentions shortly that his findings are also applicable to services, however, he does not discuss his empirical research endorsing this generalization - the reported empirical studies are consistently situated in the disk drive industry (with one instance in the hydraulic excavator industry). No article by Christensen advances the theory empirically in a service context. As a consequence, although the theory seems applicable in different industries, there is uncertainty regarding the validity of certain findings of Christensen's original research in service contexts, amongst others. See also the second part of this review, on new findings regarding reactions to disruptive innovations, as an illustration of this last point.

As part of the generalization towards services, Christensen (2006) stresses that disruptive innovation is a business model problem and not a technology problem, as companies in his research were rather impeded in changing their strategy than in changing their deployed technology. This suggests that the DIT might even be applicable in nontechnological contexts – including services that are unintensive with respect to technology. In fact, Christensen and Armstrong (1998) applied the DIT in a conceptual way to industries such as executive business education and continuing health care education for health care professionals. Nevertheless, one can wonder whether the results of Christensen's framework

⁵ This remark on the definition of the DI concept emerges from critiques that stress the limited external validity of the original theory as described above. Concerns regarding external validity are discussed in more detail further in this section.

would replicate themselves in other contexts, for example, in less capital-intensive industries or in markets where there is not just one basis of competition, where customers are concerned about or interested in a myriad of variables at the same time (Danneels, 2004; Wagner, 2016; Guttentag & Smith, 2017). For example, it is imaginable that a services business does not require heavy equipment such as in the disk drive industry, therefore it could be less capital-intensive and thus, having a lower risk, be more inclined to react to a DI by adopting it; or, the DI may be less scalable and therefore less of a threat towards incumbents, reducing their reaction appetite. In sum, even though disruptive innovation is a business model problem, the way business model problems can be solved can vary from industry to industry.

These limitations in generalizability and their consequences have also been a central point in critiques that followed after the broad acknowledgement of Christensen's original disruptive innovation theory (DIT). Firstly, a main critique will be reviewed which states that the DIT generalization may have gone too far. Then, consequences are discussed. Finally, a brief overview will be given on how generalizable the DIT appears to be in recent, empirical literature.

Regarding the broad generalization itself, particularly Danneels (2004) remarks that as the findings of the original DIT are being stretched out to different contexts (e.g. by Christensen and Raynor (2003) to the service environment of online banking, amongst others) its validity might need to be reconsidered. Furthermore, he cites Chesbrough (2001) stating that the DIT literature has focused intensely on internal validity, to the possible and relative neglect of external validity.

To illustrate the implications of the overstretched external validity of the original DIT, two relevant consequences can be cited. A first one concerns the absence of defining criteria of a DI that are stable across industry boundaries, as described above. As a second one, Danneels (2004) states that the complexity of the DIT, during its broad expansion, has been neglected regularly by academics and practitioners, leading to misinterpretations. One example of a wrongful interpretation is that firms should not be customer-oriented because this may lead to disruption.⁶

⁶ Danneels (2004) points at this as a misinterpretation for two reasons. The first reason is that customer-orientation does not necessarily mean an orientation towards *current* customers, but possibly also towards *potential* customers. For the second reason, he refers to Slater and Narver (1998), stating that a genuinely customer-oriented firm should be able to understand the unexpressed needs of its customers. Taking these points into account, customer-oriented firms can even be better suited to sense the need for DIs, develop DIs by themselves and avoid being disrupted.

These critiques may imply that if new empirical contexts are explored, it may be likely to encounter additional anomalies. This is done in recent and empirical literature on disruptive innovation in new industries, effectively resulting in new findings deviating from the DIT. Service industries are still largely absent, so the question how the DI mechanisms may take place in these contexts is left largely unanswered. Some articles adopt the generalization towards services (e.g. Guttentag & Smith, 2017) while others are still grounded in a highly technological and product perspective (e.g. Sood & Tellis, 2011; Chen, Zhang & Guo, 2016). Nevertheless, possible implications for service industries regarding company reactions to DIs can be derived, which will be discussed in the next section.

2.2.2. Literature review findings related to company reactions to disruptive innovation

Reactions to disruptive innovation has always been at the core of the DIT, as the original theory observed a way for new entrants de novo to seize industry leadership while providing advice for incumbents to escape such a demise. Later critiques and recent, empirical literature each contribute to the proposed response palette, at least concerning incumbent reactions. Reactions of new entrants de alio, on the other hand, are largely absent in these studies (the original ones, as well as the critiques and recent, empirical literature). New entrants de novo, finally, although relatively often discussed as DI initiators, are not considered extensively as responding companies as well; i.e. extensive discussions on how new entrants de novo accede an industry in response to a DI are equally absent in the reviewed literature.

As described above, Christensen observed how incumbents in the disk drive industry reacted too late to DIs because of a “lock-in” in their current value network and customer base. Furthermore, Christensen and Bower (1996) suggest setting up a separate unit as being the best option to respond to a DI, to protect it from the adverse influence of powerful customers. Conditions are that the initial size of the opportunity must be limited compared to the growth needs of the main business and significant differences in cost structure must exist between both.

Later, Christensen researched implications of this theory, such as the consequences of disruption on the differentiation and commoditization process in an industry (Christensen, 1997b) and the effect of disruptive innovation on industry structure (Christensen, Verlinden & Westerman, 2002). Each of these further discussions can have implications on itself on the possible reactions of companies to DIs.

To illustrate in more detail, as Christensen (1997b) discusses the repeating occurrence of disruption within an industry (according to a fixed order of bases of competition: functionality, then reliability, convenience and finally price), this may imply that firms who react to a DI by 'disrupting the disruption' (Charitou & Markides, 2002), will be most likely to do so according to the proposed order.

Furthermore, Christensen, Verlinden & Westerman (2002) discuss how DIs may cause products to modularize and therefore industries and companies to disintegrate. This can have replications on an incumbent's corporate strategy, focusing more on responsiveness to markets of each business unit and less on synergies between these units (De Wit & Meyer, 2010). Also, this may imply that firms who enter a disrupted industry, may do so in a more focused, niche-targeting way than the industry used to be before the disruption. A more extensive overview is included in appendix A.

The main critiques that followed after the breakthrough of the DIT add to these observations or provide alternative reaction options and explanations for incumbent failure (see also appendix B).

Firstly, Danneels (2004) extends the discussion on when to use a separate business unit to adopt a DI. As Christensen (1997a) noted, this response option should only be used if the size of the DI opportunity is small compared to the growth needs of the main business and if the DI has a different cost structure compared to the main business. Drawing on Useem (1999) and Gulati and Garino (2000), Danneels mentions that independent units may have disadvantages as well, such as channel conflict or the loss of synergies in for example purchasing, information sharing and branding. Therefore, a careful cost/benefit analysis should be conducted before opting for adoption in the main business or in a separate unit.

Regarding successful incumbent reactions to DIs, Henderson (2006) and Tellis (2006) observe criteria additional to those of Christensen and Bower (1996). Henderson (2006) suggests that incumbents should pay attention to their market-facing competences, especially the competence to find a right lead market for a DI when developing a one. This may imply that firms that have invested more in such competences, may adopt a DI sooner and better, leaving less options for later (potential) adopters of the DI to gain foothold and thus demotivating them to follow.

Tellis (2006) on the other hand, stresses the importance of visionary leadership in reacting to a DI, possibly implying a similar outcome with firms that are more able to demonstrate such a leadership style, resulting in a higher willingness to change and to cannibalize existing assets.

Markides (2006), finally, proposed a refinement of DI categories. This author suggests that DIs exist in at least three forms. One of these forms is *disruptive technological innovations* (indeed called originally *disruptive technologies* by Christensen), to which the original DIT applies. Furthermore, according to Markides (2006) *business model innovations* and *radical product innovations* do exist, each having its own kind of competitive dynamics, differing from those of disruptive technological innovations.

Firstly, business model innovations rarely grow to takeover a whole market – which Christensen (2006) contradicted – making it possibly safe for incumbents to ignore these DIs or to just reinforce their existing business model without adopting these DIs (see also Charitou and Markides, 2002).

Secondly, radical product innovations (generating new-to-the-world products) are able to grow to takeover a whole market, however, their initiators rarely have the skills and funds to do so. Therefore, a viable strategy for incumbents is to set up a fund to feed such initiatives, to fully acquire them and scale them up when they prove to be successful.

Recent, empirical DI literature has implications as well for possible company reactions to DIs in service industries. These implications can be divided into two categories: explicit reaction options (direct implications) and reaction (de)motivation factors (which mostly appear in the literature in an indirect way). In the next subsection, these categories will be discussed together with some prominent examples. A more extensive overview is included in appendix C.

Reaction options in recent, empirical DI literature

Authors in this category identify reaction options that were not discussed before in the DI literature. These studies relax the original DIT conclusion that incumbents' single reaction option towards disruptive innovation is internal development. They do so by observing and adding to the theory two new reaction options for incumbents: cooperation with the DI initiator and acquisition of that initiator. This may imply that incumbents can stay rather inactive opposed to a possible, emerging DI. If that DI seems to become more and more successful over time, incumbents can then still access the required knowledge and technology through these newly observed options of cooperation or acquisition.

Nevertheless, these studies only focus on how *incumbents* may react to DIs. Other types of companies (new entrants *de alio* or *de novo*) are left out of scope. Besides cooperation and acquisition, other options, such as experimentation, are observed, yet only in a mostly exploratory manner.

These two main additional reaction options (cooperation and acquisition) will now be discussed, starting with the former.

Hüsig and Hipp (2009) discovered cooperation as a response option used by incumbents in the telecommunications industry, however, Madjdi and Hüsig (2011) confirmed that this way of responding did not result in superior performance.

Furthermore, Marx, Gans and Hsu (2014) found incumbents in the speech recognition industry to first compete with DI-initiating new entrants *de novo*, to possibly switch to cooperation later. This happened if new entrants proved to be successful (reducing technological uncertainty – see also Sood and Tellis (2011) and Yu and Hang (2011) in appendix C). Factors making cooperation possible in these cases were believed to be the presence of high appropriability regimes (making it easier for DI-initiators to negotiate cooperative agreements) and a high cost for necessary asset acquisition (making cooperation economically more attractive for incumbents).

Secondly, acquisition as a substitute for R&D is discussed by Wagner (2016), who observed this phenomenon in the software industry. Wagner attributed this to low capital intensity (thus lowering the financial requirements of acquiring a DI initiator). Wagner believes that acquisition can also be used on a less ad-hoc basis, within a corporate venture capital system. This also resonates to Markides (2006), who described the setup of an incubation network by incumbents to cope with radical product innovation.

Christensen (1997a) in fact discussed acquisition as a response option as well. However, he mainly stressed that the question remains whether the acquired company should be integrated into the main business or should be left independent such as a separate business unit. (This publication was not subject to peer review and was therefore not included in the prior analysis).

In conclusion, it can be stated that different response options seem to depend on industry characteristics, the most prominent ones being capital intensity (which decreases the possibility of acquisitions), the existence of high appropriability regimes (increasing the likelihood of cooperation) and the cost of acquiring necessary assets (beneficial for cooperation as well). Still, as the evidence from service industries remains low, this supports the need to examine what responses can be found in service industries as these are assumed to have even more deviating characteristics compared to product industries (which reinforces the research question).

The studies just discussed, describe reaction options mostly in an explicit way and the studies are often aimed at extending the core of the original DIT, as they addressed the same topics as the original theory (such as descriptions of competitive dynamics, e.g. Marx, Gans and Hsu, 2014) and adjusting its findings (e.g. by adding previously undescribed reaction options for incumbents, such as acquisitions – e.g. Wagner, 2016). Studies where (de)motivating factors can be derived from, on the other hand rather broaden the scope of the original DIT, by addressing topics that were not discussed before (e.g.

Yu and Hang (2011) propose R&D strategies to facilitate parties that intend to develop a DI). Consequences for company reactions can then be derived in a rather implicit way. This will be discussed in the next paragraphs.

Reaction (de)motivating factors in recent, empirical DI literature

Studies containing factors encouraging or discouraging companies to react to a DI, mostly do so in an implicit way. These studies rather explore previously undiscussed areas of disruptive innovation, such as the reconfiguration of value propositions (Bohnsack & Pinkse, 2017) or DI success factors (Chen, Zhu & Zhang, 2017). Reaction (de)motivating factors can then be derived (mostly) implicitly. Some concern real incentives. For example, Lui, Ngai and Lo (2016) discuss the cost of equity advantages of DI adoption. Others refer to rather structural advantages or barriers which may lead firms (not) to react. Examples of this last category are Hüsigg (2013) concerning regulation and Ganguly, Das and Farr (2017) concerning previously built marketing competences⁷.

Two other examples of the latter category are Sood and Tellis (2011) and Guttentag and Smith (2017). Sood and Tellis (2011) propose a new model for analyzing disruptive innovation. Using this new model, the authors are able to measure a high failure rate amongst potentially disruptive innovations. This may likely result in a lower response appetite for companies to potential DIs because a given DI is unlikely to survive and may hence not be considered as a serious threat (or opportunity) by other companies – requiring no specific response.

Guttentag and Smith (2017), in a study on Airbnb and the hotel industry, mention the existence of a myriad of selection criteria used by customers. As a high number of selection criteria are used, many niches may exist as well, each preferring a certain combination of selection criteria more than other niches. Then, as there is less of a ‘main market’ paying attention to just one attribute constituting the basis of competition that can be convinced by a ‘good enough’ DI, but many niches each with a relatively high demand for their specific performance attributes, it may be difficult for a DI to quickly

⁷ This study partly resonates with Danneels (2004) on the importance of marketing capabilities when facing a DI. As discussed above, Danneels (2004) stated that a truly customer-oriented firm should be able to sense the latent needs of its current customers and should pay attention to potential customers as well. Therefore, more customer-oriented firms should be better able to develop a DI, or to react to one through adopting the DI.

Ganguly, Das and Farr (2017) on the other hand, propose marketing strategies required to break through the preexisting relationship between customers and incumbents. This may imply similar advantages for firms with the marketing capabilities to do so.

seize a whole market. The DI may even be obstructed to ever do so. For example, Airbnb may be strong on local authenticity, but may not be able to replace all niche sorts of traditional hotels that currently exist⁸. Such lower payoffs could demotivate a (potential) DI initiator, but also other companies to react to a DI by copying it.

Again, other companies such as new entrants *de alio* or *de novo* that do not initiate a DI, are not discussed extensively. As such, these studies provide useful, potential implications for reactions to DIs in service contexts; however, as these studies as well arose mainly from empirical evidence on product industries, the need to test these implications in service industries is still reinforced.

2.3. Conclusion

The disruptive innovation (DI) stream of literature, initiated by Christensen, fits in a broader tradition of research on the impact of technological discontinuities on competitive dynamics in product industries. However, Christensen, finding that disruptive innovation rather consists of a business model problem than of a technology problem, applied this theory also to service industries in a conceptual way. While large parts of this theory seem applicable in service contexts, some anomalies may arise as well, as demonstrated by critiques following the breakthrough of the DIT.

A considerable amount of the anomalies found, were related to the reactions of incumbents to disruptive innovation. While Christensen suggested incumbents should use a competitive response to counter DIs, later critiques and recent, empirical studies suggest several alternative response options – such as cooperation (Hüsiger and Hipp, 2011) and acquisition (Wagner, 2016).

Furthermore, these recent, empirical studies contain many possible implications for company reactions in service industries.

Christensen does not present an extensive empirical analysis of DI research in service industries, neither do the critiques discussed and service contexts are barely represented in the recent, empirical studies on disruptive innovation. Moreover, reactions of companies other than incumbents or DI-initiating new entrants *de novo* – thus companies such as new entrants *de alio* or new entrants *de novo* in a follower's role) are never discussed extensively. Nevertheless, when authors discovered new response options, their existence was often contributed to industry characteristics, and service

⁸ In fact, Guttentag and Smith (2017) label Airbnb as disruptive only towards high-end hotels. However, then again, multiple niches of high-end hotels may exist, obstructing the DI to seize a large market share, as described previously in this paragraph.

industries are assumed to exhibit quite different characteristics compared to product industries. Therefore, the possible company reactions to disruptive innovations in service industries will be discussed in the remainder of this study.

Chapter 3: Methodology: set-up of the qualitative study

This chapter discusses which research strategy and design were selected and why. Subsequently, the details of the research design and methods are discussed, followed by an overview of the data collection and analysis.

3.1. Research strategy and design

The body of knowledge on company reactions to disruptive innovations (DIs) in service industries is rather limited, as was concluded in chapter 2. Therefore, to conduct the intended research, exploratory methods were used, as such methods are advised if that case (Recker, 2013; Sekaran & Bougie, 2016).

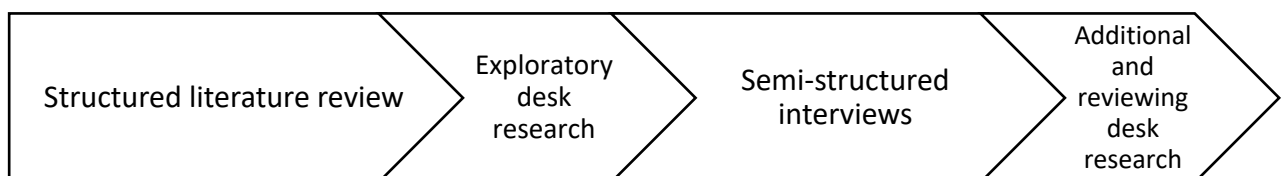
The primary method relied on was (exploratory) interviewing, triangulated by desk research. These qualitative methods were used as they were deemed most appropriate to examine the concerned phenomena in their natural, rich context, which is considered as a good starting point for theory-building (Recker, 2013). Also, the possibility of adapting the research design (according to knowledge gained in the course of the research) was considered as an important reason for using qualitative methods in this case.

More specifically, semi-structured interviews were used, as this allowed to assess the presence of certain essential elements (such as the characteristics of disruptive innovation) in a systematic way, while at the same time leaving ample space for probing (which allowed for exploring the context of the phenomena).

3.2. Research methods

The research methods that were deployed, are demonstrated in chronological order in figure 3.1.

Figure 3.1 Research timeline



First, a structured literature review has been conducted (see chapter 2 for its details). Next, a preliminary, exploratory phase of desk research was executed, examining multiple service industries to assess the existence and occurrence of disruptive innovations, the industries' availability for research, the amount of secondary information etcetera. Main sources were press articles, company websites, and annual reports. Two industries were selected: the staffing industry and the legal services industry (for more details, see section 3.4). Within these industries, semi-structured interviews were conducted. Finally, interview findings were triangulated by additional desk research.

3.3. Properties of the research methods

In line with Recker (2013), table 3.1 summarizes the properties of the research methods deployed. Overall, explorability and complexity were high, as demanded given the research objectives. These advantages came at the cost of lower controllability, deductibility and repeatability. Moreover, important to note is that the research methods of this study do not render generalizable findings; nor does this study strive to do so.

Table 3.1 Properties of the research methods deployed

<i>Property</i>	<i>Level and discussion of the property within the study</i>
Explorability	High, as semi-structured interviews allow for the discovering unknown or previously unconsidered observations (Recker, 2013).
Complexity	High, as semi-structured interviews allow for a rather exhaustive, multi-faceted analysis of the phenomena in case (Recker, 2013).
Controllability	Low, as none of the events in the study could be manipulated in any way. Nevertheless, the wide availability of cases made it possible to select those cases that corresponded to those certain events or characteristics that required specific attention.
Deductibility	Low, as solely exploratory methods were used with the explicit goal of theory-building and not theory-testing. It is included in the goal and in the limitations of this study that it should provide only (input for) propositions that still have to be tested during future, quantitative research.
Repeatability	Low, as semi-structured interviews were used, and the instruments of measurement were therefore not precisely defined (Recker, 2013). Furthermore, the interviewees may have limited time available for repeating a (similar) interview and other interviewees, in their own subjectivity, may not give the same or similar answers. Still, as interview questions focused on facts and past events on which a broad agreement is expected to exist within the companies of the interviewees, similar findings are expected when interviewing other persons from the same companies.

Generalizability	Low, as solely exploratory methods were used which inhibits the generalizability of the findings (Recker, 2013). Therefore, the attainment of generalizable findings was excluded from the goals of this research, which were restricted through the formulation of (input for) propositions to be tested in future, quantitative research.
------------------	---

Although these research methods were, based on the available literature (Recker, 2013; Sekaran & Bougie, 2013), perceived as the best suitable methods in this research situation, they had some disadvantages besides the ones discussed in table 3.1. More specifically, interviews risk invalid answers because of reflexivity, inaccuracy in the answers and interviewer's biases (Recker, 2013). Therefore, interview findings were triangulated by desk research, to improve internal and external validity. Moreover, to increase external validity, diversity in interviews was increased (focusing on multiple types of companies in two different industries – see section 3.4), while for each interview still a standardized interview guide was used.

3.4. Data and analysis

The exploratory desk research resulted in the selection of two industries: staffing services (a part of the human resources industry) and the legal services industry.

Firstly, the human resources industry was selected as main industry for this research, because of a wide availability of potentially disruptive innovation initiatives and because of a relatively low availability of secondary data (increasing the need for and contributive value of primary information through interviews). The main part of the interviews was therefore conducted in this industry. The DI selection is discussed in chapter 4, as this requires a discussion of the industry context (which is part of the results of the interviews). The type and phase of the DI case are discussed in this chapter as well, for the same reason.

The legal services industry was selected as validation industry, to increase external validity. As there was a broader availability of secondary data in this industry, fewer interviews were conducted in this context and there was a higher reliance on desk research.

In total, sixteen interviews were conducted (twelve HR industry interviews and four interviews in the legal services industry). The sets of interviews are summarized schematically in table 3.2 (p. 20).

Table 3.2 Firm types interviewed

INDUSTRY: STAFFING SERVICES	
<i>Firm type</i>	<i>Number of interviews</i>
Incumbent (market leading)	3
Incumbent (smaller and/or niche)	2
New entrant de novo	5
Trade association	2
INDUSTRY: LEGAL SERVICES	
<i>Firm type</i>	<i>Number of interviews</i>
Incumbent (market leading)	1
New entrant de alio	1
New entrant de novo	1
Trade association	1

Before potential interviewees were contacted, the number of organizations per company category was determined, balancing the weight of each category to ensure sufficient variety (e.g. it was determined that at least three incumbents should be interviewed in the staffing industry). Potential interviewees were contacted using the snowball method.

Interviews were conducted at the premises of the organization of the interviewee, if possible, because face-to-face interviews are more likely to result in longer and more detailed answers, better capturing the complexity of the situation under discussion (De Pelsmacker & Van Kenhove, 2010). Alternatively, interviews were conducted via telephone or video conferencing. As all interviewees were Dutch native speakers, interviews were conducted in this language. Interviews lasted between 30 minutes and 90 minutes, depending on the availability of the interviewee. The interviewees were all involved in or knowledgeable about potential DIs and were in the position of director, manager (mostly with specific responsibilities for strategy, digitization, research, or marketing), business developer, or were the founders of the company in case.

The two industries were researched in parallel. Within each industry, firstly, new entrants (mostly, but not exclusively, DI initiators) and incumbents were interviewed. Trade associations were interviewed in a later stage (if this matched the availability of the interviewees) to validate and complete intermediary conclusions. The interview guide (see appendix H) was reviewed for adaptation after every interview, building on previous findings.

Interview results were analyzed manually, as the exploratory research setting did not allow for a set of concepts or constructs to base the analysis on ex ante, which limits the usability of software for

qualitative analysis. To conduct this analysis, labels were added to interview transcripts, interview results were summarized in tables focusing on diverse variables to look for patterns, and events from interview data were ordered on timelines to examine the occurrence of patterns over time.

After the interviews were completed, additional desk research was conducted to test intermediary conclusions. Additional data was analyzed in a similar way.

The results of this research are discussed in the next chapter.

Chapter 4: Results from data collection

This chapter discusses the results of the conducted interviews, supplemented by desk research findings when relevant. Firstly, the staffing services industry is discussed, followed by the legal services industry. Each section is structured as follows: first, the general industry profile is described, followed by a discussion of potentially disruptive innovations (DIs) that occurred in this industry and that will be examined by this study. Finally, the observed and/or reported company responses to these DIs are discussed.

4.1. The staffing services industry

The staffing services industry is considered as being in transition, with technological innovation considered as a major change driver. Companies of all sorts are reacting to these changes, as will be discussed in this section.

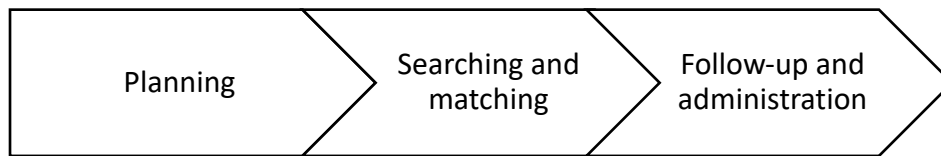
4.1.1. Industry profile

Firstly, incumbent companies in this industry will be discussed. Afterwards, this subsection concerns typical clients and the traditional performance attributes in the industry.

The staffing services industry is a part of the broader human resources industry. This industry is globally fragmented, while at country level, concentration rates may be higher (Information Services Group, 2013; Adecco Group, 2016). For example, the French market leader is still able to secure a market share of 22% (Adecco Group, 2016). Companies in this industry range from mastodons with over € 20 billion in annual revenues, to staffing freelancers. Industry leaders (as measured by market share) are often highly integrated companies with a vast amount of business lines (with staffing and HR solutions as core activities – Adecco Group, 2016; Wetfeet, 2012). Smaller incumbents maintain foothold through niche strategies, such as focusing on staffing for specific industries (e.g. the catering industry) or specific temporary workers (e.g. blue-collar profiles). With the possible exception of certain niches (mostly concerning professions that are low in supply compared to demand, such as cleaning personnel), profit margins are perceived as highly under pressure because of fierce competition. Arrangements such as ‘no cure – no pay’ offerings by staffing companies usually occur. Staffing firms were said to be under pressure to constantly review their service offerings, in order to reduce unnecessary features and to lower costs and prices. On the other hand, some sources still report that during times of economic expansion, the staffing market is normally growing as well (because of its high dependency on the business cycle), temporarily softening price pressures (Flexmarkt, 2018; Barclay Simpson, 2018).

As mentioned, main services are staffing (both temporary and permanent, general and professional) and HR solutions such as talent management (Adecco Group, 2016; Wetfeet, 2012). For the purpose of this research, the remainder of this study will focus on staffing. Staffing includes searching profiles and matching these profiles with vacancies, but also planning, follow-up and administration. These primary activities are depicted in figure 3.1. Planning refers to the planning of work activities and determination of the required number of workers. Follow-up refers to aid provided to staffed workers and to client companies (e.g. following up if staffed workers are satisfied with the tasks they are assigned to or explaining them which steps they should undertake in case they fall ill). Administration concerns contracting, invoicing etcetera. Mostly, these tasks are executed by regular, internal employees (called ‘consultants’ within the industry).

Figure 4.1. Primary activities of the staffing value chain.



In general, the industry is perceived as highly complicated, regulated and in transition – with technology and regulation being major change drivers.

Concerning technology, since 2015, vast numbers of new entrants *de novo* have emerged, mostly introducing software tools aiding in all primary activities of the value chain. Initiators are often followed by other new entrants *de novo* or *de alio*. Incumbents are often looking for ways to respond to this trend and are reconsidering their current way of working.

Secondly, changes in regulation drive technological adaptations and organizational adaptations as well. For example, in Belgium, contracts between a temporary worker and a staffing agency first had to be signed within 48 hours after their commencement. Later, this stipulation changed; requiring the signing of contracts *before* their commencement. This made it difficult for staffing companies to send and receive contracts through regular mail in time. Therefore, most members of the Belgian industry (supported by their trade association) installed systems for the electronic signing of these labor contracts, adapting their technology and organization processes to this change in regulation.

The most prominent trends besides these two major change drivers, are shifts in served industries and demographics (Federgon, 2015). Regarding the former, e.g. the retail industry increasingly requires flexibility in its workforce (in part because of the emergence of e-commerce), therefore relying more on temporary staffing and demanding reductions in the time-to-hire of vacancies. Regarding the latter, the aging of the population in many regions across the world (Deloitte, 2013), requires staffing services providers to adapt their offerings and to be prepared for forthcoming workforce shortages within industries that rely more intensively on an older workforce.

Main profit drivers are the ability to provide large quantities of candidates in the general segment, as most costs are relatively fixed (e.g. real estate and wages) and remain relatively invariant when the quantity of candidates provided is increased. Nevertheless, to be able to increase quantity within the boundaries of the fixed infrastructure of a traditional staffing firm, delineated and efficient processes are required. This is aided by internal automation, which requires relatively large upfront investments.

At the professionals segment, margins are higher (as higher prices easily compensate higher search costs) and quantities are lower. Key factor here is the ability to find the right candidates within time, for which broad networks are deemed necessary.

In both segments, the ability to retain candidates also increases profitability, as the one-off recruitment cost can then be spread out over a longer period of time. However, efforts are usually more necessary in the general segment, as contracting periods there are only a small fraction of those in the professionals segment. (One-week contracts were said to be typical in the general segment, compared to six-month contracts in the professionals segment).

The core of the staffing business model takes two main stakeholder types into account. Stakeholders of the first type are companies (clients) requesting temporary workforce. The second type concerns temporary workers, that usually are not invoiced for the services provided to them, but still are an important point of attention for staffing companies, as they constitute the necessary workforce supply.

In the past years, traditional staffing companies have invested in back-end automation. However, as from about 2015, a vast number of new entrants de novo, as well as some more innovative, smaller incumbents, have been striving to bring automation and digitization to the front-end of the business, serving clients directly. Examples are online marketplaces where buyers and suppliers of temporary labor can post offerings or requests, which are automatically provided to possibly interested counterparties.

As a client can be any company relying on human resources, the client pools of generalist companies are often very diverse, ranging from large multinationals to small, local businesses. As mentioned before, this leaves ample space for niche strategies targeting specific market segments (although, next to those demand-niches, supply-niche companies are common as well, targeting the recruitment of specific temporary workers). Nevertheless, some market segments (i.e. types of client companies, such as removalist companies in Belgium) are not allowed to be served by the temporary staffing industry.

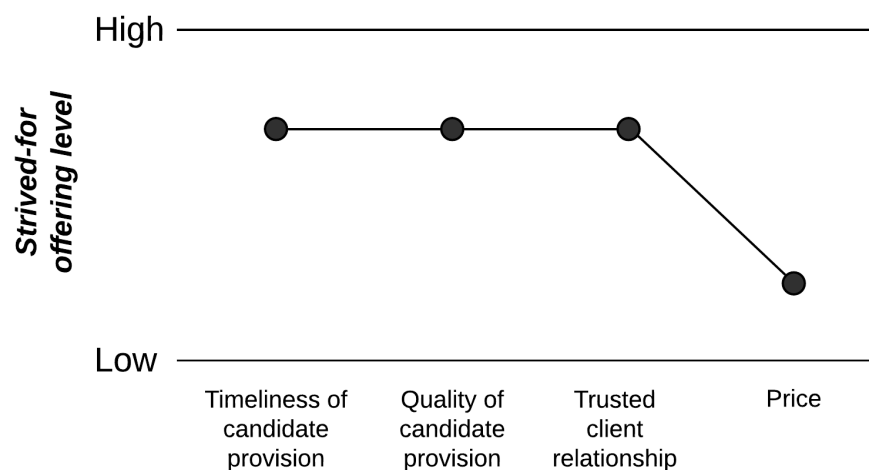
Staffing companies have to take the requirements and selection criteria of both stakeholder sides into account, as both expect to be 'served'. Nevertheless, the requirements of the former seemed to be more complicated and interviewed incumbents could provide more details on this stakeholder group. Furthermore, this is usually the sole group that is being invoiced. Therefore, this is the only group that will be considered as 'customers' in this study, for whom staffing firms compete.

Traditionally, the following value attributes constituting the basis of competition have been mentioned in interviews:

- Timeliness of candidate provision
- Quality of candidate provision
- Trusted relationship with the client
- Price

Figure 4.2 represents these value attributes and their strived-for offering levels visually.

Figure 4.2. The strived-for offering levels of the main value attributes in the traditional staffing services industry (strategy canvas)⁹



One important remark is that the client basis of competition seemed to depend on the business cycle. During expansions, when the amount of vacancies is high compared to the amount of job candidates, the importance of timeliness and quality of candidate provision increases, while the importance of price decreases. During economic downturns, the reverse seemed to be true. Situations of economic expansion are especially advantageous for larger incumbents, as these firms have more slack resources and a broader candidate base, which enables them to deliver requested profiles in a faster and more efficient way, despite scarcity.

In essence, the staffing industry is considered to be a crowded industry, which puts pressure on prices. Because of this, and because of relatively low market growth, interviewees believe that staffing is in a red ocean situation (Kim & Mauborgne, 2005). In the industry, larger generalist companies exist next

⁹ Regarding the smaller professionals segment, the value attribute *price* may be higher.

to smaller ones, that may target niches of workers or companies. Larger companies have been in advantageous position of having more slack to cope with candidate scarcity during economic expansion. Also only the few largest staffing companies are able to serve the largest client companies in the market. Furthermore, they have been able to make larger investments in backend automation, enabling larger cost reductions. Finally, because of the latter, larger firms could further reduce their prices during economic downturns.

Nevertheless, changes have been going on as well in the staffing services industry. Major change drivers were regulation, broader economic shifts and demographic shifts. Finally, technology is a major change driver. More and more firms, mostly new entrants *de novo*, have been entering the market, mostly with technological applications that are situated closer to the front end of the typical staffing firm.

4.1.2. Disruptive innovations in the staffing services industry

Two specific, potentially disruptive innovations have been selected in the staffing industry. These innovations will now be discussed.

For the selection of these initiatives, the description of Govindarajan and Kopalle (2006a) will be used, as it summarizes the main definitional findings on the DI concept¹⁰, together with the remarks of Markides (2006) on the disruptive character of radical product innovation and business model innovation (as these forms of innovation can be DIs as well). To identify a potentially disruptive innovation, this study will focus on innovations that provide a different set of performance attributes, partly superior compared to current offerings and partly inferior. Furthermore, it will be considered whether these innovations may imply threats towards current business models and may influence current competitive dynamics.

Staffing DI N°1: Automated, external matching

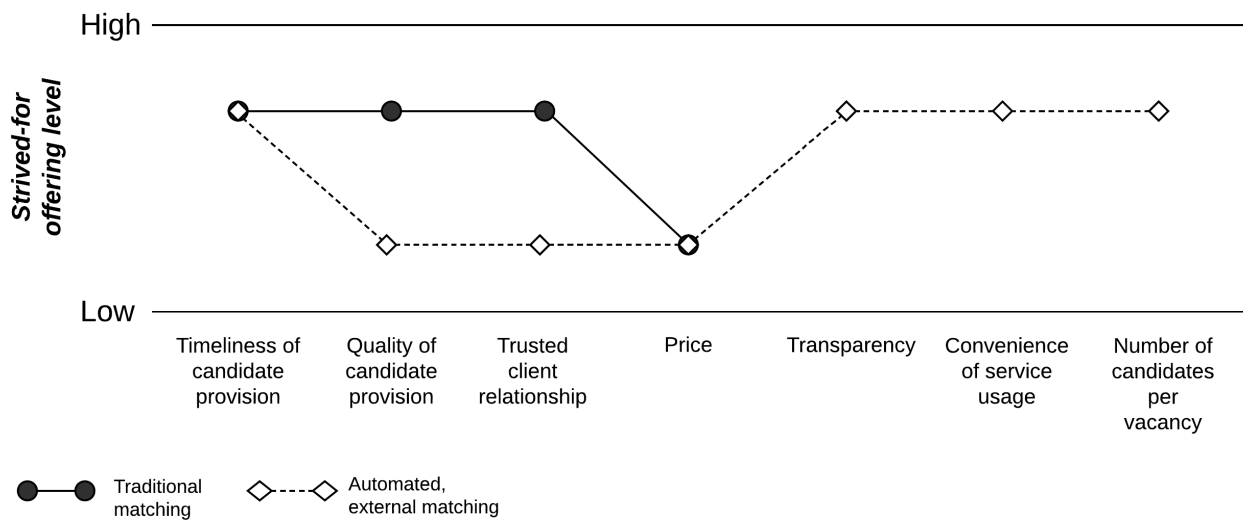
Large incumbents in the interview sample attested that for multiple years, they have been examining the use of technology to support their consultants during matching tasks ('internal matching'). However, during the last years, initiatives have emerged to propose matches between job seekers and vacancies (semi-)automatically, in the front-end of the organization (called 'external' matching, directly serving customers).

¹⁰ Although a delineated set of defining criteria is absent in literature, as discussed in chapter 2.

The sample of this study contained three companies developing such a way of working, providing Internet-based external matching (through websites and mobile applications). One was initiated by a medium-sized incumbent, the other two were new entrants de novo. Two initiatives (amongst which the one initiated by the incumbent) were being developed at the same time, so they were not intended as reactions against each other. Both of these two targeted (niches of) temporary workers in the general segment – thus no professionals such as IT specialists. The third initiative was developed earlier than these two, targeting professionals – which is considered as a highly different market (Adecco Group, 2016) and therefore the other two initiatives were not considered as reactions to the third either.

These three innovations exhibited a different set of features (Govindarajan & Kopalle, 2006a), as they stressed transparency (with respect to skills, prices etc.), user convenience (both for clients and candidates – incl. 24/7 accessibility for both), and the number of candidates provided per vacancy. A qualitative, graphical assessment of these offerings compared to the traditional model is given as a strategy canvas in figure 4.3 p. 28.

Figure 4.3. The comparison of automated, external matching to the traditional way of matching within the staffing industry (strategy canvas)¹¹



Because of the relatively large, upfront investments that are required to develop an automated, front-end matching system, initiators stated that although their service had a lower marginal cost, they could afford to lower their prices significantly below those of the traditional services. On the contrary, they even considered pricing their services above those of the traditional firms, because the user convenience and transparency of their systems allowed them to avoid the ongoing trend of price reduction.

Timeliness of service is a selection criterion that is important amongst these innovations as well, however, this is part of the traditional basis of competition as well and therefore not considered as a disruptive element.

Nevertheless, some attributes of these initiatives were reported to be inferior compared to the traditional way of working. An attribute reported by all interviewees was the importance of 'human touch': the ability to sense a client's company culture and to assess whether a candidate would match such an environment. Furthermore, the digital way of matching was less suitable for building a trusted relationship with a client. Moreover, some tasks had to be performed by platform users, that would otherwise be done by the traditional recruiting firm itself, such as writing vacancy texts. Lastly, two initiatives confirmed that fewer quality assessments of candidates were possible through their digital matching system, compared to the traditional way. One of these initiatives mentioned that measures were being taken to improve this last drawback, by prescreening candidates before their profiles were submitted into their matching platform.

¹¹ Automated, external matching is also rated on the value attributes that it introduces and that were not paid specific attention to by the traditional way of matching.

On the candidate side, one incumbent noticed an increase in (consumer) technology savviness amongst his temporary workers, which was believed to cause a higher acceptance of mobile applications for matching over time – even if the characteristics of this innovation did not improve in any way.

Two initiators could not affirm that they were targeting specific, delineated niches – either on the customer side or on the candidate side. Nevertheless, often only specific client niches could be served – as for each industry subset (i.e. market segment), a separate license was required, which required separate negotiations. The third initiator mentioned that his application only served students, a group that was believed to be more trusted with consumer IT such as mobile applications.

All initiatives considered themselves as ‘disruptive’ and competing against traditional staffing businesses. The two general profiles initiatives refer to themselves as *digital temporary workers agencies*, compared to traditional temporary workers agencies. The professional profiles initiative believed that disrupted companies could still survive and even perform better than before its launch if they were willing to adapt their business model and to cooperate with the initiative, by using it for the supply of candidates.

Staffing DI N°2: Alternative recruitment methods

In the sample of this study, one innovation initiator developed a platform to interview job candidates in an asynchronous way. With this platform, job candidates record themselves (usually by video) while responding to questions from the recruiting (client) company. The aim of this initiator is to replace a share of the currently common telephone interviews, which are often used in the early stages of job application procedures.

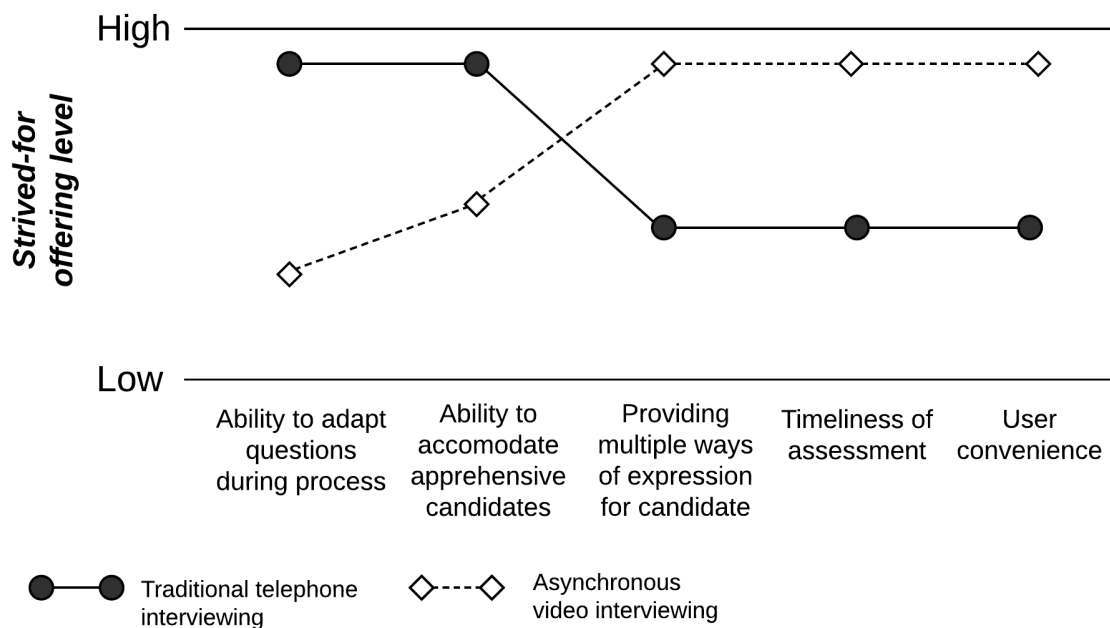
At staffing in general, candidates were able to choose their service provider at their own discretion. Within this specific part of recruitment, they usually have to accept the choice of interviewing methods of their potential employer. Nevertheless, as the strategy of the initiator includes a focus on employer branding for recruiting (client) companies, the interviewee stressed that considerable effort was done to improve the experience of candidates during their recruitment processes through their innovation.

The initiator, a French company, was aware that at its commencement, video recruitment initiatives existed in the United States. However, this company adapted its offering to the specific demands of

the European market. Also the technological aspects of its offering were different, with less focus on the integration of advanced technologies such as artificial intelligence.

The interviewee from this company was able to list multiple advantages of asynchronous video interviewing, compared to (synchronous) telephone interviews. These are represented graphically on the strategy canvas of figure 4.4.

Figure 4.4. The comparison of asynchronous video interviewing to the traditional way of telephone interviewing in recruitment (strategy canvas)



Firstly, 70% of interpersonal communication in general was said to be nonverbal, which would be lost in telephone calls but partly recuperated by video. Secondly, the asynchronous character allows more flexibility for the interviewing company (either the company offering the vacancy or a HR service provider) and for the job candidate. This flexibility does not only allow more convenience, but usually also a faster processing time as both parties do not have to wait for each other to be available for a synchronous call. Nevertheless, as timeliness of service has been identified as a traditional performance attribute, this improvement is considered to be sustaining.

The major disadvantages of asynchronous video interviewing include the impossibility of asking additional questions, and the possibility that timid persons may not be able to express themselves completely freely when being recorded. The initiator has tried to improve the latter disadvantage over time, by using audio-only records and by providing more preparation time before recording responses.

The initiator targeted specific niches, which are listed below:

- International recruitment (as asynchronous communication is useful when working with different time zones)
- Recent graduates (for whom motivation and personality – transferrable through video – can be more important than experiences, which are usually transferred through classic résumés)
- Large application volumes (which may otherwise require a vast amount of telephone calls)
- Companies looking for additional employer branding through the use of innovative recruitment techniques
- Companies benefitting from diversity (such as innovative companies or socially engaged firms – as this technique helped persons from minority groups or persons without the standardly required skillsets to still express their motivation and personality through video)
- SMEs without a recruitment team (which may be interested in saving time through selecting on the basis of short videos wherein candidates introduce themselves).

However, there were no indications that this innovation initially appealed exclusively to these niches, as described by the original DIT (e.g. Christensen, 1993). Moreover, these niches were not overserved concerning the attributes on which this innovation performs worse compared to telephone interviews, nor were these niches previously noncustomers.

Initially, the initiative considered itself as competing towards traditional recruitment agencies. Moreover, the interviewee confirmed that some of its clients have quitted using the services of these traditional agencies and fully switched to the video platform.

In summary, it can be stated that this innovation featured a different set of performance attributes compared to the traditional services, it actively intends to partly replace. The innovation focuses on certain niche segments appealed by this different set of attributes. Therefore, this innovation is considered as potentially disruptive.

4.1.3. Company reactions to disruptive innovations in the staffing industry

The reactions of companies to the (potentially) disruptive innovations discussed above, are given schematically in table 4.1 (p. 33). Information summarized in these tables was obtained exclusively from interviews, not from desk research. More details are provided in appendices D, E, and F.

Table 4.1. Reactions to disruptive innovations observed in the staffing industry

<i>Disruptive innovation</i>	<i>Incumbents</i>	<i>New entrants de novo</i>	<i>New entrants de alio</i>
Automated, external matching	<ul style="list-style-type: none"> - Setting up an incubating network - Purchasing the DI and adapting own business model to it - Purchasing the DI without adapting own business model to it - Developing a similar (differentiated) DI in the same market - Developing a similar (differentiated) DI in another market - Cocreation with the DI initiator - (Friendly) minority acquisition - (Friendly) majority acquisition - Attempting to take the DI out of business without direct adoption or competition - Reinforcing current business model - Not reacting, still observing the DI - Not reacting, ignoring the DI 	<ul style="list-style-type: none"> - Developing a similar (differentiated) DI in the same market 	<ul style="list-style-type: none"> - Developing a similar (differentiated) DI in the same market - Cocreation with DI initiator
Asynchronous video interviewing	<ul style="list-style-type: none"> - Purchasing the DI without adapting own business model to it - Not reacting, still observing the DI 	<ul style="list-style-type: none"> - Developing a similar (differentiated) DI in the same market 	<ul style="list-style-type: none"> - No reactions observed in this category

It can be concluded from table 4.1 that certainly incumbents have and use a broad range of reaction options towards DIs they are confronted with. Market-leading incumbents were observed to set up incubating networks. The new entrants de novo concerned with the DIs selected in this study were seen as a part of a vast stream of emerging, innovative initiatives; by setting up such a network, market-leading incumbents could monitor this stream, and access additional resources systematically. Leadership style and the availability of funds are important in these cases. One interviewee commented that “they have the right vision at the top and pockets deep enough to act that way”.

Another incumbent method to develop or access a DI was purchasing the DI services (with or without adaptation of the own business model). This could usually be done if the DI only related to a part of the total service package provided by the incumbent; incumbents could then outsource part of their services to the DI provider or license its services, without a risk of losing much clients. Larger incumbents were usually first to start purchasing. A possible explanation are large budgets again, allowing for more experimentation of all sorts, so also regarding the purchasing of certain DIs. Sometimes incumbents were indeed significantly threatened by a DI; however, if they adapted their business model and purchased its services, they could still benefit from it.

Internal development (in the same market or in another, with or without the help of an external party) also was an option for incumbents, although other options were often preferred (see below). This option was for example selected when the DI initiator refused to be acquired.

Moreover, internal development of a DI seemed to be the only way for new entrants de novo to respond to a DI in this industry. New entrants de alio could also engage in cocreation with a DI initiator. Usually this concerned a technology company contributing to a DI initiating incumbent, eventually taking joint ownership.

Market-leading and smaller incumbents also opted for ad-hoc acquisition. Management of the acquired company was not replaced afterwards, they received advice from the acquirer and were able to scale up significantly. Incumbents would either purchase limited interests, possibly to be extended over time, or a majority interest directly. In case the DI initiator was not interested in being acquired, cocreation arrangements could be set up as an alternative.

Besides adopting a DI, incumbents have also tried to take its initiator out of business without direct competition, by trying to harm its business in another way. Examples are legal action (looking for and reporting on noncompliance with relevant regulation) and negative marketing campaigns, defaming the initiator.

Some incumbents stressed the inferiority of the matching DIs with regards to the absence of ‘human touch’, and exclusively reinforced their current business model by investing in their offices and training their personnel, which were considered to be key assets in the face of this disruption.

Lastly, incumbents may even not react to the DI at all, and just ignore it, or keep observing it. Incumbents doing so, may not consider the DI as a real threat, as it was not involved with its profit-driving activities (e.g. the matching DI was not perceived as a threat for incumbents focusing on the qualitative follow-up of candidates). Furthermore, they may not be knowledgeable about the details and the potential impact of the DI, or just lack the funds to react in any way. If an incumbent perceives a DI not as a current threat, but still as potential one, it may keep it in observation.

Additional remarks can be made about how incumbents organized themselves internally to cope with disruptive innovation.

Firstly, incumbents usually preferred not to develop a DI internally. According to an employee of a market leader, this “puts too much pressure on our own personnel, as they are already occupied with keeping the lights on”, others confirmed that internal development puts much pressure on internal resources. Instead, they usually opted for acquisition or cocreation.

If an incumbent acquired a potentially disruptive startup, it avoided to bother it too much with its own internal processes and its process-oriented culture. One interviewee mentioned: “We are an HR company, not an engineering business, and do not want to involve our acquisitions in our machine-like, process-oriented organization more than necessary”.

Overall, incumbents preferred to develop DIs thus in a (if possible, acquired) separate business unit. No specific advantages of integration within the main business were perceived.

However, incumbents stressed other issues beyond choosing for separation. More specifically, incumbents were concerned with at which level to integrate and develop a DI (at corporate level, or in a local business unit). If a local business unit in a certain geographical area would be preferred, concerns arose with how to transplant a growing DI business into other areas. More in general, the upscaling of initiatives was an issue.

4.2. The legal services industry

Compared to the staffing industry, much more uncertainty and wait-and-see mentality seems to exist towards DIs in the legal services industry. Nevertheless, some companies do react to emerging DIs. Their responses will be discussed after an overview of the industry and two disruptive innovations.

4.2.1. Industry profile

Mirroring the structure of the staffing industry profile subsection, the industry structure and main sorts of incumbents will now be discussed, followed by an overview of the clients of the industry and the main bases of competition.

The legal services industry is highly fragmented, both on global level and on local level. Entry to this industry is mildly limited by regulation and by knowledge requirements. Regulatory protection has been granted for specific activities (litigation practices, notaries etc.), moderately restricting the number of new entrants. However, lawyers, certainly those in the corporate law segment, also perform many activities outside these protection boundaries, such as contract negotiations. Furthermore, as these entry barriers are relatively low, interviewees perceive entry levels to be highly elevated, putting pressure on prices in many market subsets, certainly in low-end segments. In summary, it is relatively easy to set up a new venture, as the only considerable barriers to entry are relatively mild and do not even cover all content areas of the legal professions.

Amongst incumbents, differences are observed between large, international law firms and smaller, local ones. Examples of such differences are the (in)ability to serve in international cases and the size of research and development (R&D) budgets.

Large, multinational law firms offer a wide range of corporate legal services and were initially built on bundling principles: by offering their wide range of services ‘under one roof’ and thus by reducing transaction costs for clients, they were able to sell their services with a vastly increased profit margin. This has been a highly successful model for multiple decades. Concerning HR policies, these firms usually focus on the recruitment of legal top talent and maintain an associate-partner model with an up-or-out system. On the other side of the spectrum are small, local offices, often serving individuals and small businesses, having generally lower prices and less of a strict up-or-out culture. These offices may focus on corporate law as well, or on other domains such as family law. In between are medium-sized corporate law firms, which have less of an international focus compared to the multinational law

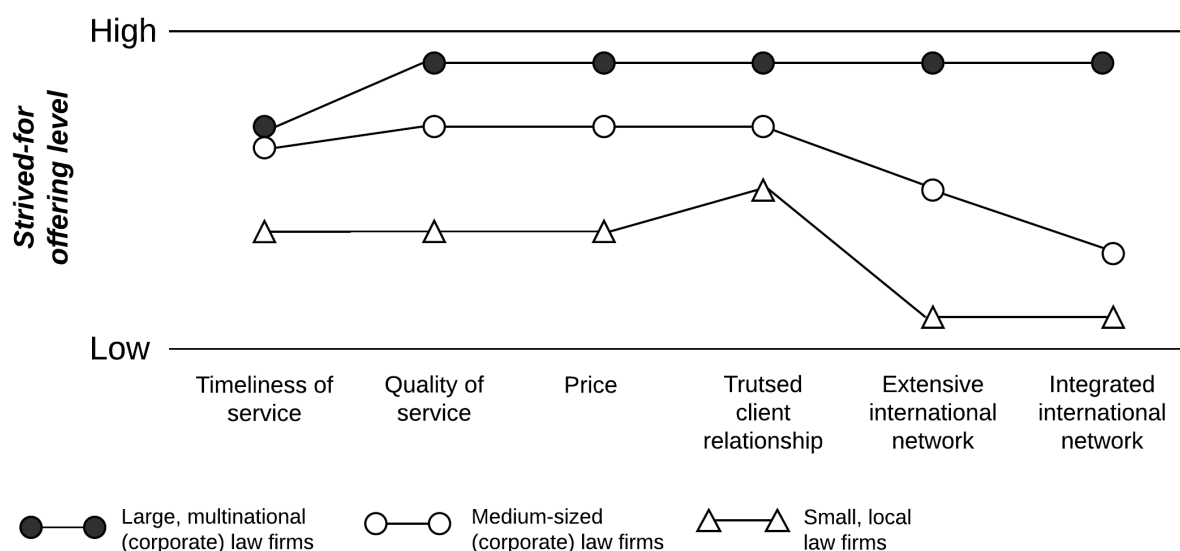
firms. Niche strategies amongst small, local businesses and amongst the mid-segment usually occur on the basis of domains of expertise (e.g. tax offices, intellectual property offices etcetera).

Clients of legal service providers range from individuals, seeking legal advice for personal matters, to multinational corporations. Nevertheless, client types mirror law firm types to a certain extent: multinational client firms with cross-border legal issues, prefer to be served by multinational law firms that have an integrated cross-border network, whereas smaller, local businesses and individuals (being often more price-sensitive as well) prefer local legal practices.

The following possible, traditional bases of competition have been observed (see figure 4.5 for a graphical representation in terms of a strategy canvas):

- Timeliness of service (mostly regarding the corporate law segments)
- Quality of service (mostly regarding the corporate law segments)
- Price (mostly regarding the segment of small, local firms)
- Trusted relationship with the client (important amongst all segments)
- Having an extensive international network (regarding international client situations – mostly regarding the segment of international corporate law firms)
- Having an integrated international network (regarding international client situations – mostly regarding the segment of international corporate law firms)

Figure 4.5. The strived-for offering levels of the main value attributes in the traditional legal services industry (strategy canvas)



Regarding trends, one main trend relates to the use of technology, certainly at larger law firms, mostly to automate back-end processes. This is even expected by corporate clients, who are becoming increasingly cost-conscious in general. Lastly, attention for alternative legal services providers is growing (see also Deloitte, 2016), which is discussed in the next subsection.

In essence, the legal services industry is a fragmented one, with high entry levels, which brings prices under pressure (certainly in the low-end of the market). Three industry subsets can be distinguished: a high-end segment, consisting of multinational law firms serving multinational clients, a mid-segment consisting of rather local corporate law firms, and smaller, local practices which may serve local companies and individuals.

For the high-end segment, main points of competitiveness are the ability to attract legal talent and the embeddedness of the firm in an integrated, extensive international network. For the low-end segment, finding a right niche strategy is considered to be vital, given the situation of high entry and the relative complexity of law. For the mid-segment, both the acquisition of talent and a niche-focus can be relevant. However, regarding all segments, building up a trusted relationship with clients was seen as one of the most crucial aspect for legal practices.

4.2.2. Disruptive innovations in the legal services industry

The two disruptive innovations examined in the legal services industry, will now be discussed.

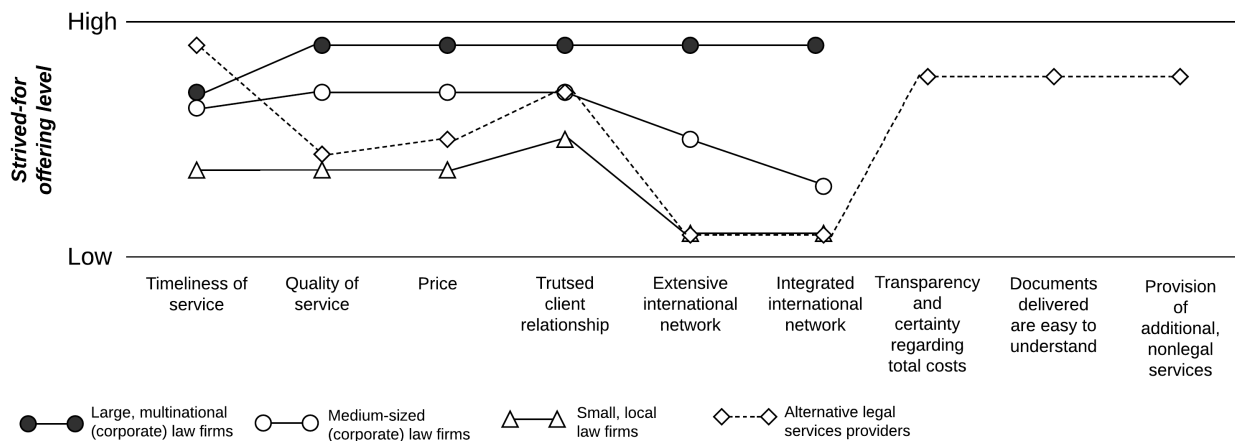
Legal services DI N°1: Alternative legal service providers

Since the 1990s and early 2000s, firms providing legal services through novel business models have emerged, mainly considered as ‘alternative’ compared to the traditional high-end, multinational law firms (Legaltrek, 2016; Ribstein, 2010). Sometimes, these new business models are called ‘newLaw’ models, as opposed to the ‘bigLaw’ multinational firms.

NewLaw firms have emerged in many forms, ranging from providers of traditional legal services, to lawyer market places, to automated document generators. Also the provision of management consulting for legal departments and legal secondment have been considered as newLaw activities. In summary, the concept of newLaw is not clearly defined or delineated. Therefore, this study will focus on business models which have the most plausible disruptive and directly competitive character with respect to traditional law firms, namely the alternative providers of traditional legal services.

NewLaw providers of legal services have a set of often-observed commonalities (Legaltrek, 2016), which are summarized in the qualitatively estimated strategy canvas of figure 4.6.

Figure 4.6. Comparison of traditional law firms to alternative legal service providers (strategy canvas)



In the interview sample, two new entrants de novo provided legal services resounding to this character. One firm hired persons with a law degree, but who were not affiliated with a bar association and thus were restricted from practicing important parts of litigation. However, regulation allowed them to perform other tasks, such as drafting and reviewing legal documents. Moreover, they focused intensely on drafting understandable documents, avoiding the use of jargon when possible for example. Lastly, invoicing was done on a project-basis, rather than on an hourly basis.

Its clientele consisted primarily of SMEs, which were appealed by its value proposition; however, this company has also been able to attract larger enterprises.

In summary, this firm provided traditional legal services that nevertheless constituted a different set of features compared to either local and multinational law firms. Inferiorities concerned the inability to practice litigation and to match the abilities of top-tier, multinational law firms. Nevertheless, they offered alternative pricing arrangements and developed an ability to draft legal documents being more understandable than what is common in the industry. Lastly, after initial appeal to the mid-segment, this firm has also attracted multinational companies as clients. Therefore, this novel approach to legal services is considered as disruptive towards large, multinational law firms and towards the mid-segment.

The second new entrant de novo was associated with one of the largest professional service firms worldwide. By sharing infrastructure, informal contacts and the sharing of skills were fostered within regulatory boundaries. Through this association, the firm was able to provide an unprecedentedly broad range of services to its corporate clients, and its business model turned out to be highly successful.

Nevertheless, one possible inferiority compared to multinational, integrated law firms was the absence of an integrated, international network. Nevertheless, the company in case steadily improves on this. Concerning HR policies, pricing practices, and use of jargon in documents, this firm rather resounded to the traditional bigLaw model.

Regarding its clients, this firm served local SMEs and larger corporations. However, because of its weaker international presence compared to multinational, integrated law firms, this firm was not always the preferred choice of multinational corporations with cross-border legal matters, such as international mergers and acquisitions, although it expects to perform better on this aspect in the future.

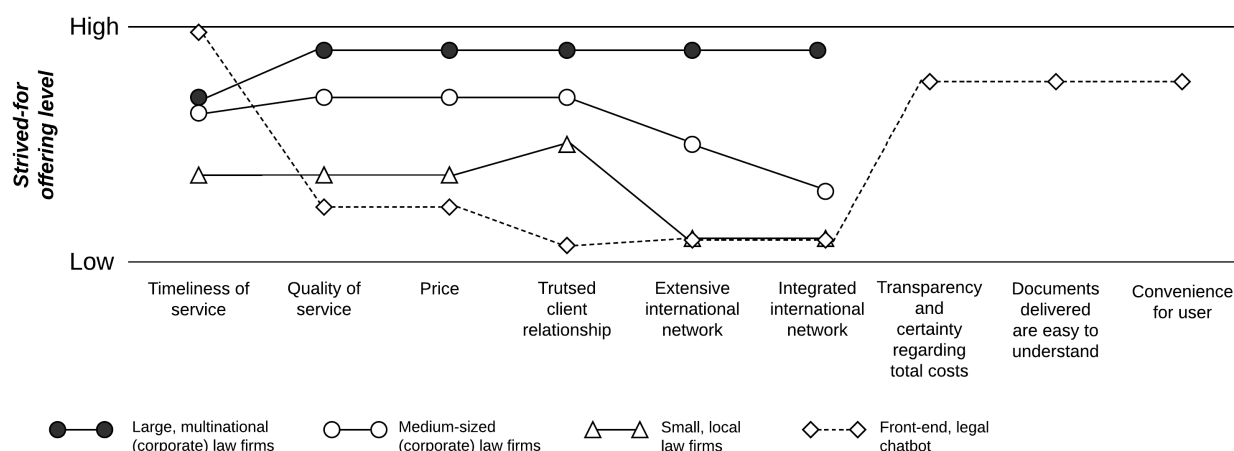
Summarizing on this second alternative legal service provider, this company provided a business-model innovation with a different set of performance attributes, initially attractive to the mid-segment of the market. Because of its lack of internationality, it could not yet convince the high-end of the market, however, the company is improving on this issue. Therefore, it is considered here as a potentially disruptive innovation towards multinational, integrated law firms.

Legal services DI N°2: Front-end, legal chatbots

Eight years after its founding, the first newLaw firm from the previous paragraphs introduced a chatbot, with the objective of providing inexpensive, qualitative, and introductory legal advice to startups for a fixed, monthly fee.

Compared to the traditional way of providing legal services, a chatbot clearly provides a different set of features and performance attributes, as represented graphically in the strategy canvas of figure 4.7 (p. 40).

Figure 4.7. Comparison of traditional law firms to a service model based on the use of a front-end, legal chatbot (strategy canvas)



While traditionally, response times to client queries of two weeks used to be no exception in this industry (as contended by an interviewee from a traditional law firm), this chatbot provided immediate advice on a 24/7 basis. Furthermore, in line with the alternative way of providing services by this newLaw firm, the chatbot was designed to provide to-the-point, clearly understandable answers, as opposed to the traditional way of communicating to clients, which was jargon-intense. Finally, the fixed monthly fee offered certainty on prices, whereas firms' legal costs were reported by interviewees to be rising in almost all industries and general counsel budgets were perceived as being under pressure.

One potential downside concerns the limitations on the amount of legal knowledge that can be learned by the chatbot system. Therefore, its current quality of service is estimated to be lower than that of all traditional legal service providers. Nevertheless, technical improvements are steepening its learning process. A second downside is the lack of human and emotional support and empathic advice (although the chatbot is backed by a human helpdesk for the follow-up of clients if necessary).

Regarding niches, the chatbot was targeted initially towards startup companies. This category is believed to have, in general, less complicated legal issues compared to larger companies. Detailed, traditional advice may overserve such startup enterprises. Nevertheless, the advantages of 24/7 availability and clear language may be beneficial for the main market as well, provided that the chatbot is able to answer the broad range of legal queries that this main market might have.

Clearly, this chatbot competes against traditional legal services providers in the market for shorter legal queries, and the initiator perceives its innovation as disruptive and radical.

In summary, this chatbot provides a different set of features compared to traditional legal advice – which may initially appeal to the niche to which it is targeted, but because of its inferiorities, may not convince the main market on its own, i.e. without the backup of traditional, human legal service providers able to answer most small legal questions from the main market. Hence, this system is considered here as a potentially disruptive innovation towards all three traditional types of legal service providers.

4.2.3. Company reactions to disruptive innovations in the legal services industry

The reactions of companies to the disruptive innovations discussed above, are given schematically in table 4.2 (p. 42). These are all interview findings again, unless indicated otherwise.

Overall, disruptive innovations were not adopted as frequently as in the staffing industry. In fact, none of the incumbents in the sample of this study did fully adopt one of the DIs at all; the only adopters were new entrants *de novo* and *de alio*.

Incumbents, on the other hand, considered moving up to the high-end of the market. These firms recognize the potential impact of disruption to a certain extent. One interviewee commented: “New services providers could become a threat, indeed. Therefore, we are trying to position ourselves more as a quality car instead of a budget car, to avoid competition on the budget segment. Quality cars still make more money though, as far as I know”.

For both DIs, not reacting at all was a response that was believed to be very popular. Most of the youngest and oldest lawyers seemed not to be bothered too much, while some members of the group in between were more concerned with the DIs. Most legal service providers nevertheless observed the emergence of the chatbot, and eventually looked for ways to educate themselves on the technology behind it.

Others remarked the inferiorities of the chatbot and enhanced their current business model, for example by increasing focus on areas where creativity and empathy are more important. “A chatbot can’t handle mergers or divorces”, one interviewee stated.

Table 4.2. Reactions to disruptive innovations observed in the legal services industry

<i>Disruptive innovation</i>	<i>Incumbents</i>	<i>New entrants de novo</i>	<i>New entrants de alio</i>
Alternative legal services providers	<ul style="list-style-type: none"> - Moving up to high-end with current business model - Not reacting, still observing the DI - Not reacting, ignoring the DI 	<ul style="list-style-type: none"> - Developing a similar (differentiated) DI in the same market¹² - Developing a similar (differentiated) DI in another market¹³ 	<ul style="list-style-type: none"> - Developing a similar (differentiated) DI in the same market
Front-end, legal chatbots	<ul style="list-style-type: none"> - Reinforcing current business model to compete with DI - Careful, internal development of the DI - (Request for) cocreation with the DI initiator - Not reacting, still observing the DI - Not reacting, ignoring the DI 	<ul style="list-style-type: none"> - No reactions observed in this category 	<ul style="list-style-type: none"> - No reactions observed in this category

¹² Finding based on desk research (Legaltrek, 2016; Ribstein, 2010)

¹³ Finding based on desk research (Legaltrek, 2016; Ribstein, 2010)

One incumbent in the sample realized the potential threat of the chatbot to a certain extent, yet nevertheless remained skeptical. Having the funds to do so, it would experiment with similar technology internally, but avoided exposing its developments to clients.

A last group of responding incumbents, requested the setup of collaborations with the chatbot initiator. At the time of interviewing, the latter was still considering whether it would engage in such arrangements and in what form they could be possible.

Finally, regarding new entrants de novo and de alio, many new alternative legal service providers were found, developing their business on their own. No new entrant de novo or de alio responding to the front-end, legal chatbot have been observed.

In the next chapter, these findings will be discussed.

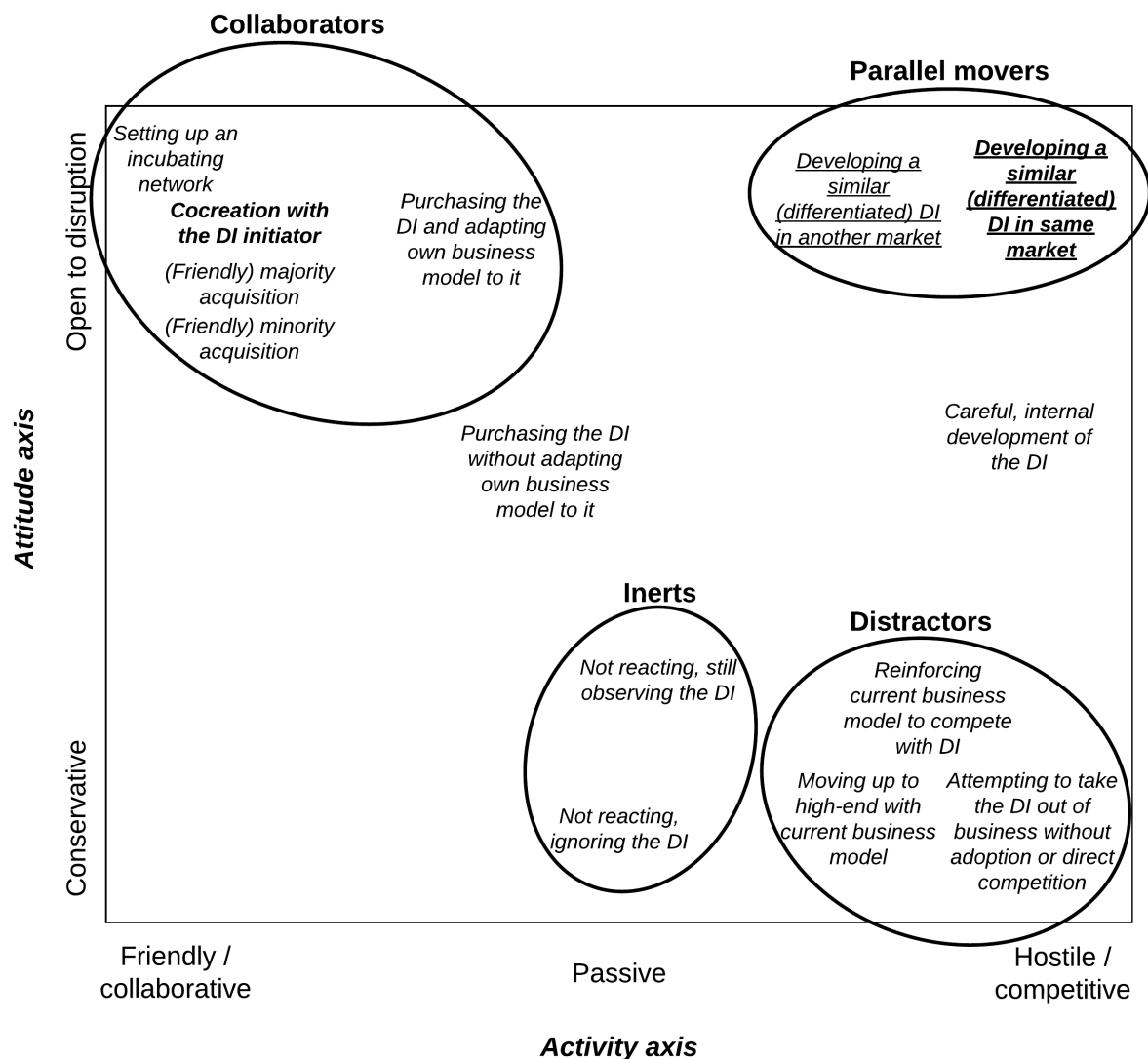
Chapter 5: discussion

This chapter commences with the discussion of a model overviewing the general response options of companies to disruptive innovations (DIs) in service industries. Secondly, additional remarks are given with respect to the specific cases of particular firm types and their typical reactions. Finally, the effects of observed, particular service industry characteristics on disruption and company reactions are discussed in detail.

5.1. The “attitude-activity” model of company reactions to disruptive innovation in service industries

The main model for company reactions to DIs in service industries that emerged from this study, is depicted in figure 5.1 (p. 45). Important to note again is that this is a model derived from an exploratory study and is therefore rather a proposition than as a tested and representative finding. First, a clarification on the axes and the particular positions of response options is given. This is followed by a discussion of possible, qualitative clusters of reaction options. Next, factors influencing the position of a company with respect to a given DI are discussed. Lastly, possible evolution paths, indicating how companies may adapt their response approach over time, are overviewed.

Figure 5.1. Company reaction options with respect to disruptive innovation in a service industry (incl. qualitative clusters).



As discussed in chapter 4, incumbent reactions were more diverse than those of new entrants de novo or de alio. This can also be seen from figure 5.1 – incumbent reactions are in italics, new entrant de novo reactions are underlined and new entrant de alio reactions are in bold. The specific cases of the new entrant types and incumbent types are discussed in subsection 5.2.1. Furthermore, some reaction options can be clustered in a qualitative way. These clusters are discussed in more detail in subsection 5.1.2.

5.1.1. Matrix axes and clarifications of selected positions

Before discussing the more general cluster patterns within this model, the axes and some particular positions of individual reaction options are briefly overviewed.

Companies reacting to a DI in a service industry appear to have a broad range of options, which differ along two dimensions – one representing the attitude of a company towards a DI and one representing the character of the activities it takes.

Firstly, regarding a company's attitude with respect to a given DI, companies appear to react in a manner from conservative to open. Conservative companies aim for preserving the status quo (at least within the company), whereas open-to-disruption companies deploy or even advance the disruptive innovation. This "attitude axis" thus ranges from one antonym to another.

Secondly, service companies appear to either stay inactive (passive) or react in an active manner. This latter can be split again into a friendly, collaborative way (aimed at supporting the DI and/or its initiator, which usually reduces competition) and a hostile, competitive way – increasing competition or trying to harm the business of the DI initiator in another way). Thus, as opposed to the attitude axis, this activity axis has a middle point (passivity) wherein reactive activity is at its lowest level, and this level of activity increases when heading from the passive middle point to either one of the two extremes.

Some details regarding the positions of less self-evident reaction types in this proposed map are discussed below in a clockwise manner. The main points of this overview are presented schematically in table 5.1.

Table 5.1. Additional comments on selected reaction types and their position within the attitude-activity model

<i>Reaction type</i>	<i>Additional comments</i>
Setting up an incubating network	Considered as the most open approach, as the existence of a nurturing network encourages potential new entrants de novo to launch DIs which can then be captured in a systematic way.
Cocreation [together] with the DI initiator	This approach can occur more on an ad hoc basis compared to systematically screening and incubating new entrants de novo.
(Friendly) majority/minority acquisition	The purchasing of interests in DI initiators or followers de novo only happened in a friendly way as far as observed. Management was not replaced and was often even assisted with additional resources and advice.

<i>Reaction type</i>	<i>Additional comments</i>
Careful, internal development of the DI	The aim of this method was to increase knowledge on the DI, to later possibly switch to a competitive, DI-adopting approach. This reaction option is thus considered as rather competitive as well.
Moving up to high-end [segments] with current business model	This approach avoids direct competition with the DI, but nevertheless secures its competitive position in market segments that may become the target of the DI later on.
Reinforcing current business model to compete with DI	Companies following this approach believe they will enter in direct competition with the DI soon, or they are already in direct competition with the DI. Therefore, this approach is considered as more hostile than just <i>moving up to high-end with current business model</i> .

Setting up an incubating network (to nurture new entrants de novo) is considered as the most open-to-disruption approach, as this method is intended to systematically capture as many relevant DIs as possible and to ensure their success. This approach may even encourage the emergence of new DIs, as it sets up a startup-friendly ecosystem and provides the possibility of a financially-rewarding exit option through acquisition.

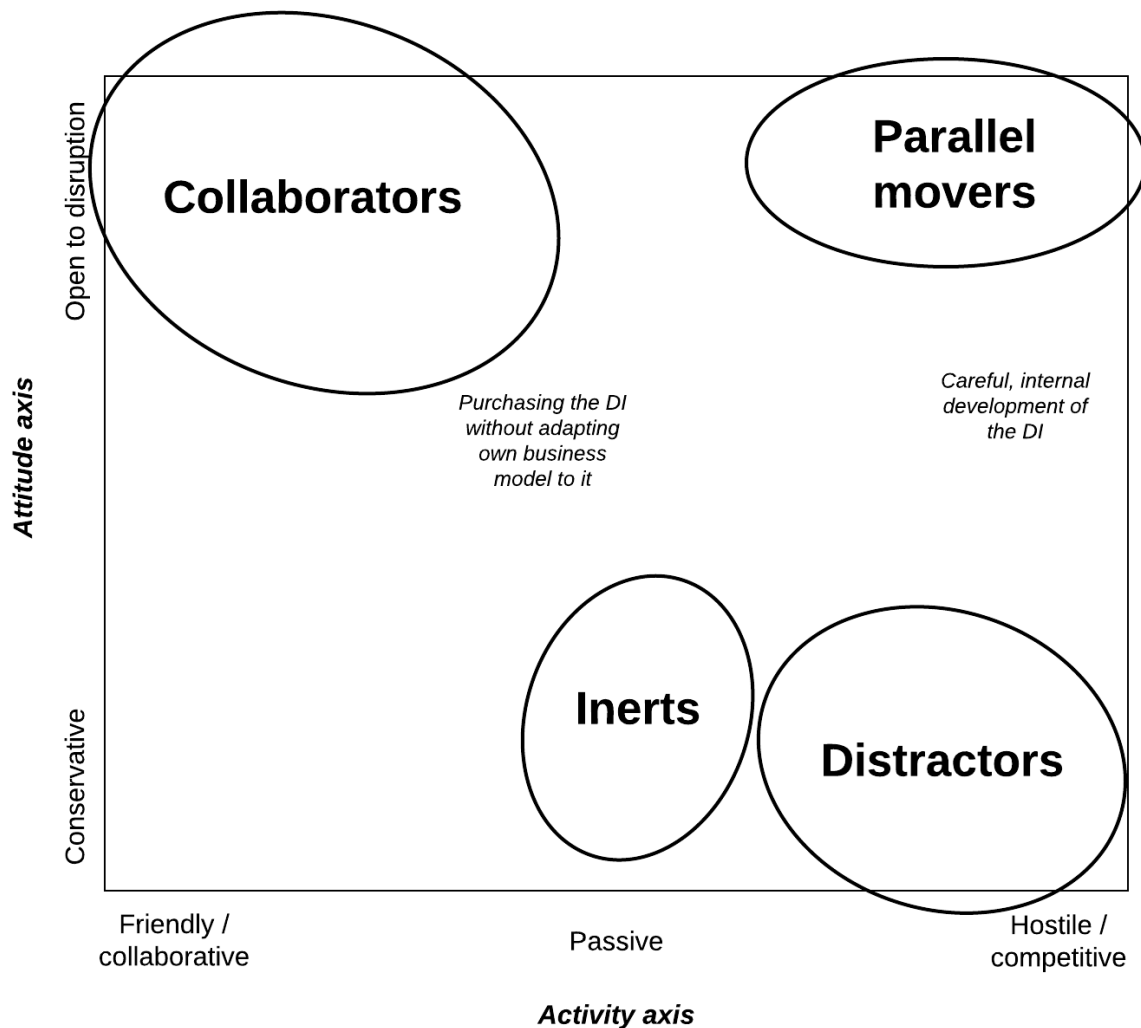
Cocreation [together] with the DI initiator can occur more on an ad-hoc basis, compared to the systematic incubating approach. Regarding *acquisitions* (of DI initiators or followers de novo), only friendly ones have been observed: management was not replaced after the change of control and was often even assisted by the acquirer in terms of advice from senior management and resources that enabled significant upscaling.

Careful, internal development of the DI was observed as a method to increase the (mostly technological) knowledge of the firm and to enhance its competitive position that way, and never to (later) cooperate with the DI initiator. Therefore, this reaction option is positioned at the hostile/competitive end of the activity axis. It is considered as 'careful' because incumbents following this approach, were relatively reluctant to expose their clients to their experimental developments. Lastly, *reinforcing current business model to compete with DI* is considered as more competitive than *moving up to [the] high-end [segment of the market] with current business model* because it effectively engages in competition with the DI. The other reaction option, in contrast, avoids direct competition (but still reinforces the position of the firm in the high-end segment, making it more difficult for the DI to gain foothold in that part of the market). Furthermore, it is considered as more open because it effectively engages in adapting its business model and thus in taking steps away from the current industry recipe and the status quo.

5.1.2. Qualitative clusters of reaction options

When the possible reaction options are mapped in this attitude-activity model, a number of conceptual, qualitatively determined clusters emerge, as demonstrated in figure 5.1 (p. 45) and repeated in a summarizing way in figure 5.2.

Figure 5.2. Clusters in the attitude-activity model



Again following a clockwise discussion, the first cluster, emerging in the upper-left ('Collaborators'), concerns open and collaborative approaches; companies following this path are often concerned with the success of a DI and take active steps to support it. The next cluster ('Parallel movers' in the upper-right) also represents approaches of (almost) complete adoption of the DI, but in a (potentially) more competitive manner. In the lower-

right ('Distractors'), reaction options are taken together that are less aimed at following the DI, but nevertheless actively seek ways to stay competitive. These approaches may often avoid direct competition and opt for more hostile methods to limit the success of a DI, such as negative marketing and legal action. Finally, in the lower middle ('Inerts') are approaches that remain passive in the face of possible disruption and that do not deviate significantly from the status quo.

The only two reaction options that did not fit in one of these clusters were *purchasing the DI [services] without adapting own business model to it* and *careful, internal development of the DI*. Both are situated close to the middle of the attitude axis, between conservative and open approaches. A possible explanation may be that in these situations, factors influencing conservative behavior and factors influencing open behavior are simultaneously impacting the decision-making process of the concerned company (see also subsection 5.1.3). As a result, these reaction approaches may be stuck between multiple, more extreme clusters. At most reaction options, on the other hand, influencing factors may be more in line with each other, leading to a higher number of options around more extreme positions and thus more clustering.

In more detail, regarding *purchasing the DI [services] without adapting own business model to it*, firms may have rather open values while the DI may be perceived to be low in impact. Therefore, companies may opt to adopt it without performing much internal effort, e.g. by licensing its services, thereby finding some sort of equilibrium.

Regarding *careful, internal development of the DI*, the reverse may be true. This approach was more common in industry subsets where firms had rather conservative values, while the DIs at hand may still have been relatively (potentially) impactful. Eventually, companies following this approach in general may still choose to adopt the DI or to ignore it (e.g. when the DI becomes more successful or fails to meet expectations), thereby still joining one of the clusters described above. Nevertheless, it should be noted that no companies have been observed during the study switching from *careful, internal development of the DI* to another approach, so this explanation has a solely speculative character.

A possible conclusion can be that the threat of a DI is a factor with a relatively high weight. If the threat is high then, conflict with other factors (that must be strong as well to make

conflict possible) may be intense and not sustainable, while if the threat is lower, a compromise can be found more easily. When the threat of a DI is stronger, forces it comes at real conflict with must then also be relatively powerful. Ultimately, one of the stronger factors may overcome the other, possibly pushing the company to one of the clusters. If the threat of a DI is weak (steering a company possibly to an inert approach), a company may find a compromise with other factors (steering towards other approaches) by settling in a permanent position between clusters. Influencing factors are discussed in more detail below.

Finally, two prominent white spaces within the grid become clear after clustering. One space concerns the absence of conservative yet friendly responses. Nevertheless, this may be quite evident, as there are few incentives for collaboration with DI initiators if companies are mainly interested continuing their business in the status quo. The other space concerns open yet passive approaches. This seems also evident, as a DI cannot be fostered and supported without specific action.

The discussion on the two reaction approaches that did not fit in one of the clusters, indicated the existence of factors driving a company towards certain approaches. This will be further elaborated in the next subsection.

5.1.3. Influencing factors

The following paragraphs discuss what factors may drive a company's response towards a certain attitude level and a certain activity level (e.g. a more conservative, hostile approach). Table 5.2 (p. 51) summarizes possible reasons. These possible explanations were all derived from interview data. Links to related findings in the DI literature have been mentioned within the table. Regarding the attitude dimension, if an influencing factor comes into play in a way reverse to its description in the table, it will likely direct a company's approach to the other extreme. For example, if conservative firm values increase the likelihood of a conservative approach, open firm values may increase the likelihood of an open approach.

The activity axis, on the other hand, is less unidimensional (e.g. a fragmented industry structure can lead to rather passive behavior, however, it is unclear whether a consolidated

industry leads to behavior that is rather competitive or rather collaborative). Therefore, a similar conclusion cannot be made about this axis.

Furthermore, passive approaches appear to relate positively to conservative attitudes (i.e. a passive approach is usually also a conservative one), and collaborative reactions to open approaches. Therefore, factors increasing the likelihood of a passive (or collaborative) approach, may increase the likelihood of a conservative (or open) attitude as well.

Table 5.2. Factors influencing attitude / activity levels

<i>Attitude / activity level</i>	<i>Influencing factor¹⁴</i>
Conservative	<ul style="list-style-type: none"> - Conservative values of the firm (<i>F</i>) - Conservative values of stakeholders within the value network of the firm (see also Christensen & Bower, 1996) – provided they have a sufficiently strong influence over the strategy of the firm (<i>V</i>)
Open to disruption	<ul style="list-style-type: none"> - Visionary leadership amongst key decision makers (see also Tellis, 2006) (<i>F</i>) - Mid-seniority amongst key decision makers (<i>F</i>) - DI market is highly related to main market¹⁵ (<i>F/DI</i>)
Friendly/collaborative	<ul style="list-style-type: none"> - Backlog in technology and/or knowhow amongst incumbent firm (while sense of urgency of reaction and means to engage in collaboration – e.g. funds necessary for acquisition – are present); see also Marx, Gans & Hsu (2014) (<i>F/DI</i>) - High ‘make’-costs to build a similar DI, compared to purchasing and transaction costs (<i>F/DI</i>)
Passive	<ul style="list-style-type: none"> - Fragmented industry (<i>I</i>) - High technological uncertainty (<i>DI</i>) - Effects of the success trap (Levinthal & March, 1993) (<i>F</i>) - Lower perceived threat of revenue loss (<i>F/DI</i>)

¹⁴ Indications to which type of characteristics an influencing factor refers: *F* = firm characteristics, *V* = value network characteristics (e.g. characteristics of typical clients or clients of clients), *DI* = DI characteristics, *I* = industry characteristics

¹⁵ As a disruptive innovation contains a different set of performance attributes compared to traditional offerings, it may constitute a different market – as Markides (2006) explained in terms of business model innovation and as new-market innovations do (Christen & Raynor, 2003). This new market is called a DI market in this table.

<i>Attitude / activity level</i>	<i>Influencing factor¹⁴</i>
Hostile/competitive	<ul style="list-style-type: none"> - High ability and willingness to react, yet low ability or willingness to collaborate (<i>F</i>) - More hostile way of traditional competition within the industry (<i>I</i>)

The following paragraph provides additional details regarding the influence factors mentioned in table 5.2.

Factors pushing towards more conservative approaches, are linked with characteristics of companies and their value networks. A candidate pool consisting mainly of conservative job candidates for example, may make a staffing firm reluctant to implement automated, external matching applications. Another example is a high share of high-end, demanding firms amongst the client base of a company. As noted by Christen and Rosenbloom (1995), this may make a firm reluctant to invest in a DI, because of its inferior features compared to the traditional offering.

Factors influencing firms towards more open-to-disruption approaches, are mostly related with characteristics of key decision makers (visionary leadership – as studied by Tellis, 2006 – and mid-seniority).

Mid-seniority amongst key decision makers refers to the observations by interviewees that when key decision makers had a relatively low seniority, they regularly failed in sensing the importance of emerging disruptive trends. Key decision makers with a relatively high seniority, on the other hand, regularly refused to let the organization go through changes that were usually required by an open-to-disruption approach. Therefore, both groups tended towards more conservative approaches, while when an open approach was selected, this was done mostly by decision makers of mid-seniority. However, this possible association has only been observed within relatively small businesses in the legal services industry, such as small partnerships and independent lawyers. Therefore, it possibly is only relevant in similar situations, when decision makers contribute to large proportions of primary value chain activities personally. This engagement in primary activities may potentially reinforce the dominant logic amongst key decision makers, making them more reluctant to enter different and disruptive ways of working (Prahalad & Bettis, 1986). Potentially, also a reluctance to invest in competence-destroying innovation is present as well (Tushman & Anderson, 1986).

One factor inducing rather friendly or collaborative responses relates to an incumbent characteristic (i.e. the absence of necessary knowhow and technology combined with the willingness and ability to cooperate), while another relates to a combination of firm and DI characteristics. The latter is *high 'make'-costs to build a similar DI, compared to purchasing and transaction costs*. In this case, companies (usually incumbents) may prefer to buy the disruptive services from the DI initiator and resell them to their own customers (usually through outsourcing and white labeling). This may lead to the reaction approaches of *purchasing the DI and/without adapting own business model to it*. One condition is that the disrupted services of the incumbent only represent a small portion of its whole services portfolio and that the incumbent sells integrated bundles of services, so they can more easily outsource parts of this bundle without losing clients.

Influencing factors leading to passive behavior are diverse: one relates to an industry characteristic (*fragmented industry*), one to a DI characteristic (*high technological uncertainty*), one to a firm characteristic (*effects of the success trap* - Levinthal & March, 1993) and one to a combination of firm characteristics and DI characteristics (*lower perceived threat of revenue loss*).

Regarding the factor *fragmented industry*: if industry structure is fragmented, companies' decision makers may be used to the prior observation that one competitor never grows large enough to directly impact the market shares of others. Therefore, they may also presume that a DI will stick to a niche and perceive a lower sense of reaction urgency (as described in Christensen & Rosenbloom, 1995). Therefore, they may follow a more passive approach, as it seems reasonable that the DI will not cause large shifts in the market impacting their revenues.

Concerning the factor *effects of the success trap* (Levinthal & March, 1993), interviewees reported on firms that have successfully innovated in the past and were believed to have too much attention for exploiting these innovations, instead of exploring new possibilities, such as the DI.

Finally, regarding factors inducing hostile or competitive behavior, the first factor in this category (*High ability and willingness to react, yet low ability or willingness to collaborate*) is related to firm characteristics. It applies for example to new entrants de novo developing a similar yet differentiated DI. They may be able to do so; however, (being a small and high-risk business) they may not be able to convince a DI initiator to collaborate with them. The second factor, *more hostile way of traditional competition within the industry*, is an industry characteristic may relate again to the (broadly dispersed) dominant logic of (mostly incumbent) firms (Prahalad & Bettis, 1986). Firms in this case

may be used to the perception that the most successful way to handle a competitive threat is to compete against it – therefore competing against the DI as well.

Concluding on influencing factors, it can be stated these factors are often related to firm characteristics or to a combination of firm (five out of thirteen instances) and DI characteristics (four instances). Nevertheless, two factors are directly related to industry properties. Moreover, it should be noted that multiple firm characteristics may actually come close industry characteristics because they are shared by many firms within an industry and therefore may relate rather to the industry than to individual firms themselves.

Finally, it can be noted that regarding a given DI, a given company reacted in general exclusively in one active way on this matrix¹⁶. In other words, one company did not combine multiple response options for one DI in general in the observations of this study. For example, one company would not combine the development of a similar yet differentiated DI with the move of its current business model to the high-end of the market. On the other hand, incumbents and new entrants *de alio* would usually combine their chosen response option with continuing their traditional business¹⁷. Nevertheless, this last course of action is not included as a response option because it contains no specific reaction in addition to the ones included in the model above. For example, if a company continues its current way of working and ignores the DI, it essentially follows the approach of *not reacting, ignoring the DI*.

Although one company usually followed one approach with respect to one DI at a given moment, companies may substitute their chosen response option for another through time. These ‘evolution paths’ are discussed in the next subsection.

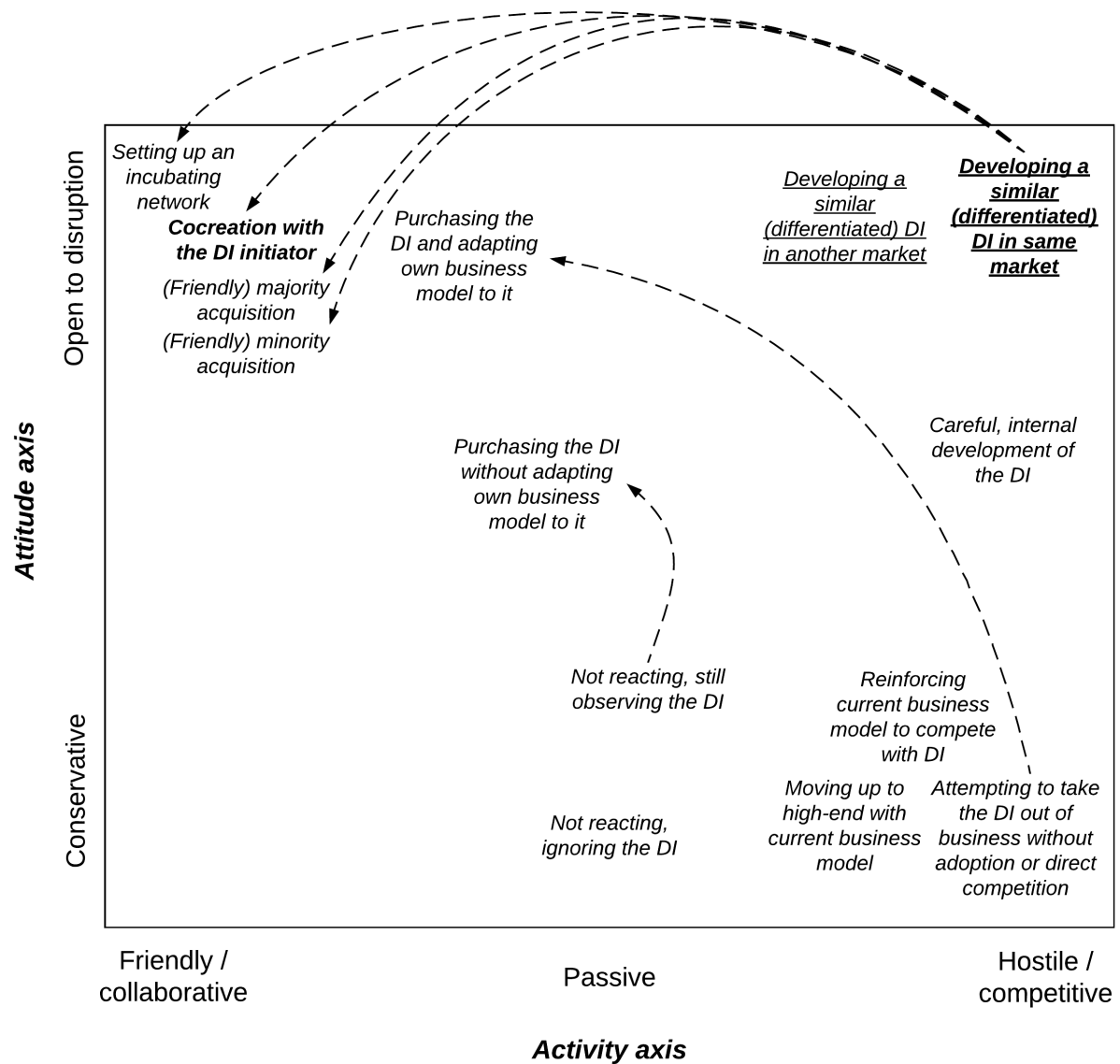
5.1.4. Evolution paths

Firms might not stick to their chosen approach. Over time, they may substitute one reaction option for another. Patterns along this switching behavior, ‘evolution paths’, have been observed. A visual representation is provided in figure 5.3 (p. 55).

¹⁶ One exception concerns incumbents purchasing the DI services and purchasing an interest in the DI initiator, thus acting as a client-investor.

¹⁷ Logical exceptions are *reinforcing current business model to compete with DI* and *moving up to high-end with current business model*

Figure 5.3. Evolution paths: how companies may substitute one reaction approach for another over time



A first typical path ranged from a rather competitive, internal development of the DI, by *(differentiated) copying of the DI in the same market*, towards more collaborative forms, such as *cocreation with the DI initiator* for example. In general, internal development was not preferred as an option because this approach was believed to put too much strain on slack resources. When companies realized this, they often started looking for ways to develop the DI together with the

initiator itself (becoming more collaborative) or with another external party (staying in the competitive zone with respect to the DI initiator).

A second evolution path ranged from the hostile, conservative approach of *attempting to take the DI out of business without adoption or direct competition*, almost entirely across the spectrum to *purchasing the DI [services] and adapting own business model to it*. This usually occurred when reacting companies realized that their approach was failing to eliminate the DI and subsequently, they started looking for economically fruitful ways to coexist with it.

Thirdly, companies have been observed to switch from *not reacting, still observing the DI* to *purchasing the DI without adapting own business model*. This was usually done by smaller incumbents that initially exhibited a more hesitant approach towards a given DI. Later, when market-leaders started buying and licensing the services of the DI initiators (or outsourcing their traditional services to the DI initiator), these smaller firms would follow because they felt that their offering would otherwise lag behind too much on that of their larger counterparts.

Overall, these evolution paths indicate trends from competitive and hostile approaches to friendlier and eventually more open ones over time. This shift was usually made when the reacting organization was internally more prepared for collaboration (e.g. after a shift in top management vision or after internal resistance was reduced).

Important to note is that although evaluating the performance of reaction options was not within the scope of this study, successful executions of each reaction option mentioned within figure 1 have been observed. Thus, although response strategies may alter according to the evolution paths, it is not necessarily true that a hostile, conservative reaction will always fail in reaching its goals (i.e., taking the DI initiator out of business).

Furthermore, the response *moving up to high-end with current business model* is considered detrimental by the original DIT, however, this may still be a viable strategy if disruption is halted (see section 5.3).

This first section discussed how companies in general may react to a disruptive innovation in a service industry. However, specific remarks on company reactions must be made as well, depending on the

firm type and on the character of the industry. These will be discussed in the next sections, starting with the former.

5.2. Specific remarks depending on firm type

In order to explain how companies may react to DIs in service industries, some specificities have to be noted depending on the type of the company that is reacting to a DI (incumbent, new entrant *de novo*, or new entrant *de alio*), besides the general patterns of company reactions discussed in previous section. This will be the subject of the current section.

5.2.1. Specific remarks regarding incumbent reactions to disruptive innovation

A first remark concerns limitations in the power of customers. In the original DIT, incumbents are limited in reacting to a DI because powerful customers impede them in doing so. However, in staffing, incumbents (certainly market-leading ones) appeared to have broad, diversified customer bases. Although interviewees believed that larger customers were still considerably more demanding¹⁸ and powerful compared to smaller ones, most incumbents were not completely dependent on a limited set of clients demanding sustaining innovation. At least, they were not totally obstructed from experimenting with partly inferior technologies and business models and eventually deploying them within their markets.

In conclusion, the power of large customers appeared to be less restricting than observed by e.g. Christensen & Rosenbloom (1995). Therefore, market-leading incumbents in this context may not be as bound to their most influential customers as described in the original DIT, making it more convenient for them to react to a DI.

The limitations in customer power may explain why market-leading incumbents in the staffing industry were certainly not as inert as described in the original DIT with respect to the emergence of disruptive innovation (a second remark). This responsiveness was observed even while the potential reasons for slowdown and halting of disruption as described above were present. Often, market-leading incumbents were the ones to set up incubating networks, nurturing disrupting new entrants *de novo* (see also Markides, 2006). This way, market-leading incumbents possibly even provided an incentive for the foundation of DI-initiating startups that would otherwise not exist. In particular,

¹⁸ As powerful customers were more demanding, they were less attracted to DIs, because of their inferior characteristics (Christensen & Rosenbloom, 1995).

they extensively contributed to the existence of financially-rewarding exit opportunities in the form of acquisitions.

Moreover, this incubating approach was deemed necessary by these market leaders to cope with the vast amount of initiatives that were being launched – as an incubation process was believed to be more efficient than considering all initiatives on an ad hoc basis. Possible reasons for this proactivity amongst market-leading incumbents are visionary leadership amongst top management (see also Tellis, 2006) and large budgets allowing for experimentation (see also Sood & Tellis, 2011). Moreover, as described above, they did not seem to be very impeded by powerful customers (in contrast to the original DIT, e.g. Christensen & Rosenbloom, 1995). Interviewees considered smaller incumbents as less suitable for an incubation strategy, primarily because of a lack of funds for riskier experimentation. Therefore, these smaller firms had to rely on more targeted acquisitions.

Furthermore, market-leading incumbents often used an integrated approach to disruptive innovation, combining internal development, cocreation and acquisition of initiatives. The last option was usually preferred as this placed less strain on internal resources and misfit with the resources-processes-values-framework of an incumbent (Christensen, 1997a) was still perceived as a difficulty for internal development.

The next specificity relates to the internal organization of incumbents. To allow an established firm¹⁹ to develop a DI, Christensen and Bower (1996) advise to set up a separate business unit, if the opportunity of the DI is small compared to the growth needs of the company and if its cost structure is clearly different. Danneels (2004) warns for synergies with the main business that may be lost, which has to be accounted for in the cost/benefit analysis of the separation decision.

In the observations of this study, incumbents indeed held acquired companies often at arm's length, as there were no significant synergies that could be lost and the other conditions were met as well. Nevertheless, incumbents considered it as a certain challenge to reintegrate separate units into the main business when they grew large enough to do so. Furthermore, they were concerned with the distinction between different local areas, and the possible failure of initiatives that were tested in another local area than the one they had grown in so far.

This indicates the existence of other difficulties regarding separate units, besides making the tradeoff between the loss of synergies and the disadvantageous effects of integration (Christensen & Bower, 1996; Danneels, 2004). In particular, reintegration, the level where the unit should be placed (corporate level vs. local level, which local area if at local level etcetera), and upscaling (revenue

¹⁹ This remark can also be applied to new entrants de alio.

generation) can be mentioned. In the context of radical innovation, commercialization issues beyond the choice for separation or integration have been studied e.g. by McDermott and O'Connor (2002). These authors investigated the business complications related with moving into unfamiliar markets, the stretching of competences, and people issues arising in organizations which may not be suitable of supporting the uncertainty related to radical innovation. Furthermore, Leifer, O'Connor and Rice (2001) stress the importance of radical innovation hubs. This responds to issues such as bringing knowledge on radical innovation together to a central point within the organization to enable cumulative learning, and to bring key persons such as idea gatherers and internal venture capitalists together.

A subsequent remark relates to the niches where a DI may emerge from. Incumbents, screening for potentially threatening DIs based on the DIT, may find it insufficient to only examine low-end segments and noncustomers, as explained below.

The selected DIs of this study could be labeled disruptive because they usually did not fit within the typical resources-processes-values (RPV) systems of incumbents (Christensen, 1997a), proposed a different (partly superior, partly inferior) set of performance attributes compared to the traditional business models, and initially attracted only a limited set of customers (small compared to the growth needs of incumbents).

However, these limited sets of customers did not always mirror the characteristics of the low-end of the market or of new markets as described by Christensen and Raynor (2003) – which may indicate the existence of other kinds of disruptive innovations besides low-end DIs and new-market DIs. This is in line with the remarks of Danneels (2004), who stressed that the characteristics of DIs as reported in previous literature (e.g. Christensen & Bower, 1996) are typical, but not necessarily defining. Therefore, they may not be stable across industry boundaries: in different industries, different characteristics may be observed (Danneels, 2004).

In the current study, initial DI customers were attracted because they were already trusted with the use of the technology deployed by the DI – consumer IT and mobile applications for example – and because of regulation unlocking only certain subsets of a market, as described in the previous paragraph. This may make the acceptance evolution of the DI more dependent on the evolution of technological savviness and DI-usage savviness of customers and on the evolution of regulation, rather than on the evolution of technological performance of the DI (as in the original DIT – e.g. Christensen & Bower, 1996). Therefore, initial niches may exist of those customers that are more

used to the technology where the DI is based on and customers that are allowed to be served by regulation.

In line with this, Ganguly, Das and Farr (2017) noted that customers are locked in a preexisting relationship with traditional incumbents, which disruptors must break in order to be successful. This is potentially easier to do if customers are more trusted with the DI technology. Moreover, an increased technology-savviness may also turn customers to dissatisfaction with the current (possibly technologically inferior) way of working, which may strongly induce switching behavior according to Fan and Suh (2014).

This may indicate that companies aspiring to react to a DI by developing one, may have the possibility to focus and test their DI version on more market subsets than only low-end customers and noncustomers. Furthermore, incumbents screening for DI threats by examining exclusively low-end customers and noncustomers, may find this approach insufficient.

A last specific remark regarding incumbents, concerns the timing and likelihood of collaboration with DI initiators. In additions to the original DIT, collaboration with initiators is discussed as a response option (Hüsigg & Hipp, 2009; Madjdi & Hüsigg, 2013; Marx, Gans & Hsu, 2014). This response option was reported to occur when technological uncertainty of a DI was successfully reduced (Marx, Gans & Hsu, 2014). Moreover, it was more likely in industries with high appropriability regimes and a high cost of obtaining necessary assets (Marx, Gans & Hsu, 2014).

In the legal services industry, incumbents requested collaboration with the initiator of the front-end chatbot in the first months after its launch, when technological and commercial uncertainty was still believed to be very high by other incumbents, including the ones already examining the underlying technology. In the HR industry, market-leading incumbents considered the companies they collaborated with on a case-by-case basis; technologically uncertain initiatives were certainly not excluded (for example, some collaborative actions started even from scratch). Moreover, appropriability regimes were believed to be relatively low. The concept of the chatbot could be copied and potential competitors were believed to be able to catch up technologically with the initiator. The cost of obtaining necessary assets was believed to be low as well.

Overall, it can be concluded that the requirement of technological uncertainty seemed not always to be very strict in the industries examined. The same conclusion can be made about the other conditions. Therefore, collaboration may even occur more than may be expected based on the DIT to date. One possible explanation may be the relatively low capital requirements to set up a technological service DI, resulting in reduced risk for the collaborating parties.

In a literature review on technology alliances, Hagedoorn (1993) noted that cooperation agreements and alliances were formed in early stages of research and development as well, e.g. for basic research, with the motive to share and reduce the risk of these activities. This could indicate that companies may also collaborate early to reduce risk, for example, when they are already convinced that a technological DI should be developed because the DI may have a large potential impact. Companies that are not convinced, may still wait for reduction of uncertainty.

In conclusion, concerning incumbent reactions, specific remarks can be made. These are summarized again in table 5.3. The remarks relate to the power of customers, the level of openness with respect to disruption amongst market leaders, the internal organization of responding incumbents, the existence of niches beyond low-end segments and noncustomers, and early-stage collaboration.

Table 5.3. Summary of specific remarks concerning incumbent reactions

<i>Remark concerning incumbent reactions</i>	<i>Comments</i>
Limitations in customer power	Incumbents were still relatively able to secure resources for experimentation, which may indicate limitations in customer power.
High level of openness to disruption amongst market-leading incumbents	Market-leading incumbents appeared to be the most open-to-disruption companies in the sample of this study. Possible reasons are visionary leadership, the availability of funds and limitations in customer power
Internal organization of disruption: additional concerns related to separate business units	The tradeoff between the loss of synergies and the disadvantageous effects of integration may not be the only prominent issue with respect to separate business units (Christensen & Bower, 1996; Danneels, 2004). Reintegration, the corporate level at which the business unit should be placed and upscaling seemed to be additional issues.
Different niches	DIs may emerge from other niches besides low-end customers and noncustomers (Christensen & Raynor, 2003). For example, customers already trusted with the technology the DI is based on, may form a separate niche.
Early-stage collaboration	Collaboration may happen relatively soon after a DI is launched. A possible explanation may be the low risk of setting up a possible DI, because of low capital requirements. This may explain the deviation from the findings of Marx, Gans and Hsu (2014).

Besides incumbents, additional remarks can be made about new entrants de novo and de alio. This will be the subject of the next subsection.

5.2.2. Specific remarks regarding reactions of other company types to disruptive innovation

The original DIT, as well as recent, empirical disruption literature, does not explicitly address the reactions of other companies than incumbents – specifically, new entrants de novo and de alio – to disruptive innovation. New entrants de novo following the innovation initiator have been observed in the staffing industry – which has a remarkably larger ‘startup scene’ compared to the legal services industry. In all cases, new entrants de novo entered through the differentiated development of a similar DI.

New entrants de alio were observed in both industries. In the staffing industry, one instance of new entrants de alio concerned the entry of technology mastodons (of the likes of Facebook and Google) who developed offerings similar to current DIs. This was believed to bring potentially heavy shocks to the industry. However, this research was conducted too early to assess the effects. Another instance concerned technology companies cocreating DIs together with incumbents and eventually taking ownership. Thus, new entrants de alio have an additional response option compared to their counterparts de novo, namely cocreation. A possible reason why they may be able to do so, is that working together with an established company de alio contains less risk compared to a new entrant de novo. Furthermore, entrants de alio may have more useful resources at the same time, which may convince cocreation partners like DI initiators.

In the legal services industry, one initiator introducing a legal service provider next to its (mostly) accounting and advisory services, was attacked again by a legal service provider making the reverse move: setting up other professional services next to its legal core business. Thus, when setting up a business model combining various existing services, companies may expect attacks from providers of all the traditional services they combine.

5.3. **The potential effects of service industry characteristics on disruption**

In this section, the specific impact of service industry characteristics on the process of disruption and on company reactions will be discussed.

Section 5.1 demonstrated that the threat of disruption may be an important factor influencing the possible reaction of a company towards a DI. Nevertheless, service industry characteristics may decelerate disruption, therefore limiting the extent of its threat.

Below, possible reasons are discussed why disruption may occur slowly within a services industry or market, and even may come to halt before a disruptor is able to seize market leadership. These reasons are summarized in table 5.4. (p. 64). These decelerations of and impediments on the evolution of a DI may motivate companies to react slowly to a DI as well, or even to react not at all (see also subsection 5.1.2). Such delayed responses have indeed been observed during this study.

A first potential reason concerns the existence of multiple performance attributes constituting the basis of competition. In the original disruptive innovation theory (DIT), the basis of competition consisted of one performance attribute at one moment in time, e.g. the capacity of a hard disk drive (Christensen & Bower, 1996). As discussed in chapter 2, this limit in the basis of competition has been subject to criticism, as there are often many more performance dimensions concurrently relevant for customers, which may likely alter the dynamics of competition and disruption as described originally (e.g. Christensen & Bower, 1996). Danneels (2004) for example summarizes eighteen performance attributes (at least) concurrently relevant for automobile customers. This may lead to the existence of different niches (very safe cars, very fuel-efficient cars and so on). Then, when a DI is initiated (e.g. electric cars vis-a-vis combustion engine cars), disruption may be slowed down because there is no one homogeneous main market to convince, but multiple niches (driving industry fragmentation), whereas each niche has relatively high demands on its specific performance attribute(s) (e.g. customers with a very high demand for safe cars). Thus, there are many differentiation possibilities and a DI initiator may encounter difficulties in convincing substantial parts of the market and the initiator may not be able to seize overall market leadership, in contrast to the initiators studied by Christensen (e.g. Christensen 1993).

In the service industries examined in this study, the basis of competition usually consisted of ca. four performance attributes. This is still a compact number compared to the automobiles example, however, the existence of multiple performance attributes may partly explain why disruption did not occur fast or why initiators were not able to seize large market shares quickly.

Disruption possibly slowed down furthermore in the staffing industry because of the presence of an important stakeholder group next to clients, namely job candidates. This requires a DI to convince an

additional group of stakeholders to substitute traditional services for the disruptive ones before large-scale disruption can occur. This also involves a sort of network effect: the presence of more clients does not attract even more clients in itself; however, it may attract more job candidates, which in turn may attract more clients. This required network effect may also prevent a DI from breaking through.

A third reason is limited scalability. Even many automated services appeared to rely to a certain extent on human service provision, e.g. automated matching frequently required a human check to ensure the quality of a match or of a candidate. Also, the legal, front-end chatbot discussed in chapter 4 required a human helpdesk. This dependency on (often scarce) human resources makes a service DI, even when automated, to an extent as limitedly scalable as traditional services are, which brakes the growth of that DI.

The last potential reason for slowdown and possible halting of a DI is regulation protecting a substantial number of niches or subsets of a market. For example, some automated matching tools in the staffing industry required a specific license for each industry (i.e. market subset) they served (requiring separate negotiations) – which evidently limited its fast growth opportunities. Regulation as a barrier to disruption has also been recognized by Hwang & Christensen (2008).

Table 5.4. Possible explanations for slowdown and eventually halting disruption within a service industry

<i>Potential reason</i>	<i>Rationale</i>
Existence of multiple performance attributes constituting the basis of competition	Creates less of a win-or-loose-all situation; multiple niches exist according to which performance attributes are preferred (all of which must be convinced by a ‘good enough’ DI in order to be seized by a disruptor.
Existence of multiple stakeholder groups that must be convinced to use the DI	Existence of multiple separate yet simultaneously required stakeholder groups that must be convinced to switch to a DI, can decelerate its adoption.
Limited scalability	Scarcity in e.g. human resources that are required to scale up a disruptive business, may slow down the advancing of that business through its market.
Regulation hampering the unfolding of a DI within the overall market	If regulation restricts entry to many niches or subsets of a market, for example through specific licensing, a disruptor may not be able

<i>Potential reason</i>	<i>Rationale</i>
	to acquire a large share of that market. See also Hwang and Christensen (2008).

A deceleration and eventual halting of disruption may lead to more passive reactions. Moreover, other options, such as *moving up to [the] high-end [segments of the market] with current business model*, become possible (as a DI may not be able to develop sufficiently to become a threat for high-end segments). In all cases, market-leading incumbents can be less concerned with losing their dominant position to a DI. On the contrary, if an incumbent would want a DI to succeed, they may opt for a more collaborative approach, assisting in its development.

5.4. Conclusion

Firstly, this chapter introduced a model overviewing the different options companies seem to have to respond to a DI in a service industry. The model organized these options along two dimensions, one regarding the attitude of a firm towards the innovation (conservative vs. open-to-disruption) and one regarding the activity level of the responding firm (passive vs. hostile-competitive or friendly-collaborative). Subsequently, a qualitative clustering of response options was overviewed. Which attitude and which activity level a company would find itself situated in with respect to a given DI, depended on influencing factors, mostly associated with industry and firm characteristics, as well as with how the DI relates to the firm (e.g. whether the DI is a small or a large threat towards the revenue model of the firm in case).

Furthermore, possible evolution paths from one response approach to another were discussed. From these paths, it can be concluded that if a company adapted its response strategy, it usually ended up deploying an open, collaborative approach.

To further determine how a company may react to a DI in a service industry, some additional factors have to be taken into account, mainly relating to the firm type and industry characteristics as well.

Which individual response option was selected, appeared to interfere with the firm type. New entrants *de alio* and *de novo* had considerably fewer options compared to incumbents.

Regarding incumbents, the following remarks were made. Firstly, market-leaders that were not strongly tied to powerful customers, appeared to be very open and collaborative with respect to DIs. Secondly, when developing a DI in a separate business unit, additional issues (e.g. reintegration into

the main business) have been identified besides the choice for integration or separation (Christensen & Bower, 1996; Danneels, 2004). Moreover, incumbents had to screen for DIs beyond the traditionally recognized niches of low-end segments and noncustomers (Christensen & Raynor, 2003). Lastly, collaboration with DI initiators may occur in early and technologically uncertain stages as well, besides exclusively later and more certain stages (Marx, Gans & Hsu, 2014).

Finally, specific service industry characteristics seemed to decelerate disruption, lowering its threat and possibly making companies more passive in their response approach. These characteristics were *the existence of multiple performance attributes, additional stakeholder groups to be convinced to use a DI, limited scalability and regulation.*

Chapter 6: Conclusion

In this closing chapter, first, the purpose and set-up of the conducted research are discussed, followed by a summary of the main findings. Then, contributions to theory and to practice are summarized. Finally, this chapter ends with the limitations of this study and with suggestions for future research.

6.1. About the research and its findings

The purpose of this research was to explore the ways in which companies may react to disruptive innovations in service industries. As discussed in chapter 2 and below in this chapter, potential company reactions in service industries have received very little attention in scientific literature, although services constitute a majority of the GDP in a majority of countries worldwide. The empirical foundation of the disruptive innovation theory (DIT) was situated in highly technological manufacturing industries (Christensen, 1993). Critiques on the original DIT (e.g. Danneels, 2004) point at problems of generalizability, amongst others to services. Also recent, empirical DI literature rarely explores service contexts – however, if studies are conducted in empirical settings different from those of the original DIT, important anomalies are found. An important set of anomalies refer to company reactions to disruption.

Despite this gap concerning reactions to DIs, it can be highly relevant for organizations to know in what ways different companies may react to a near disruptive innovation, given the contemporary increase in disruption and innovation in many industries across the world, as stated in chapter 1. This way, organizations (e.g. incumbents, post-initiation new entrants, or trade associations and governments) may benchmark their actions and determine their own stance.

This consideration led to the following main research question: *“How may companies react to disruptive innovation in a service industry?”*

To respond to this question, first, a literature review consisting of three parts was conducted; followed by an exploratory field study.

Firstly, all peer-reviewed literature (co)authored by Clayton Christensen (who developed the original DIT), was read and analyzed. The purpose was to provide a theoretical background for this study and to analyze the empirical background against which the DIT emerged. To build a more complete account of the DIT, critiques that emerged shortly after the breakthrough of this theory were analyzed as well, as a second stage of the literature review. In a final stage, recent, empirical literature on disruptive innovation was systematically reviewed. This way, in total 40 papers were retrieved and analyzed in this review.

Main findings of the literature review concern limitations in the generalizability of the DIT. Empirical settings deviating from the ones of the original DIT, result in deviating findings. Moreover, there appeared to be little attention for company reactions besides incumbents (e.g. reactions of new entrants *de alio*). These findings are discussed in more detail in section 6.2 and in chapter 2.

Due to a lack of empirical evidence in service industries, the empirical part of this study deployed an exploratory research strategy. Based on exploratory desk research, two service industries were selected for further study – the staffing industry and the legal services industry. The selection of these industries was based on the sufficient availability of sufficiently diverse DIs. Interviews were conducted with DI initiators, incumbents (both market-leading ones and smaller firms), and trade associations. For each instance, a person knowledgeable about the DI in case and the current competitive dynamics surrounding his or her firm was interviewed. In total, sixteen interviews were conducted (twelve in staffing and four in legal services), described in more detail in chapter 3. Each interviewee was questioned about the stance of his or her own company and about other competitive dynamics: the actions of (other) incumbents, new entrants etcetera. Information obtained this way, was supplemented by additional desk research. The results are provided in chapter 4, a discussion in chapter 5.

Main findings (discussed in more detail in section 6.2) were that companies (including new entrants *de novo* and *de alio*) react according to a certain attitude (conservative vs. open) towards DIs and a certain level and direction of activity (passive vs. either collaborative or hostile). Reaction approaches can be clustered and companies exhibit patterns in switching behavior when substituting one reaction approach for another. Moreover, possible attitude and activity influencing factors have been observed. The potential existence of other niches where DIs may emerge from, besides low-end segments and noncustomers, have been observed. Incumbents seemed to be more open to disruption than expected based on the original DIT, for which multiple possible explanations have

been listed. Finally, disruption dynamics in service industries have been explored, mainly leading to the conclusion that the process of disruption can be slowed down or even halted in service contexts.

6.2. Contributions to theory and practice

Main findings of the study and their contributions to theory and to practice will now be discussed.

6.2.1. Contributions to theory

This study commenced with a literature review on disruptive innovation, by examining the original DIT as proposed by Christensen and his coauthors, followed by critiques on these first studies. Finally, recent, empirical DI literature was examined.

Conclusions of the literature review were that Christensen and his colleagues developed a valuable theory on how incumbents react to disruptive technological discontinuity in technology manufacturing contexts. Subsequently, this theory was generalized to diverse contexts, including a number of service industries. This, in part, triggered the critiques mentioned above, some of which (e.g. Danneels, 2004) stated that the DIT had become overstretched during these generalizations. As this may result in findings deviating from the original DIT when new empirical contexts are researched, the recent, empirical literature on disruptive innovation was examined. Final conclusions were that when industries with different characteristics were investigated, different forms of reactions than described by the original DIT were usually observed. For example, Christensen and Bower (1996) focused on the internal development of DIs by incumbents, while Wagner (2016) observed acquisitions in less capital-intensive contexts. More recent contributions to the DIT seem to lack empirical studies of service industries as well. Finally, in contrast to incumbents, the reactions of new entrants (de novo or de alio) were never taken into account explicitly.

The empirical phase of this research (discussed to a full extent in chapter 5) subsequently explored company reactions. One of the main findings was a model overviewing possible reactions, how these reactions may relate to each other and how they may evolve.

Reaction options were categorized according to two dimensions: an attitude dimension ranging from conservative to open-to-disruption and an activity dimensions ranging from passive to either friendly/collaborative or hostile/competitive. Some approaches described by prior theory were

identified (such as internal development – Christensen & Bower, 1996), while also some new approaches were observed (e.g. attempts to take the DI out of business without direct competition – for example through negative marketing or legal action).

Regarding reaction strategies in itself, two additional remarks had to be made. First, regarding collaboration, prior theory (Marx, Gans & Hsu, 2014) states that this reaction form would usually occur in a more advanced stage of the development of the DI, when technological uncertainty was reduced. In the sample of this study, however, companies were reported to collaborate in relatively early stages. One possible explanation may be that in the examined contexts, the cost of initiating a DI was relatively low and therefore the risk of setting up a DI may have been low as well, even from the beginning. Secondly, it has been observed that DIs may emerge from other niches than low-end segments or noncustomers. Examples are customers that are already trusted with the technology where the DI is based on, and selected niches that are not locked up by regulation. Therefore, companies screening for DIs may have to take additional niches into account.

Four main clusters of reaction options have been discovered: *collaborators* (companies that are open to a given disruption and react in a friendly way to its initiator), open yet competitive *parallel movers* (developing the DI apart from the initiator, in the same or in another market), *distractors* (conservative and competitive) trying to harm the business of the DI initiator without adopting or fostering the DI and finally *interts* (staying passive and conservative).

Moreover, evolution paths have been observed, i.e. patterns along which firms move if they substitute one response approach towards a DI for another. In general, these paths ranged from rather passive or competitive approaches, to rather collaborative ones, and also to more open-to-disruption approaches (if companies were following a rather conservative approach at first).

Furthermore, underlying factors that provoke certain reactions were discussed. These factors are associated mostly to industry and firm characteristics, and to how the DI relates to the firm (e.g. if the DI is a high or a low threat for the revenue model of the firm).

Furthermore, the selected response strategy in itself seemed to depend on the firm type as well. Incumbents had a broad ‘response palette’: all observed reaction types can be selected and have been selected by incumbents. New entrants de novo on the other hand, had to rely solely on internal

development of the DI. New entrants de alio, finally, also developed a DI internally, or engaged in cocreation with the DI initiator or another firm. A possible explanation for this additional option is that relying on an established entrant de alio may contain less risk for the initiator, compared to a firm de novo, while de alio firms still may have more useful resources.

Market-leading incumbents were also observed to be more open, active and collaborative with respect to disruption than one would expect based on the original DIT. Potential reasons are, next to visionary leadership (Tellis, 2006) and large budgets allowing for experimentation, a relatively limited power of large and demanding customers (Christensen & Rosenbloom, 1995).

Finally, with respect to industry characteristics, remarks were made about specific properties of service industries and how they may influence the threat of disruption, thereby driving firms towards less active approaches.

In particular, the existence of multiple performance attributes concurrently relevant for customers (requiring the DI to convince multiple niches), the existence of additional stakeholder groups that must be convinced to use a DI (e.g. job candidates) – which may also require a network effect, limited scalability and regulation could decelerate and even halt the process of disruption.

6.2.2. Contributions to practice

Practical contributions of this study are discussed below.

This research proposed a model listing possible company reactions to DIs in service industries, providing potential explanations on how they relate to each other, and why a company may follow a given reaction approach instead of an alternative one. This way, incumbents who consider responding to a DI, may consult this listing of reaction strategies, to broaden their view on their options and to assess in which ways competition may react (both traditional competitors and new entrants). Initiators of DIs may use this model in a similar way, to oversee in which ways they may encounter competition, collaboration or inaction from incumbents as well as from new entrants. New entrant de novo and de alio, entering an industry in response to a DI, may also assess this way the stirred competitive dynamics they are entering. Finally, consultants, trade associations and governments may use this model to determine how they may optimally advice their clients or members or to set up their policies.

Moreover, companies screening for DIs based on the DIT, may focus on low-end customers and noncustomers. However, DIs may emerge from other segments as well, such as customer segments which are already trusted with the technology where the DI is based on. These segments have to be taken into account as well.

Regarding evolution paths, it may be relevant to know for a DI initiator that companies exhibiting an initially hostile or passive approach, may not continue to do so. If a company switches its reaction style, it may generally follow a more open and more collaborative approach. Therefore, it may nevertheless be fruitful for a DI initiator that is undergoing competitive pressure to sustain and preserve, as hostile moves may slow down over time.

Furthermore, if a relatively high number of disruptive initiatives are launched in a formerly traditional industry where customer power may be rather limited, market-leading incumbents may ultimately not react in a passive or competitive manner. In fact, they may even foster innovation by setting up incubating networks. Also, competitive behavior may be replaced by more collaborative approaches over time. Therefore, it may be more beneficial for DI initiators to try to convince incumbents to collaborate rather than to compete against them.

Lastly, incumbents of service industries where the conditions of *multiple performance attributes*, *additional stakeholder groups to be convinced to use a DI*, *limited scalability* and *regulation* are fulfilled, may find a DI not to be large threat, as disruption may be slowed down and even halted in these circumstances. Moreover, DI initiators on the other hand, should take these decelerating effects into account when estimating their payoffs.

6.3. Limitations and future research

This study was designed to explore company reactions to DIs in service contexts and led to various findings. Nevertheless, the research also had multiple limitations, which could form a basis for future research.

Firstly, because of limited resources, it was not possible to continue the interviewing process until theoretical satisfaction was reached – each new interview led to additional categories and remarks. Future research can continue the exploration process until theoretical satisfaction is reached.

Moreover, quantitative methods able to generalize findings, were fully absent. Therefore, as has been stated in prior chapters, all findings from this study have to be seen as yet to be validated and as non-representative. Therefore, subsequent studies can take a quantitative approach, to test the findings of (extended) exploratory research. This way, more industries can be taken into account, or solely the same or similar industries can remain in focus for internal validity.

Thirdly, as the research strived to explore company reactions in a broad sense, the research methods aimed at examining multiple, diverse cases. Therefore, individual cases were not always explored in full depth (although often direct competitors were interviewed and questioned about each other's move, to limit this shortcoming).

Importantly, this research did not aim to evaluate the performance effects of the possible company reactions it listed. Still, for example, one might expect higher business performance from a collaborative move compared to a hostile one, as this reduces competition. Business performance could hence be a dependent variable in subsequent research.

Relatedly, it must be acknowledged that this research had an exclusive supply-side focus. Nevertheless, assessing the views of customers is enriching when building understanding on how performant and disruptive a DI or a reaction to it actually is, as demonstrated by Guttentag & Smith (2017). Findings and implications of this research, such as the relevance of technological savviness of the potential users of a DI in their acceptance process, can be further explored by future studies taking a customer point of view.

Lastly, this study took account of different DIs, possibly in different development stages. This led to suggestions for evolution paths in response approaches. Longitudinal studies could further unravel how a company's reaction strategy unfolds and adapts over time.

References

- Adecco Group. (2016). *The HR services industry*. Retrieved from http://annualreport2015.adecco.com/uploads/tx_dlcenter/05-Adecco-AR-2015-The-HR-services-industry.pdf
- Barclay Simpson. (2018). Introduction to the interim market. Retrieved May 24, 2018, from <https://www.barclaysimpson.com/introduction-to-the-interim-market>
- Bergek, A., Berggren, C., Magnusson, T., & Hobday, M. (2013). Technological discontinuities and the challenge for incumbent firms: Destruction, disruption or creative accumulation?. *Research Policy*, 42(6-7), 1210-1224.
- Bohnsack, R., & Pinkse, J. (2017). Value Propositions for Disruptive Technologies: Reconfiguration Tactics in the Case of Electric Vehicles. *California Management Review*, 59(4), 79-96.
- Bohnsack, R., Pinkse, J., & Kolk, A. (2014). Business models for sustainable technologies: Exploring business model evolution in the case of electric vehicles. *Research Policy*, 43(2), 284-300.
- Brachmann, S. (2014). The Rise and Fall of the Company that Invented Digital Cameras. Retrieved May 18, 2018, from <http://www.ipwatchdog.com/2014/11/01/the-rise-and-fall-of-the-company-that-invented-digital-cameras/id=51953/>
- Brynjolfsson, E., & McAfee, A. (2012). *Race Against The Machine: How The Digital Revolution Is Accelerating Innovation, Driving Productivity, and Irreversibly Transforming Employment and The Economy*. Retrieved from http://digital.mit.edu/research/briefs/brynjolfsson_McAfee_Race_Against_the_Machine.pdf
- Central Intelligence Agency. (2018). GDP - Composition, by sector of origin. Retrieved December 9, 2017, from <https://www.cia.gov/library/publications/the-world-factbook/fields/2012.html>
- Chandy, R. K., & Tellis, G. J. (2000). The incumbent's curse? Incumbency, size, and radical product innovation. *Journal of marketing*, 64(3), 1-17.
- Chen, C., Zhang, J., & Guo, R. S. (2016). The D-Day, V-Day, and bleak days of a disruptive technology: A new model for ex-ante evaluation of the timing of technology disruption. *European Journal of Operational Research*, 251(2), 562-574.
- Chen, J., Zhu, Z., & Zhang, Y. (2017). A study of factors influencing disruptive innovation in Chinese SMEs. *Asian Journal of Technology Innovation*, 25(1), 140-157.
- Christensen, C. M. (1992a). EXPLORING THE LIMITS OF THE TECHNOLOGY S- CURVE. PART I: COMPONENT TECHNOLOGIES. *Production and Operations Management*, 1(4), 334-357.

- Christensen, C. M. (1992b). Exploring the limits of the technology S-curve. Part II: Architectural technologies. *Production and Operations Management*, 1(4), 358-366.
- Christensen, C. M. (1993). The Rigid Disk Drive Industry: A History of Commercial and Technological Turbulence. *The Business History Review*, 67(4), 531-588.
- Christensen, C. M. (1997a). *The innovator's dilemma*. Boston, MA: Harvard Business School Press.
- Christensen, C. M. (1997b). Patterns in the Evolution of Product Competition. *European Management Journal*, 15(2), 117-127.
- Christensen, C. M. (2006). The ongoing process of building a theory of disruption. *Journal of Product innovation management*, 23(1), 39-55.
- Christensen, C. M., & Armstrong, E. G. (1998). Disruptive Technologies: A Credible Threat to Leading Programs in Continuing Medical Education? *The Journal of Continuing Education in the Health Professions*, 18(2), 69-80.
- Christensen, C. M., & Bower, J. L. (1996). Customer power, strategic investment and the failure of leading firms. *Strategic Management Journal*, 17(3), 197-218.
- Christensen, C. M., & Raynor, M. (2003). *The innovator's solution*. Boston, MA: Harvard Business Review Press.
- Christensen, C. M., & Rosenbloom, R. S. (1995). Explaining the attacker's advantage: Technological paradigms, organizational dynamics, and the value network. *Research policy*, 24(2), 233-257.
- Christensen, C. M., Suarez, F. F., & Utterback, J. M. (1998). Strategies for Survival in Fast-Changing Industries. *Management Science*, 12(2), 207-220.
- Christensen, C. M., Verlinden, M., & Westerman, G. (2002). Disruption, disintegration and the dissipation of differentiability. *Industrial and Corporate Change*, 11(5), 955-993.
- Christensen, C., & Raynor, M. (2013). *The innovator's solution: Creating and sustaining successful growth*. Harvard Business Review Press.
- Cornell University, INSEAD, & World Intellectual Property Organization. (2017). *The Global Innovation Index 2017*. Retrieved from <https://www.globalinnovationindex.org/gii-2017-report>
- Danneels, E. (2004). Disruptive technology reconsidered: A critique and research agenda. *Journal of product innovation management*, 21(4), 246-258.
- Day, G. S. (1994). The Capabilities of Market-Driven Organizations. *Journal of Marketing*, 58, 37-52.
- De Pelsmacker, P. & van Kenhove, P. (2010). *Marktonderzoek: methoden en toepassingen*. Amsterdam, the Netherlands: Pearson Education.

- De Wit, B., & Meyer, R. (2010). *Strategy synthesis: Resolving strategy paradoxes to create competitive advantage*. Cengage Learning EMEA.
- Deloitte. (2013). *The Aging Workforce: Finding the silver lining in the talent gap*. Retrieved from <https://www2.deloitte.com/global/en/pages/human-capital/articles/aging-workforce.html>
- Deloitte. (2016). *Future Trends for Legal Services*. Retrieved from <https://www2.deloitte.com/content/dam/Deloitte/global/Documents/Legal/dttl-legal-future-trends-for-legal-services.pdf>
- Dyer, J. H., Gregersen, H. B., & Christensen, C. (2008). Entrepreneur behaviors, opportunity recognition, and the origins of innovative ventures. *Strategic Entrepreneurship Journal*, 2(4), 317-338.
- European Commission. (2016). *European Innovation Scoreboard*. Retrieved from <https://publications.europa.eu/en/publication-detail/-/publication/6e1bc53d-de12-11e6-ad7c-01aa75ed71a1/language-en/format-PDF/source-31234102>
- Eurostat. (2017, April 3). Innovation statistics. Retrieved December 9, 2017, from http://ec.europa.eu/eurostat/statistics-explained/index.php/Innovation_statistics
- EY. (n.d.). How did disruption become mainstream? Retrieved December 9, 2017, from <http://www.ey.com/gl/en/issues/business-environment/ey-megatrends-understanding-disruption>
- Fan, L., & Suh, Y. H. (2014). Why do users switch to a disruptive technology? An empirical study based on expectation-disconfirmation theory. *Information & Management*, 51(2), 240-248.
- Federgon. (2015). *Foresight 2020*. Retrieved from <http://www.foresight2020.be/files/FEDERGON-foresight-A4-NL.pdf>
- Flexmarkt. (2018). ABN: 'Uitzendbranche kan honderden miljoenen euro's mislopen'. Retrieved May 24, 2018, from <https://www.flexmarkt.nl/arbeidsmarkt/uitzendbranche-honderden-miljoenen-euros-mislopen/>
- Ganguly, A., Das, N., & Farr, J. V. (2017). The Role of Marketing Strategies in Successful Disruptive Technologies. *International Journal of Innovation and Technology Management*, 14(03), 1750016.
- Glaser B, Strauss A. 1967. *The Discovery of Grounded Theory*. Chicago, IL: Aldine.
- Govindarajan, V., & Kopalle, P. K. (2006a). The usefulness of measuring disruptiveness of innovations ex post in making ex ante predictions. *Journal of product innovation management*, 23(1), 12-18.

- Govindarajan, V., & Kopalle, P. K. (2006b). Disruptiveness of innovations: measurement and an assessment of reliability and validity. *Strategic Management Journal*, 27(2), 189-199.
- Gulati, R., & Garino, J. (2000). Get the right mix of bricks & clicks. *Harvard business review*, 78(3), 107-114.
- Guttentag, D. A., & Smith, S. L. (2017). Assessing Airbnb as a disruptive innovation relative to hotels: Substitution and comparative performance expectations. *International Journal of Hospitality Management*, 64, 1-10.
- Hagedoorn, J. (1993). Understanding the rationale of strategic technology partnering: Interorganizational modes of cooperation and sectoral differences. *Strategic management journal*, 14(5), 371-385.
- Harvard Business School. (2018). Clayton M. Christensen - Kim B. Clark Professor of Business Administration. Retrieved May 19, 2018, from <https://www.hbs.edu/faculty/Pages/profile.aspx?facId=6437>
- Henderson, R. (2006). The innovator's dilemma as a problem of organizational competence. *Journal of Product Innovation Management*, 23(1), 5-11.
- Henderson, R. M., & Clark, K. B. (1990). Architectural Innovation: The Reconfiguration of Existing Product Technologies and the Failure of Established Firms. *Administrative Science Quarterly*, 9(30), 439-465.
- Hüsig, S. (2013). The disruptive potential of PWLAN at the country-level: The cases of Germany, the UK, and the USA. *Telecommunications Policy*, 37, 1060-1070.
- Husig, S., & Hipp, C. (2009). The disruptive potential of Wi-Fi in the German hotspot market. *International Journal of Mobile Communications*, 7(6), 615-631.
- Hwang, J., & Christensen, C. M. (2008). Disruptive Innovation In Health Care Delivery: A Framework For Business-Model Innovation. *Health Affairs*, 27(5), 1329-1335.
- Information Services Group. (2018). *The HR Consolidation Wave Continues*. Retrieved from <https://www.isg-one.com/docs/default-source/default-document-library/aon-and-hewitt-consolidation-wave.pdf?sfvrsn=0>
- Jurvetson, S. (2010). The Pace of Innovation Never Falter. Retrieved May 16, 2018, from <https://www.technologyreview.com/s/417600/the-pace-of-innovation-never-falters/>
- Karimi, J., & Walter, Z. (2015). The role of dynamic capabilities in responding to digital disruption: A factor-based study of the newspaper industry. *Journal of Management Information Systems*, 32(1), 39-81.

- Kim, W. C., & Mauborgne, R. (2005). *Blue ocean strategy: How to create uncontested market space and make the competition irrelevant*. Boston, Mass.: Harvard Business School Press.
- Kothman, I., & Faber, N. (2016). How 3D printing technology changes the rules of the game: Insights from the construction sector. *Journal of Manufacturing Technology Management*, 27(7), 932-943.
- Kranz, J. J., Hanelt, A., & Kolbe, L. M. (2016). Understanding the influence of absorptive capacity and ambidexterity on the process of business model change—the case of on-premise and cloud-computing software. *Information Systems Journal*, 26(5), 477-517.
- Langlois, R. N., & Robertson, P. L. (1992). Networks and innovation in a modular system: Lessons from the microcomputer and stereo component industries. *Research Policy*, 21(4), 297-313.
- Legaltrek. (2016, April 16). What Is NewLaw and How It Is Changing the Legal Industry Forever. Retrieved May 2, 2018, from <https://legaltrek.com/blog/2016/04/what-is-newlaw-and-how-it-is-changing-the-legal-industry-forever/>
- Leifer, R., O'connor, G. C., & Rice, M. (2001). Implementing radical innovation in mature firms: The role of hubs. *The Academy of Management Executive*, 15(3), 102-113.
- Levinthal, D. A., & March, J. G. (1993). The myopia of learning. *Strategic management journal*, 14(S2), 95-112.
- Lin, C., Zhang, Z., & Yu, C. (2015). Measurement and empirical research on low-end and new market disruptive innovation. *Journal of Interdisciplinary Mathematics*, 18(6), 827-839. doi:10.1080/09720502.2015.1108092
- Lui, A. K., Ngai, E. W., & Lo, C. K. (2016). Disruptive information technology innovations and the cost of equity capital: The moderating effect of CEO incentives and institutional pressures. *Information & Management*, 53(3), 345-354.
- Madjdi, F., & Hüsig, S. (2011). The response strategies of incumbent mobile network operators on the disruptive potential of public W-LAN in Germany. *Telecommunications Policy*, 35(6), 555-567.
- Markides, C. (2006). Disruptive innovation: In need of better theory. *Journal of product innovation management*, 23(1), 19-25.
- Marx, M., Gans, J. S., & Hsu, D. H. (2014). Dynamic commercialization strategies for disruptive technologies: Evidence from the speech recognition industry. *Management Science*, 60(12), 3103-3123.
- McDermott, C. M., & O'Connor, G. C. (2002). Managing radical innovation: an overview of emergent strategy issues. *Journal of product innovation management*, 19(6), 424-438.

- McGrath, R. G. (2013, November 25). The Pace of Technology Adoption is Speeding Up. Retrieved May 16, 2018, from <https://hbr.org/2013/11/the-pace-of-technology-adoption-is-speeding-up>
- McKinsey & Company. (2015). The four global forces breaking all the trends. Retrieved December 9, 2017, from <https://www.mckinsey.com/business-functions/strategy-and-corporate-finance/our-insights/the-four-global-forces-breaking-all-the-trends>
- McKinsey & Company. (n.d.). Growth & Innovation. Retrieved December 9, 2017, from <https://www.mckinsey.com/business-functions/strategy-and-corporate-finance/how-we-help-clients/growth-and-innovation>
- Novotny, M., & Laestadius, S. (2014). Beyond papermaking: technology and market shifts for wood-based biomass industries—management implications for large-scale industries. *Technology Analysis & Strategic Management*, 26(8), 875-891.
- Obal, M. (2013). Why do incumbents sometimes succeed? Investigating the role of interorganizational trust on the adoption of disruptive technology. *Industrial Marketing Management*, 42(6), 900–908.
- Pervez, T., Maritz, A., & De Waal, A. (2013). Innovation and social entrepreneurship at the bottom of the pyramid-A conceptual framework. *South African Journal of Economic Management Sciences*, 16(5), 54-66.
- Prahalad, C. K., & Bettis, R. A. (1986). The dominant logic: A new linkage between diversity and performance. *Strategic management journal*, 7(6), 485-501.
- Prajogo, D. (2006). The Relationship between Innovation and Business Performance—A Comparative Study between Manufacturing and Service Firms. *Knowledge and Process Management*, 13(3), 218-225.
- PwC. (2013). *Unleashing the power of innovation*. Retrieved from https://www.pwc.com/gx/en/innovationsurvey/files/innovation_full_report.pdf
- Recker, J. (2013). *Scientific Research in Information Systems*. Heidelberg, Germany: Springer.
- Ribstein, L. (2010). The Death Of Big Law. *Wisconsin Law Review*, 3, 749-815.
- Rosenbloom, R. S., & Christensen, C. M. (1994). Technological discontinuities, organizational capabilities, and strategic commitments. *Industrial and corporate change*, 3(3), 655-685.
- Sandström, C. G. (2016). The non-disruptive emergence of an ecosystem for 3D Printing—Insights from the hearing aid industry's transition 1989–2008. *Technological Forecasting and Social Change*, 102, 160-168.

- Schumpeter, J. A. (1934). The theory of economic development: An inquiry into profits, capital, credit, interest, and the business cycle. *Social Science Electronic Publishing*, 25(1), 90-91.
- Sekaran, U., & Bougie, R. (2016). *Research methods for business: A skill building approach*. Chichester, United Kingdom: John Wiley & Sons.
- Slater, Stanley F. and Narver, John C. (1998). Customer-Led and Market-Oriented: Let's Not Confuse the Two. *Strategic Management Journal* 19(10), 1001–1006.
- Sood, A., & Tellis, G. J. (2011). Demystifying disruption: a new model for understanding and predicting disruptive technologies. *Marketing Science*, 30(2), 339-354.
- Tellis, G. J. (2006). Disruptive technology or visionary leadership?. *Journal of Product Innovation Management*, 23(1), 34-38.
- The Boston Consulting Group. (2017). Innovation in 2016. Retrieved December 9, 2017, from <https://www.bcg.com/publications/2017/growth-innovation-in-2016.aspx>
- The White House - Washington. (2015). *A Strategy for American Innovation*. Retrieved from https://obamawhitehouse.archives.gov/sites/default/files/strategy_for_american_innovation_october_2015.pdf
- Tushman, M. L., & Anderson, P. (1986). Technological Discontinuities and Organizational Environments. *Administrative Science Quarterly*, 31(3), 439-465.
- Useem, J. (1999, September 6). Internet Defense Strategy: Cannibalize Yourself. Retrieved April 19, 2018, from http://archive.fortune.com/magazines/fortune/fortune_archive/1999/09/06/265284/index.htm
- Vlaamse Regering. (2014). *Beleidsnota 2014-2019*. Retrieved from <https://www.vlaanderen.be/nl/publicaties/detail/beleidsnota-2014-2019-werk-economie-wetenschap-en-innovatie>
- Wagner, M. (2016). Managing disruptive innovation with technology acquisitions: the informing case of software-based high-technology industries. *Technology Analysis & Strategic Management*, 28(8), 979-991.
- Weeks, M. R. (2015). Is disruption theory wearing new clothes or just naked? Analyzing recent critiques of disruptive innovation theory. *Innovation*, 17(4), 417-428.
- Wetfeet. (2012). Industry Overview: Human Resources. Retrieved May 24, 2018, from <https://www.wetfeet.com/articles/industry-overview-human-resources>
- Wolak, R., Kalafatis, S., & Harris, P. (1998). An Investigation Into Four Characteristics of Services. *Journal of Empirical Generalisations in Marketing Science*, 3, 22-43.

World Intellectual Property Organization. (2017, March 15). Record Year for International Patent Applications in 2016; Strong Demand Also for Trademark and Industrial Design Protection. Retrieved December 9, 2017, from http://www.wipo.int/pressroom/en/articles/2017/article_0002.html

Yu, D., & Hang, C. C. (2011). Creating technology candidates for disruptive innovation: Generally applicable R&D strategies. *Technovation*, 31(8), 401-410.

Appendices

Appendix A – Summary of peer-reviewed literature by Clayton M. Christensen on disruptive innovation

<i>Study</i>	<i>Character</i>	<i>Industry</i>	<i>Type of innovation initiator</i>	<i>Characteristics of disruptive innovation</i>	<i>Possible implications for company reactions in service industries</i>
Christensen (1992a) Topic: evaluating the existence of first mover benefits regarding product component innovation	Empirical	Disk drive industry	New entrants de novo ²⁰	Terms of <i>disruptive innovation</i> or <i>disruptive technology</i> not yet in use, although the replacement of industry leadership due to technological innovation is discussed (disruptive innovation is viewed as a subset of this kind innovation; Christensen & Rosenbloom, 1995). Innovations that threatened industry leadership never resulted from product component innovations.	Service firm value propositions that consist of multiple, linked services, in such way that the customer is only interested in the package of services because the component services render little value individually, may not be threatened by innovations causing improvements in the component services. Incumbents may have to adopt these innovations; however, they may not perceive them as disruptive and may not perceive a need to react accordingly.

²⁰ Christensen (1997) describes that incumbents, despite usually being first to invent a disruptive technology, were usually not first to further develop and commercialize it, which was mostly done by new entrants de novo.

<i>Study</i>	<i>Character</i>	<i>Industry</i>	<i>Type of innovation initiator</i>	<i>Characteristics of disruptive innovation</i>	<i>Possible implications for company reactions in service industries</i>
Christensen (1992b) Topic: evaluating the existence of first mover benefits regarding product architecture innovation	Empirical	Disk drive industry	New entrants de novo	Terms of <i>disruptive innovation</i> or <i>disruptive technology</i> not yet in use, although the replacement of industry leadership due to technological innovation is discussed. Innovations that threatened industry leadership implied strong first mover advantages. Innovations that threatened industry leadership could result from architectural innovations.	Service firm value propositions that consist of multiple, linked services, in such way that the customer is only interested in the package of services because the component services render little value individually, may be threatened by innovations changing the configuration of the services package. Conditional here is that a change in configuration requires a change within incumbents' organizational structure or dynamics Disruptive innovations may mostly emerge in the format of such a reconfiguration. Therefore, reconfigurations may be monitored more closely, and reactions observed against reconfigurations may be expected as well against certainly disruptive innovation.
Christensen (1993) Topic: the impact of changes in technology and market structure on industry leadership	Empirical	Disk drive industry	New entrants de novo	DIs (labeled as <i>disruptive technological change</i> in this study) disrupt the upward trajectory of performance of the established technology, performing worse on the primary basis of competition and better on certain other characteristics,	Incumbents, unaware of the disruption risk, will ignore the DI. Incumbents, aware of the disruption risk and having high growth needs compared to the size of the initial opportunity, will develop the DI through a separate unit in case of a

<i>Study</i>	<i>Character</i>	<i>Industry</i>	<i>Type of innovation initiator</i>	<i>Characteristics of disruptive innovation</i>	<i>Possible implications for company reactions in service industries</i>
				<p>therefore appealing to new, emerging niche segments.</p> <p>Disruptive innovations are set off against sustaining innovations, that maintain the upward trajectory of performance of incumbents' products on the basis of competition and rarely threat incumbent firms.</p> <p>Over time, the market demand for primary performance increases in a slower way than the actual, supplied performance and eventually becomes exceeded by the latter. When the performance of the DI improves sufficiently to meet market demand, the main market switches to the DI as well, appealed by its superiority in secondary characteristics.</p> <p>Incumbents do not switch to the DI in time because its niche segment is not financially attractive given the growth needs of the incumbent.</p>	<p>positive cost/benefit analysis (Danneels, 2004).</p> <p>Incumbents, aware of the disruption risk and not large compared to the size of the initial opportunity, will adopt the DI in their main organization.</p>

<i>Study</i>	<i>Character</i>	<i>Industry</i>	<i>Type of innovation initiator</i>	<i>Characteristics of disruptive innovation</i>	<i>Possible implications for company reactions in service industries</i>
Rosenbloom & Christensen (1994) Topic: discussion of the circumstances under which new technologies imply an advantage towards new entrants	Empirical	Disk drive industry	New entrants de novo	Terms of <i>disruptive innovation</i> or <i>disruptive technology</i> not yet in use, although the replacement of industry leadership due to technological innovation is discussed. New technologies had major competitive impact if they did not address the needs of known customers, requiring strategic change in incumbents' value networks (as nested supply chains) orienting these networks towards other customers.	Established service firms responding to a disruptive innovation by adopting it within one organization, may experience certain difficulties, the largest of which being the financing of developments not demanded by current customer and finding new markets large enough to pull resources away from the firm's current markets (Christensen & Bower, 1996; Henderson, 2006).

<i>Study</i>	<i>Character</i>	<i>Industry</i>	<i>Type of innovation initiator</i>	<i>Characteristics of disruptive innovation</i>	<i>Possible implications for company reactions in service industries</i>
Christensen & Rosenbloom (1995) Topic: proposing a market explanation for the replacement of industry leadership related to a shift in the industry's technological paradigm	Empirical	Disk drive industry	New entrants de novo	Terms of <i>disruptive innovation</i> or <i>disruptive technology</i> are not used, however, the replacement of industry leadership related to technological changes and the disruption of performance trajectories (as in Christensen, 1993) are discussed ²¹ . These technological changes typically arose outside the established value networks (networks of nested supply chains) of incumbents. Incumbents, tied to their customers in their established value networks, were disadvantaged to develop and commercialize the innovations arising outside their value networks. New entrants, on the contrary, able to start their business in the new value networks, were in a better position to develop and commercialize these innovations.	If incumbents are unable to serve new customers outside their current value network and are unaware of the threat of disruption, they may choose not to develop and commercialize an emerging DI. Incumbents, unable to serve new customers but aware of the risk of disruption, will take measures (see below) to serve new customers outside their current value network when a DI emerges. New entrants de novo or de alio, entering an industry where a DI is emerging, may initially only target customers in a new value network instead of the customers of the incumbents, because the DI seems to be more accepted among the former.
Christensen & Bower (1996)	Empirical	Disk drive industry	New entrants de novo	Disruptive innovations (DIs) – initially performing worse on the primary basis of	Incumbents, unaware of the threat of a DI or unwilling to cannibalize their

²¹ This phenomenon appeared to be possible even in cases where incumbents were able to overcome competence-destroying innovations (Tushman & Anderson, 1986) and architectural innovations changing organizational dynamics (Henderson & Clarck, 1990), as long as the innovations arose within their established value networks.

<i>Study</i>	<i>Character</i>	<i>Industry</i>	<i>Type of innovation initiator</i>	<i>Characteristics of disruptive innovation</i>	<i>Possible implications for company reactions in service industries</i>
Topic: explaining how powerful customers can influence the strategic decision-making process of incumbents, leading them away from DIs				<p>competition – typically do not appeal an incumbent's main market and its high-end, most profitable customers.</p> <p>The DI usually appeals to niche segments (overserved by the incumbent), however, high-margin customers incentivize incumbents to invest in sustaining instead of disruptive innovations.</p> <p>The size of the niche of the DI is initially not sufficiently large to persuade the incumbent to invest in it.</p> <p>As the main market starts switching to the DI, the new entrants have obtained a considerable first mover advantage preventing the incumbent from acquiring a leading share of the DI market.</p> <p>The most successful and efficient way to avoid this pressure from powerful customers, appeared to be the setup of a separate organizational unit developing and commercializing the DI (see also Burgelman, 1984).</p>	<p>current business, will stay tied to their most influential customers and will maintain and enhance their current service performance.</p> <p>Incumbents that recognize the threat of a DI and new entrants de alio attracted by the DI will try to avoid the influence from their most powerful, current customers by setting up a separate business unit providing for the DI. At the same time, these firms may maintain and enhance their traditional business as long as it remains profitable.</p> <p>However, if the operational relatedness between the DI and the traditional business is too high, an established firm may opt to develop the DI internally, if it is willing and able to incur the costs and effort to do so (Christensen & Bower, 1996).</p>

<i>Study</i>	<i>Character</i>	<i>Industry</i>	<i>Type of innovation initiator</i>	<i>Characteristics of disruptive innovation</i>	<i>Possible implications for company reactions in service industries</i>
Christensen (1997b) Topic: the repeating occurrence of disruption in an industry and the link with commoditization.	Empirical (disk drive industry and hydraulic excavator industry); conceptual (healthcare and executive education)	Disk drive industry; hydraulic excavator industry; healthcare; executive education	New entrants de novo (disk drive industry); incumbents and new entrants (hydraulic excavator industry); Incumbents (healthcare); new entrants (executive education)	<p>Disruptive innovation theory is mentioned to be applicable to services as well (although no extensive empirical analysis, as was done with the disk drive industry, is presented).</p> <p>Disruption can be a repeating phenomenon. While initially performing below market demand on the basis of competition, a DI is initially attractive because of a favorable secondary characteristic. After disruption, this secondary characteristic can become the new basis of competition. When exceeding market demand for performance on this new basis of competition, the DI may become disrupted itself, by a second DI performing better on a third characteristic.</p> <p>This disruption will not occur before the new DI meets market demand for performance on the secondary characteristic.</p> <p>If an old product, service or DI exceeds market demand and disruption has not yet taken place, price competition may occur. A fixed order of competition bases was observed: (1) functionality, (2) reliability, (3) convenience, and (4) price.</p>	<p>Companies reacting to a disruptive innovation when the disruptor already has built significant market and technological advantages, may choose to 'disrupt the disruption' (Charitou & Markides, 2002).</p> <p>Companies opting to 'disrupt the disruption' will do so according to the proposed differentiation pattern.</p>

<i>Study</i>	<i>Character</i>	<i>Industry</i>	<i>Type of innovation initiator</i>	<i>Characteristics of disruptive innovation</i>	<i>Possible implications for company reactions in service industries</i>
				If a firm tries to differentiate according to other characteristics or in another sequence, this differentiation may be ineffective and might result in price competition.	

<i>Study</i>	<i>Character</i>	<i>Industry</i>	<i>Type of innovation initiator</i>	<i>Characteristics of disruptive innovation</i>	<i>Possible implications for company reactions in service industries</i>
Christensen & Armstrong (1998) Topic: application of the DIT to continuing education in healthcare and business	Conceptual	Continuing education in healthcare and business	New entrants de novo	<p>Disruptive technologies are described as “simple, convenient-to-use innovations that initially are used only by unsophisticated customers at the low end of markets” (p. 69).</p> <p>When responding to a DI, incumbents are advised to focus on customers “at the lower, least demanding tiers of the market” instead of mainstream customers or lead customers, that will demand for higher performance on the current basis of competition.</p> <p>Secondly, incumbents are advised to map out performance trajectories to compare the performance of their own offering with possible DIs and finally with market demand, in order to assess future competitive dynamics.</p> <p>Lastly, if an incumbent seems to be threatened by a DI, the authors advice to find ways to exploit the DI, for example by setting up a separate unit to do so and by preparing the cannibalize their current offering.</p>	<p>Companies of all sorts reacting to a DI, may do so by developing a simpler, more convenient and cheaper services, aimed at low-end, overserved customers.</p> <p>Incumbents preparing to react to a DI, may have to overcome internal resistance as well as pressure from high-margin customers seeking to steer the company towards sustaining innovation. Therefore, they will have to take measures to overcome such resistance, such as change management, setting up distinct organizational units and finding ways to exploit market demand for its traditional services as long as these are profitable.</p>

<i>Study</i>	<i>Character</i>	<i>Industry</i>	<i>Type of innovation initiator</i>	<i>Characteristics of disruptive innovation</i>	<i>Possible implications for company reactions in service industries</i>
Christensen, Suarez & Utterback (1998) Topic: the determinants of firm survival in times of technological (potentially disruptive) change	Empirical	Disk drive industry	New entrants de novo (regarding the disruptive innovations)	<p>Although the terms of <i>disruptive technology</i> or <i>disruptive innovation</i> were not used, this study examines how firms can survive technological change in fast-paced industries and refers to Christensen (1993) for similar conclusions.</p> <p>Architectural product innovations (as opposed to component innovations) may constitute a dominant design; ultimately all companies that survived, were using this dominant design.</p> <p>The emergence of a dominant design ends the “window of learning” period; companies switching to the dominant design before or after this period, had very low survival probabilities.</p>	<p>Given that disruptive product innovations appear to be a subset of architectural innovations, incumbents aware of the risk of disruption are expected to monitor architectural innovations closely (see also Christensen, 1992b).</p> <p>Furthermore, these incumbents are expected to switch to a design or configuration that fits in a tendency of architectural standardization before it emerges as dominant.</p>
Christensen, Verlinden & Westerman (2002) Topic: the effect of disruptive innovation on industry structure	Conceptual	General	General	<p>Disruptive innovation can constitute changes in industry structure. DIs often emphasize convenience, which is often enabled by modularity. As a consequence, industries with a small number of integrated firms disintegrate into a large number of specialized firms (Langlois and Robertson, 1992).</p>	<p>Incumbents, confronted with a disruptive innovation, may adapt their corporate level strategy, focusing less on synergies between business units and more on business responsiveness to serve the new market demand for (convenience through) modularity (De Wit & Meyer, 2010).</p> <p>Firms entering a disrupted industry, are expected to do so in a more focused, niche-targeting way than</p>

<i>Study</i>	<i>Character</i>	<i>Industry</i>	<i>Type of innovation initiator</i>	<i>Characteristics of disruptive innovation</i>	<i>Possible implications for company reactions in service industries</i>
Christensen, Musso & Anthony (2004) Topic: when companies should perform which research activities, given the tendency to product and industry modularity over time	Conceptual	General	General	Conceptual framework based on the original DIT. Integrated products are preferred in an industry and integrated companies lead, as long as functionality and reliability constitute the basis of competition. After disruption and a competitive focus change towards convenience, modular products are preferred, and companies become disintegrated. Then, companies should focus their research efforts on individual parts as well, instead of on integration.	the industry used to be before disruption.
					See discussion of Christensen, Verlinden and Westerman (2002). Companies that have built competences in component service research, and that are remarking a shift in industry structure towards disintegration, may be more inclined to react to a DI because the value of these competences increases in such situation. The same may hold true for potential new entrants de novo that can access similar experience (e.g. if the founders are experienced in component research).

<i>Study</i>	<i>Character</i>	<i>Industry</i>	<i>Type of innovation initiator</i>	<i>Characteristics of disruptive innovation</i>	<i>Possible implications for company reactions in service industries</i>
Christensen (2006) Topic: discussing critiques on the original DIT and conceptually advancing its constructs	Conceptual	General	General	<p>Disruptive innovation may not be defined post-hoc, as replacing industry leadership because of the mechanisms described earlier (Christensen & Rosenbloom, 1995; Christensen & Bower, 1996).</p> <p>Business-model innovation - as a type of innovation that “tends to be disruptive to established competitors” (Markides, 2006, p. 19) - may emerge slowly, so that disruptors are able to assume a lion’s share of the market if a large time span (e.g. multiple decades) is taken into account, as opposed to the conclusions of Markides (2006).</p> <p>In the original DIT, firm success was assumed to be the maximization of shareholder value, not the survival in times of technological change.</p> <p>As mentioned in a book (not peer-reviewed) by Christensen & Raynor (2003), the term ‘disruptive technology’ is replaced by ‘disruptive innovation’, to stress the contended generalizability of the DIT, to services for example. Furthermore, as mentioned the original DIT concerned low-end disruptive innovations, which appeal initially only to a niche of low-end customers that were</p>	<p>In case of business-model innovation, when disruption can take a long period of time to fulfill, an incumbent may take a longer period of time to react, giving itself time to analyze its situation, plan its course of action and gather its resources in a well-considered way.</p> <p>Companies of all sorts reacting to a DI, may not only do so by developing simpler, more convenient and cheaper services, aimed at low-end, overserved customers; as another possibility is developing an innovation that is aimed to serve a newly constituted market. Focus in this case may be on easy-to-use services aimed at familiarizing customers with an offering and educating them on how to consume or utilize it.</p>

<i>Study</i>	<i>Character</i>	<i>Industry</i>	<i>Type of innovation initiator</i>	<i>Characteristics of disruptive innovation</i>	<i>Possible implications for company reactions in service industries</i>
				<p>already consuming the traditional products or services. Next to this, new-market disruptive innovations exist as well, initially appealing to customers who previously lacked the money or skill to buy or use the product or service.</p> <p>High-end disruption (as introduced by Govindarajan & Kopalle, 2006a – see below) is not considered a useful notion because incumbent failure in this case would result from other organizational dynamics than low-end or new-market DIs (Guttentag & Smith, 2017).</p> <p>Disruptive innovation is a relative phenomenon; therefore, it should always be assessed relative to a given business-model.</p>	
Dyer, Gregersen & Christensen (2008) Topic: behavioral differences between executives and (innovative) entrepreneurs	Empirical	Software, Internet businesses, retail, consumer electronics, airlines, healthcare, construction materials, entertainment	New entrants de novo	Innovative entrepreneurs tend to be involved more in the following behavioral patterns: questioning, observing, experimenting and idea networking.	Companies of all sorts where influential people exhibit the same behavioral patterns, may be better suited to react to a disruptive innovation by copying or improving it, or by ‘disrupting the disruption’ (Charitou & Markides, 2002).

<i>Study</i>	<i>Character</i>	<i>Industry</i>	<i>Type of innovation initiator</i>	<i>Characteristics of disruptive innovation</i>	<i>Possible implications for company reactions in service industries</i>
Hwang & Christensen (2008) Topic: proposing disruptive innovation as a solution for the high cost of healthcare in the U.S.	Conceptual	Healthcare	None (absence of DI) / lesser examples of incumbents	<p>Business-model innovation can be realized through the introduction of new types of business-models in an industry that has typically been exhibiting only a certain other type. Possibilities are:</p> <ul style="list-style-type: none"> - solution shops (solving unstructured problems); - value-adding process businesses (transforming inputs into outputs of greater value); - facilitated user networks (same persons represent the demand and supply of goods, information etc.). <p>Healthcare, for example, has been dominated by solution shops (medical specialists) and could benefit from facilitated user networks wherein patients with similar affections can consult and support each other for minor details of their treatments.</p> <p>Barriers to business-model innovation in healthcare have been:</p> <ul style="list-style-type: none"> - Synergies in integrated delivery of care, as opposed to more modular systems; - Lack of a retail market exhibiting 'shopping' behavior, as many customers consume care through their 	<p>Incumbents and new entrants de alio of considerable size confronted with a DI that tries to set up a user network, may set up such a network themselves and lever their size and brand to seize a network effect preempting that of the DI.</p> <p>Companies may be less likely to react to a DI if the mentioned disruption barriers (synergies of integration, lack of a retail market with 'shopping behavior' and regulatory barriers) are present.</p>

<i>Study</i>	<i>Character</i>	<i>Industry</i>	<i>Type of innovation initiator</i>	<i>Characteristics of disruptive innovation</i>	<i>Possible implications for company reactions in service industries</i>
				<p>general practitioners, insurance companies etc.</p> <ul style="list-style-type: none"> - Regulatory barriers protecting the status-quo. 	

Appendix B – Summary of a selection of critiques on the original DIT

<i>Study</i>	<i>Character</i>	<i>Industry</i>	<i>Type of innovation initiator</i>	<i>Characteristics of disruptive innovation</i>	<i>Possible implications for company reactions in service industries</i>
Danneels (2004) Topic: providing an overview of the main issues of the DIT	Conceptual	General	General	<p>Absence of clear criteria classifying a <i>technology</i> as <i>disruptive</i>. Core of a possible definition is: “A disruptive technology is a technology that changes the bases of competition by changing the performance metrics along which firms compete” (p. 249). For many products or services, it is likely that customers take more than two decision variables into account (i.e., the basis of competition can be an extensive vector). For cars for example, at least eighteen different concurring performance dimensions have been identified. Disruptive technologies do not cause all incumbents to fail (in terms of survival vs. nonsurvival); possibly survivors are having superior resource allocation systems. Firms in Christensen’s original research do not show a deep understanding of customers’ needs, they fail to recognize their customers’ broader range of selection criteria and to look beyond their current customers, to potential ones. Referring to Christensen (1997a) his conditions for setting up a separate</p>	<p>The absence of clear criteria classifying an innovation as disruptive, requires incumbents to carefully monitor and assess many sorts of inferior innovations to evaluate their disruption potential. Markets exhibiting a wide variety of selection criteria, make many differentiation paths possible and make it harder to win large portions of market share by excelling at a limited number of these selection variables. Therefore, it is expected that disruption may not alter the competitive dynamics as drastically as foreseen by the original DIT. Strongly market-driven firms (Day, 1994) may be better suited to sense the explicit and the latent needs of their current as well as their potential customers, therefore they may be better suited to develop and commercialize a DI. Incumbents that have lost market share to a DI in the past because of a lack of market orientation, may invest in this capability as part of their learning process and may invest more in a reaction to a subsequent DI.</p>

<i>Study</i>	<i>Character</i>	<i>Industry</i>	<i>Type of innovation initiator</i>	<i>Characteristics of disruptive innovation</i>	<i>Possible implications for company reactions in service industries</i>
				business unit providing for the DI - “When a threatening disruptive technology requires a different cost structure in order to be profitable and competitive, or when the current size of the opportunity is insignificant relative to the growth needs of the main- stream organization, then—and only then—is a spin- out organization a required part of the solution” (p. 176) – setting up a separate unit may not always be the best solution to respond to a DI. Connections with the traditional business are possible; concerning the online division of Barnes & Noble, Gulati & Garino (2000) mention synergies in purchasing, information sharing, branding, cross-promotion, and customer service (Danneels, 2004).	Established firms reacting to a DI, may consider setting up a separate unit to develop and commercialize it. Before making this decision, these firms may execute an extensive cost/benefit analysis, assessing the need for protection against inert-making power of customers (pleading in favor of a separate unit) on the other hand assessing positive synergies with the main business (pleading against a separate unit) on the other hand.
Govindarajan & Kopalle (2006a, b) Topic: measuring and predicting disruptive innovatoin	Empirical	General (using data from 38 Fortune 500 companies)	General	Next to low-end disruptive innovation, high-end disruptive innovation, “i.e., technologically more radical in nature” (p. 13) can exist as well - which is rejected by Christensen (2006), see above. Including high-end disruptive innovation, the authors describe the phenomenon of DI as follows: “A disruptive innovation introduces a different set of features, performance, and price attributes relative	Incumbents may not only be impeded by their most high-margin customers to actively react to a DI, but also by customer segments that are highly profitable because of their size, rather than because of profit margins. These segments may object to DIs which are initially higher priced than the traditional products; the incumbent may be disincentivized to develop such a DI

<i>Study</i>	<i>Character</i>	<i>Industry</i>	<i>Type of innovation initiator</i>	<i>Characteristics of disruptive innovation</i>	<i>Possible implications for company reactions in service industries</i>
				to the existing product, an unattractive combination for mainstream customers at the time of product introduction because of inferior performance on the attributes these customers value and/or a high price—although a different customer segment may value the new attributes. Subsequent developments over time, however, raise the new product’s attributes to a level sufficient to satisfy mainstream customers, thus attracting more of the mainstream market” (p. 15).	because of initially low market value estimates.
Markides (2006) Topic: proposing separate categories of DI, each having different competitive effects, and demonstrating this by elaborating on the distinct categories of business-model innovation and radical product innovation.	Conceptual	General	Business-model innovation: general Radical product innovation: usually new entrants de novo	Christensen (1997a) concerned disruptive <i>technologies</i> , but the DIT was later extended to include other kinds of disruptive innovation as well. Markides (2006) recognizes different sorts of DIs, each having specific competitive effects. Next to disruptive technological innovation, business-model innovation (BMI) and radical product innovation (RPI) are recognized as separate types of disruptive innovation. BMI is described as the discovery of a “fundamentally different business model in an existing business” (p. 20). Because	If confronted with BMI, incumbents may choose not to adopt the innovation because it essentially concerns a different market – not threatening the main business – which may just be unattractive to enter. If the risk of disruption is low, other growth options such as acquiring direct competitors or internationalization can be deemed more attractive. (See also Charitou & Markides, 2003) Besides ignoring the BMI, incumbents have other options such as combining the BMI with the traditional business (in case of absence of hard-to-resolve

<i>Study</i>	<i>Character</i>	<i>Industry</i>	<i>Type of innovation initiator</i>	<i>Characteristics of disruptive innovation</i>	<i>Possible implications for company reactions in service industries</i>
				<p>emphasizing different characteristics in its value proposition, this kind of DI attracts to a different kind of customer than served by the traditional business models and requires different business activities that are often conflicting with the traditional ones. Such conflicts, e.g. British Airways experiencing resistance from its travel agents if the airline company sells its tickets online, may arise even if the company develops a low-cost airline DI in a separate unit.</p> <p>RPIs create new markets in a supply-push way, that are initially flooded by new entrants, most of which fail when a dominant design emerges. The pioneering new entrants are seldom the ones who will scale up the innovation; established companies, capable in brand development, mass-market production and distribution etc., enter just before the dominant design emerges and acquire the main parts of the market with a process similar to disruption: i.e. by developing a product that is good enough in terms of functionality (where startups usually strive for overengineered ones only appealing to early adopters), but</p>	<p>conflicts), substituting it for traditional business, investing in improvements for traditional business, or disrupting the disruption (see also Charitou and Markides, 2003).</p> <p>With RPI, timing appears to be an important factor. Startups and small new entrants de alio desiring to build a possible acquisition target, may enter the industry as early as possible after the introduction of the innovation.</p> <p>If these small companies prefer to stay independent, they may do so by defending their demanding niches of early adopters. If they nevertheless try to scale themselves up after the emergence of a dominant design, they may do so by looking for other sources of external financing and the hiring of scaling expertise (as in this case, the disruption would not be caused by financial disincentives - cfr. Christensen & Bower, 1996 – but by lack of resources, mass-market expertise and by and impeding engineering culture). Incumbents and established new entrants de alio may enter right before the emergence of a dominant design and</p>

<i>Study</i>	<i>Character</i>	<i>Industry</i>	<i>Type of innovation initiator</i>	<i>Characteristics of disruptive innovation</i>	<i>Possible implications for company reactions in service industries</i>
				emphasizing other selection criteria such as price.	scale up the innovation as described. Furthermore, the authors suggest nurturing a network of promising startups – acting as a venture capitalist – to form strategic alliances with them, or to maintain minority stakes.
Tellis (2006) Topic: the role of firm leadership in coping with disruptive technology	Empirical	No specific industries mentioned	General	<p>Absence of clear criteria classifying a <i>technology</i> as <i>disruptive</i>.</p> <p>Performance paths of technologies are not linear and not easily predictable.</p> <p>The secondary selection criterion in a market is not always convenience, simplicity, size or price.</p> <p>The success or failure of an incumbent is linked to its culture, with visionary leadership (willingness to change and to cannibalize existing assets) as an important aspect.</p>	<p>The unpredictability of performance paths and thus of the disruptive potential of new technologies, may lead to more careful and less drastic reactions from companies of all sorts to technological DIs.</p> <p>In industries less fast-paced and less highly technological than the disk drive industry, other differentiation patterns than proposed by Christensen (1997b) may occur.</p> <p>Companies of all sorts with visionary leaders, an adaptable culture, a track record of successful change programs and willingness to cannibalize existing business, may be more likely to react and to react stronger to a disruptive innovation.</p>
Henderson (2006) Topic: the role of market-facing	Empirical	Foods industry	New entrant de novo	“Many disruptive innovations [...] come to reshape the pattern of preferences in a market, and this is particularly difficult for	Companies of all sorts that have stronger market-sensing capabilities (Day, 1994) may react faster to a disruptive

<i>Study</i>	<i>Character</i>	<i>Industry</i>	<i>Type of innovation initiator</i>	<i>Characteristics of disruptive innovation</i>	<i>Possible implications for company reactions in service industries</i>
competences in responding to disruptive innovation				<p>established firms to respond to effectively for reasons that flow directly from the nature of the embedded organizational competences of the firm” (p. 9).</p> <p>More specifically, firms failing to respond lack market-facing competences. An example is a failure to find a lead market for the innovation (as incumbents tend to test the innovation with their current customers or with potential customers to related to the former), thereby overlooking the true potential of the innovation.</p>	innovation and may conceive a more successful value proposition.

Appendix C – Summary of recent, empirical literature on disruptive innovation

<i>Study</i>	<i>Industry</i>	<i>Type of innovation initiator</i>	<i>Characteristics of disruptive innovation</i>	<i>Possible implications for company reactions in service industries</i>
Hüsig & Hipp (2009) Topic: discussion of the disruptive potential of WLAN	Telecommunications	Incumbents, new entrants and incumbents and new entrants jointly	<p>Based on Christensen and Bower (1996), disruptive technologies are (by definition) considered to be “technologies which disrupt an established trajectory of performance improvement downwards, or redefine what performance means” (p. 618).</p> <p>In a minority of cases, incumbents and new entrants cooperated to exploit the new technology studied.</p>	If incumbents and new entrants de novo or de alio compete against each other, cooperation between two or more of these categories may occur at the same time.

<i>Study</i>	<i>Industry</i>	<i>Type of innovation initiator</i>	<i>Characteristics of disruptive innovation</i>	<i>Possible implications for company reactions in service industries</i>
Sood & Tellis (2011) Topic: proposing a new model to analyze disruptive innovation	Utilities (electrical lighting and data transfer), consumer electronics, pharmaceuticals	Incumbents and new entrants	<p>Disruption requires a 'lower technological attack', i.e. the issuance of a new technology is inferior to the dominant technology in a market on the basis of competition, but superior on a secondary characteristic preferred by a niche.</p> <p>Empirically, potentially disruptive technologies:</p> <ul style="list-style-type: none"> - Were introduced as often by incumbents as by new entrants; - Were usually not cheaper than old technologies; - Were rarely actually disruptive. <p>Moreover, when issued by an incumbent, the hazard of disruption appeared to be higher. If a new technology was cheaper, the hazard of disruption was higher as well.</p>	<p>Because incumbents may often be confronted with potentially disruptive innovations that do not tend to actually disrupt, the need for reaction may be perceived as low.</p> <p>Potential new entrants aiming for a market leader position the industry they consider entering, may be deterred to enter to exploit a disruptive innovation as well, because of this low actual disruption rate.</p> <p>Incumbents, trying to preserve their market position, may be more inclined to react strongly towards another incumbent developing a disruptive technology because of the higher threat of disruption. A strong response can also be expected towards a cheaper disruptive technology.</p>

<i>Study</i>	<i>Industry</i>	<i>Type of innovation initiator</i>	<i>Characteristics of disruptive innovation</i>	<i>Possible implications for company reactions in service industries</i>
Madjdi & Hüsigg (2011) Topic: discussion of the response strategies of incumbents to a potentially disruptive innovation in the telecom industry	Telecommunications	Incumbents, new entrants and incumbents and new entrants jointly	<p>Conceptual framework based on Christensen & Raynor (2003) and the original DIT. Disruptive technology and disruptive innovation are used as synonyms.</p> <p>The incumbents were (at least partly) aware of the DIT but decided not to act in a theory-conform way, but rather in function of their strategic context. Theoretical recommendations such as acquisition or cooperation were implemented, but were their results were not superior.</p> <p>Responses reported were:</p> <ul style="list-style-type: none"> - Experimentation with new business-models while focusing on the protection of the core business; - The spin-out of a separate R&D unit by the corporate head; - Flexible, discovery-driven planning approaches that were changed over time; - Response formulation through dedicated, cross-functional teams 	<p>Companies aware of the DIT may still not react in a theory-conform way, especially if the strategic context differs from that of the main empirical situations wherein the DIT emerged.</p> <p>All reported responses can be expected in a service context, especially in integrated, regulated and capital-intensive industries comparable to the telecommunications industry.</p>
Yu & Hang (2011) Topic: proposing four R&D strategies to develop DIs	Technology	General	<p>Conceptual framework based on the original DIT, with a focus on the technological dimension.</p> <p>Remark of a general perception that DIs, because of their relative inferiority, are not a worthy R&D goal and only occur occasionally.</p>	<p>Companies may be likely not to react to disruptive, technological service innovations requiring extensive R&D by adopting the disruption or by disrupting the disruption, because of high technological uncertainty.</p>

<i>Study</i>	<i>Industry</i>	<i>Type of innovation initiator</i>	<i>Characteristics of disruptive innovation</i>	<i>Possible implications for company reactions in service industries</i>
<p>Bergek e.a. (2013) Topic: discussion of the instances wherein incumbents are better suited than new entrants to survive discontinuous technological change</p>	Automotive industry, Gas turbine industry	Automotive: incumbents and new entrants; Gas turbine industry: new entrants de novo	<p>Remark of a need for R&D strategies to facilitate the development of DIs.</p> <p>Conceptual framework based on the original DIT.</p> <p>Remark of a conclusion of the DIT if certain incumbents fail to hold their positions, they are replaced by new entrants.</p> <p>Despite the conditions being present, disruptive innovation did not occur in the cases studied. New entrants and some incumbents failed, while other incumbents maintained their position, which is attributed to a process of creative accumulation. In capital-intensive and complex product industries, incumbents that have a capability in building a broad knowledge base and to integrate old and newly acquired knowledge make it difficult for attackers and other incumbents to gain foothold or to survive.</p>	In service industries that are capital-intensive and complex as well, a similar “attacker’s disadvantage” can be expected, discouraging potential new entrants to enter the industry, even in times of technological discontinuity.
<p>Hüsig (2013) Topic: a cross-country analysis of the impact of a potentially disruptive technology on incumbents in</p>	Telecommunications	Incumbents, new entrants and incumbents and new entrants jointly	<p>Conceptual framework based on the original DIT.</p> <p>Whether incumbents or new entrants were more successful in exploiting the new technology, depended on local regulation.</p>	In more regulated industries, firms may have less niche opportunities disposable to let a DI gain foothold. Therefore, incumbents may be less experienced in screening for DIs and responding to DIs and may therefore be more careful in their reaction. Potential new entrants, seeking to gain foothold in a niche through a DI, may be

<i>Study</i>	<i>Industry</i>	<i>Type of innovation initiator</i>	<i>Characteristics of disruptive innovation</i>	<i>Possible implications for company reactions in service industries</i>
<p>the telecom industry</p> <p>Pervez, Maritz & de Waal (2013)</p> <p>Topic: proposing success criteria for DIs aimed at the 'bottom of the pyramid' (BOP)</p>	<p>Consumer goods industry, automotive industry, financial services industry</p>	<p>Incumbent, new entrants de novo</p>	<p>Conceptual framework based on the original DIT.</p> <p>Proposed success criteria for DIs aimed at the BOP (i.e. low-income consumer markets in developing countries):</p> <ul style="list-style-type: none"> - doing efforts 'beyond selling to the poor', creating value for all stakeholders; - seeing customers as producers; - full embedment into the community to co-develop. <p>(These are mentioned as propositions and remain to be tested).</p>	<p>impeded by such regulation and may choose not to enter the market.</p> <p>Service industry incumbents confronted with a DI aiming at the BOP, may consider the DI a larger threat if it meets the success criteria proposed in this study and react stronger to it.</p> <p>Companies entering a BOP market in the wake of a disruptive innovation, may implement these success criteria if the innovation initiator has not already done so.</p>
<p>Fan & Suh (2014)</p> <p>Topic: proposition of a consumer behavior model explaining why users switch to disruptive information technology (IT)</p>	<p>Mobile phones industry</p>	<p>Incumbents</p>	<p>Conceptual framework (regarding the characteristics of DI in itself) based on the original DIT.</p> <p>Main reasons for users to switch to a disruptive IT, are expectation of the disruptive IT and dissatisfaction with the incumbent IT, with the former having the strongest effect.</p> <p>No significant effect for switching costs.</p>	<p>If a disruptive innovation initiator focuses its marketing efforts on creating a sense of dissatisfaction with an incumbent service, responders adopting the DI may enlarge the market for their version of the DI by focusing on increasing expectations of the DI amongst incumbent customers, as this proves to be a more effective marketing technique.</p> <p>Incumbents being attacked by a DI and having dissatisfied users, may best focus</p>

<i>Study</i>	<i>Industry</i>	<i>Type of innovation initiator</i>	<i>Characteristics of disruptive innovation</i>	<i>Possible implications for company reactions in service industries</i>
				their efforts on lowering relative expectations on the DI

<i>Study</i>	<i>Industry</i>	<i>Type of innovation initiator</i>	<i>Characteristics of disruptive innovation</i>	<i>Possible implications for company reactions in service industries</i>
Marx, Gans & Hsu (2014) Topic: competition and cooperation between new entrants de novo and incumbents in the commercialization of DIs	Automated speech recognition industry	New entrants de novo	<p>Conceptual framework (regarding DI) based on the original DIT.</p> <p>Due to high technological uncertainty, incumbents may initially not cooperate with DI-initiating new entrants de novo, forcing the latter to compete. However, after a period of technological improvement (and/or a possible decline in integrating costs for incumbents), cooperation forms can emerge, advantageous for both sorts of parties to access resources and to reduce competition.</p> <p>Possibly, this result may have been absent in the disk drive industry (Christensen, 1993) because of differences in the business environment: low appropriability regimes may have impeded negotiation and the cost of obtaining necessary assets may have been low for incumbents, favoring competition instead of cooperation as well.</p> <p>Cooperative commercialization maintained the leading position of incumbents within the industry.</p>	<p>Incumbents may in general be inclined to cooperate with DI-initiating new entrant (in order to acquire necessary resources for exploiting a DI and to reduce competition) as long as technological uncertainty and integration costs are low or reduced.</p> <p>However, in certain business environments (with low appropriability regimes and low acquisition costs for necessary assets), cooperation still may be rare or absent, as DI initiators may avoid negotiations to protect their information on their DI, and incumbents do not have to cooperate with an initiator to access necessary assets.</p>

<i>Study</i>	<i>Industry</i>	<i>Type of innovation initiator</i>	<i>Characteristics of disruptive innovation</i>	<i>Possible implications for company reactions in service industries</i>
Pinkse, Bohnsack & Kolk (2014) Topic: the effectiveness of protection levers to protect DIs before reaching commercial success	Automotive industry	Incumbents and new entrants	Conceptual framework building on the original DIT and critiques (e.g. Christensen, 1997a; Danneels, 2004). Public DI protection levers that appeared to be successful, were regulation (obligating mass production), tax incentives and public-private cooperation. Prominent private protection levers were resource allocation, niche occupation, and collaboration-integration	Companies of all sorts responding to a DI by adopting it, may focus on improving the mentioned protection levers to increase their chances of success, or they may try to impede the DI-initiator from using a protection lever to its own advantage (e.g. by flooding and occupying a niche before the initiator can do so). Incumbents, not responding to a DI by adopting it, may try to diminish these protection levers, e.g. by lobbying against protecting regulation and tax incentives.
Karimi & Walter (2015) Topic: the importance of dynamic capabilities in responding to digital DIs	Newspaper industry	New entrants de novo	Conceptual framework (regarding DI) based on the original DIT. Response (adoption) performance to digital DIs is influenced by first-order dynamic capabilities, with capabilities in building digital platforms as mediating variable.	Firms having built first-order dynamic capabilities, for example by reacting to prior DIs, may execute their reaction in a better way. Furthermore, they may have more confidence in their response strategy, which may result in a larger reaction scale and a higher upfront investment. For firms that do not have these capabilities when the disruption threat arises, the opposite may be true.

<i>Study</i>	<i>Industry</i>	<i>Type of innovation initiator</i>	<i>Characteristics of disruptive innovation</i>	<i>Possible implications for company reactions in service industries</i>
Lin, Zhang & Yu (2015) Topic: establishing measurement scales for low-end and new-market DIs	Manufacturing	General	Conceptual framework based on the original DIT. Measurement scale for low-end DIs: focuses on the low-price attraction of disruptive products to existing market customers. Measurement scale for new-market DIs: focuses on the attraction of disruptive products to non-consumers or potential consumers and the building of new markets.	The more disruptive a DI is on either of these scales, the higher the payoffs of actively responding to it for all sorts of companies, the more companies may react and the larger investments in reactions may be.
Chen, Zhang & Guo (2016) Topic: deriving and testing a model for the timing of market entry for a disruptive technology	Hardware manufacturing	General	Conceptual framework based on the original DIT. A disruptive technology may have an ideal niche market entry moment ("D-Day"), and an ideal main market entry moment ("V-Day"), based on its performance and customer utility.	Companies responding to a DI by adopting it, believing that the DI was launched too early in a niche or main market, may try to time its D-Day or V-Day better than the initiator or other responders and enter these markets on a later moment, wasting less resources on commercializing an innovation in an unprepared in market.

<i>Study</i>	<i>Industry</i>	<i>Type of innovation initiator</i>	<i>Characteristics of disruptive innovation</i>	<i>Possible implications for company reactions in service industries</i>
Kranz, Hanelt & Kolbe (2016) Topic: the role of absorptive capacity and ambidexterity in incumbent business model change as response to disruptive innovation	ERP software industry	New entrants de novo	Conceptual framework (regarding DI) based on the original DIT. Reacting to a DI requires incumbents to have absorptive capacity – concerning knowledge on their main market as well as adjacent markets. Nevertheless, incumbents seemed often to lack the latter. Furthermore, incumbents have to balance market knowledge and technology knowledge to avoid underestimating or overestimating a DI's potential market or technology value.	Companies that have developed absorptive capacity concerning an adjacent market of an incumbent, may be more inclined to enter that market in response to a DI because the incumbent may lack the knowledge about that market required to enter it properly. Companies of all sorts reacting to a DI, may do this because of an overestimation of its market or technological potential, caused by an unbalance in absorptive capacity regarding market / technology knowledge. Therefore, they may fail to reach desired outcomes. On the other hand, the number of adoptions of a DI may be lower than expected because of an analogous underestimation.
Wagner (2016) Topic: acquisition as a response option to DIs	High-technology software industry	New entrants de novo	Conceptual framework based on the original DIT. In industries that are not capital-intensive, the total asset value of a new entrant de novo is relatively low, making a total acquisition of that new entrant and all of its developed technologies more likely.	Acquisition can be valid response option for any firm having the resources, acquisition competences and willingness to acquire, provided that the DI is either initiated or adopted by low-capital new entrants de novo.

<i>Study</i>	<i>Industry</i>	<i>Type of innovation initiator</i>	<i>Characteristics of disruptive innovation</i>	<i>Possible implications for company reactions in service industries</i>
Lui, Ngai & Lo (2016) Topic: the relationship between DI adoption, cost of equity, CEO compensation schemes and institutional pressures	Manufacturing	General	Conceptual framework (regarding DI) based on the original DIT. Adopting a DI results for incumbents in a reduced cost of capital. This effect is stronger if the CEO's compensation scheme is incentive-based and if the institutional environment pressures to adopt the DI (e.g. large clients or the U.S. Food and Drug Agency demanding adoption).	Incumbents will be (to a certain extent) financially incentivized to adopt a disruptive innovation, especially when experiencing an already elevated cost of capital. These incentives will be larger when management has an incentive-based compensation scheme and when powerful stakeholders demand such an adoption.
Bohnsack & Pinkse (2017) Topic: tactics for reconfiguring value propositions when initiating or adopting a DI	Automotive industry	General	Conceptual framework based on the original DIT. To prepare a market to adopt a DI, firms need to reconfigure the value proposition common in that market, since a DI is inferior on the basis of competition and superior on a number of other characteristics.	Firms benefitting from more developed marketing capabilities, may be inclined to react sooner to a DI than other firms, that may wait to exploit marketing efforts done by early movers.

<i>Study</i>	<i>Industry</i>	<i>Type of innovation initiator</i>	<i>Characteristics of disruptive innovation</i>	<i>Possible implications for company reactions in service industries</i>
Chen, Zhu & Zhang (2017) Topic: factors influencing the success of disruptive innovations in Chinese SMEs	For the surveys used in the study: no particular industries mentioned, for the case studies: broadband production and e-commerce	General	Conceptual framework based on the original DIT. SME success factors for: <ul style="list-style-type: none"> - new-market DIs: top management support and government support; - Low-end DIs: entrepreneurs' innovation willingness and venture capital funding; - Both types: external knowledge sources and a dominant position of R&D. 	Incumbents confronted with a DI benefitting from one or more of these success factors, may react stronger to the DI because of elevated disruption risk. SMEs reacting to a DI by adopting it, may try to cultivate one or more of these success factors (e.g. involving top management, trying to get access to venture capital funding etc.)
Guttentag & Smith (2017) Topic: evaluating Airbnb as a disruptive innovation through a demand-side approach	Hotel and hospitality industry	New entrants de novo	Conceptual framework based on the original DIT. Focus on the perception of substitutability, of inferiority on the main characteristics of the incumbent service, and of superiority on the DIs own main characteristics. Remark of many coexisting selection criteria being relevant for customers, making the concept of DI only limitedly applicable to Airbnb.	Industries characterized by large groups of coexisting selection criteria, may exhibit many differentiation possibilities, thereby limiting the competitive effect a single DI can have and possibly even impeding substantial disruption at all.
Ganguly, Das and Farr (2017) Topic: marketing strategies for	education (13% of respondents), IT (23%), services (10%), manufacturing (40%), healthcare (3%), other (10%)	General	Conceptual framework based on the original DIT. DI failure is often the result of a failure to break through the preexisting relationship between customers and incumbents (Obal, 2013).	Incumbents adopting a DI may do so by benefitting from synergies with older marketing resources and competences (e.g. an established umbrella brand). Furthermore, as with Bohnsack and Pinkse (2017), firms having superior marketing competences may react

<i>Study</i>	<i>Industry</i>	<i>Type of innovation initiator</i>	<i>Characteristics of disruptive innovation</i>	<i>Possible implications for company reactions in service industries</i>
disruptive innovations			Marketing strategies should familiarize initial customers with the DI and prepare them to use it, and subsequently do the same for main market customers.	sooner to a DI, while others may lag and try to benefit from spillovers of the early marketing efforts (e.g. market familiarization with the DI).

Appendix D – Company reactions to (potentially) disruptive innovations in the staffing industry – as perceived by initiators

<i>Interviewee/company</i>	<i>Observed reactions</i>	<i>Comments</i>
General staffing - matching initiator targeting a specific B2C niche (<i>New entrant de novo</i>)	<p>Incumbents:</p> <ul style="list-style-type: none"> - Multiple incumbents attempted to take the company out of business by reporting compliance deficiencies - One smaller incumbent acquired a software company - One market-leading incumbent developed a similar platform in another market²² - One market-leading incumbent observes the market of the initiator but does not react - One smaller incumbent acquired the initiator <p>New entrants de novo:</p> <ul style="list-style-type: none"> - Tried to set up similar initiatives, but failed <p>New entrants de alio:</p> <ul style="list-style-type: none"> - No reactions observed by interviewee 	Incumbents traditionally used similar technology on a smaller scale, in a sustaining way (to increase the efficiency of their consultants who match candidates to vacancies manually). Using this technology externally was considered as a 'different game'.

²² It is unlikely that this development was a reaction exclusively to the platform of the innovation initiator.

<i>Interviewee/company</i>	<i>Observed reactions</i>	<i>Comments</i>
General staffing - matching initiator without niche strategy (Incumbent ²³)	Incumbents: - No reactions observed by interviewee New entrants de novo: - No reactions observed by interviewee New entrants de alio: - No reactions observed by interviewee	The interviewee certainly believed that other incumbents were observing their venture and may be developing similar initiatives without much publicity, however, since their launch (ca. one year before the interview) no specific company reactions were observed.
Professional staffing - matching initiator (New entrant de novo)	Incumbents: - Negative word-to-mouth marketing campaigns - Purchasing the DI (potentially adapting their business towards it) - One market-leading incumbent acquired the initiator New entrants de novo: - One similar initiative started New entrants de alio: - No reactions observed	Interviewees reported that incumbents had to overcome difficulties in adapting to the innovation because it did not fit their culture or fixed business processes. The incumbent acquiring the initiator did not do this exclusively because of its disruptive elements, as they believed most value is created from follow-up activities and not by core matching activities themselves.
Alternative recruitment method initiator (New entrant de novo)	Incumbents: - Purchasing the DI, without adapting their business model New entrants de novo: - Three similar initiatives started, differentiating themselves by offering complementary services through more advanced technology New entrants de alio: - No reactions observed	Largest incumbents were the first clients of the initiator, as they had the largest budgets to experiment. Smaller incumbents followed the move by their larger counterparts. The initiator underestimated the incumbents' willingness to collaborate.

²³ This initiative is not discussed in the incumbent table because it concerned a fully separate business unit, able to focus fully on its innovative service.

Appendix E – Company reactions to (potentially) disruptive innovations in the staffing industry – as perceived by incumbents

<i>Interviewee/company</i>	<i>Reported reactions</i>	<i>Comments</i>
Market-leading incumbent	<p>First, this company tried to develop all required initiatives internally. When this appeared to be an unviable strategy, top management changed its vision and made the company more relying on external developments (cocreation and acquisition). To do this, the company founded an investment fund and acted as an <i>HR tech</i> incubator.</p> <p>The company interacts with the startups it selects in two ways:</p> <ul style="list-style-type: none"> - The company becomes a client-investor of the startup - The company fully acquires the startup <p>Startup initiatives are developed first on a small scale, on a local level. In a next step, initiatives are exported to another country. Finally, if the second step succeeds as well, the initiatives are scaled up completely. Next to new entrants de novo, the incumbent expected the entry of new entrants de alio (Facebook and Google) into its core markets, possibly in a disruptive way. Nevertheless, this company believed that its network of local agencies and its ability to deliver ‘human touch’ could protect its market position from this threat and would do investments to reinforce these resources.</p>	<p>The company did not react in this way specifically to one of the initiatives described above, but as ca. three years before the interview, a considerable amount of new initiatives in <i>HR Tech</i> emerged, the company believed it had to react this way to monitor that entry stream and to react to the most prominent ones. Which role the company takes, depends on the startup as well: some strive to be fully acquired, while some want to maintain a certain level of independency.</p> <p>The incumbent company considered its size as an advantage and as a disadvantage simultaneously: it was slower to react to the mass emergence of HR innovations, however, when it reacted, it could do so at the largest scale in the industry. Furthermore, its budgets allowed for experimentation, whereas smaller incumbents were believed to have less freedom concerning such a try-out strategy.</p>

<i>Interviewee/company</i>	<i>Reported reactions</i>	<i>Comments</i>
Market-leading incumbent	<p>This incumbent perceived it as difficult to innovate or react to innovations internally because its culture and business processes were not adapted to do so.</p> <p>Therefore, this company relied on startups for to develop innovations (also potentially disruptive ones).</p> <p>The incumbent either took a minority investment which it extended step by step or took a majority investment directly.</p> <p>In all cases, after (re)determining the strategy and business model of the startups, they were kept at arm's length to not be influenced by the corporate culture of the incumbent.</p>	<p>This incumbent perceived the number of new initiatives by new entrants de novo as very high and the investment selection procedure as rather difficult.</p>
Market-leading incumbent	<p>To manage the vast number of innovative initiatives by new entrants de novo, this company set up a dual, innovation-monitoring organization structure. On one side, a corporate-level unit monitored emerging technologies on a broader scale, while on the other side, local business units screened for developments in local markets. In collaboration, both levels decided on which initiatives to react, and in which way. Possibilities were internal development, cocreation with an external party (which may also enter the industry that way), supplier or the DI initiator, and acquisition (using an investment fund and an incubator structure).</p> <p>The two last forms were preferred as internal resources were already highly occupied by maintenance activities.</p> <p>To decide to which innovation must be reacted, the company prioritized each candidate according to the following categories:</p> <ul style="list-style-type: none"> - Disruptive towards the current business model - Enriching towards the current business model - Optimizing towards the current business model <p>Disruptive innovations were given the highest priority.</p>	<p>Although a dual structure existed and was used effectively by the company, the central, corporate-level unit was most prominent in managing innovations. This unit was also firmly supported by the company's CEO.</p> <p>The goal of the corporate-level unit was to leverage the size and expertise and the incumbent in reacting to innovations.</p> <p>The generally right time to acquire a new entrant de novo was perceived as being the moment when the entrant was about to scale up and required additional capital to do so.</p>

<i>Interviewee/company</i>	<i>Reported reactions</i>	<i>Comments</i>
Smaller incumbent	This company refused to invest in or pioneer in disruptive ways of working as it believed that doing so would not match its values as a family-owned, local business. Furthermore, regarding front-end DIs such as automated, external matching, it believed that the majority of its job candidates would not be highly interested, as its candidate pool consisted mainly of blue collar profiles, which were believed not be demanding with respect to this sort of innovations.	/
Smaller incumbent	The potentially disruptive, digital ways of matching considered in this study were perceived as a good additional channel to recruit temporary workers, but not as disruptive towards its business model. Therefore, this company decided to use and to purchase the services of these initiatives.	This incumbent believed that it added most of its value through training and developing its temporary workers (which were generally unskilled students, usually deployed within the high-end catering industry). Therefore, it did consider the follow-up part of the value chain as more crucial than the matching part and did not perceive alternative matching methods as a threat.

Appendix F – Company reactions to (potentially) disruptive innovations in the staffing industry – as perceived by trade associations

<i>Interviewee/company</i>	<i>Observed reactions</i>	<i>Comments</i>
----------------------------	---------------------------	-----------------

Traditional HR industry trade association	<p>Incumbents:</p> <p>This organization confirmed the widespread use of cocreation and acquisition by incumbents in the staffing industry to react to disruptive innovation. Market-leading incumbents were perceived as acting as incubators towards new entrants de novo issuing (possibly disruptive) innovations.</p> <p>Furthermore, it was confirmed that acquired startups often were initially kept at arm's length in order to let them decide independently on their development.</p> <p>This organization also mentioned that some incumbents were developing new, potentially disruptive technology on a more fundamental basis; without making much publicity on this.</p> <p>Lastly, it was confirmed that incumbents, willing to invest in startups, perceived the selection procedure as difficult because of the high number of these new entrants.</p> <p>New entrants de novo:</p> <p>No specific observations</p> <p>New entrants de alio:</p> <p>Facebook and Google were perceived as main threats. However, it was perceived as too early to observe their strategy in reacting to disruptive opportunities in the local staffing industry.</p>	<p>The disadvantages of treating newly acquired startups as separate business units, were perceived as low in general:</p> <ul style="list-style-type: none"> - Synergies in purchasing were perceived as low - Markets of startups were perceived as small compared to incumbents' growth needs - The cost structures of startups were perceived as significantly different from those of incumbents
<i>HR Tech</i> trade association	<p>Incumbents:</p> <p>This organization, as well, confirmed the widespread use of cocreation and acquisition by incumbents in the staffing industry to react to disruptive innovation. Market-leading incumbents were perceived as acting as incubators towards new entrants de novo issuing (possibly disruptive) innovations.</p> <p>Larger incumbents are perceived as being more aggressive in this strategy, as they have larger budgets allowing better for experimenting</p>	<p>Concerning the need for new entrants de novo to react to a DI, these new entrants were believed to have the advantage that HR departments are generally conservative and slow in adopting innovations, giving companies more time to develop their offerings.</p> <p>This organization believed that the main rationale for Facebook and Google to enter the staffing business, was</p>

behavior. Visionary leadership at top management level was also considered as beneficial for this response strategy. Moreover, most startups were believed to be willing to be acquired. Lastly, it was confirmed that incumbents do have other investment options besides investing in innovations and potential DIs (such as acquiring competitors), however, disruption was believed to be too important for incumbents to be ignored.

access to personal data of candidates rather than the profits of this industry itself.

New entrants de novo:

When reacting to a previously issued DI, it was perceived as important for new entrants de novo to react in time (i.e., before a large company – a large incumbent or a large new entrant de alio) entered the market of the DI.

Secondly, two-sided user experience was perceived as important, giving startups entering a DI market later, the possibility to gain foothold if it was able to offer a better experience for its users than existing initiatives.

New entrants de alio:

- Facebook and Google: it was perceived as too early to comment on their entry strategies.
 - Small, local startups from other industries may enter the HR industry, however, this usually does not occur in the staffing segment. Hence, these cases will not be discussed.
-

Appendix G – Company reactions to (potentially) disruptive innovations in the legal services industry – as perceived interviewees

<i>Interviewee/company</i>	<i>Reported/observed reactions</i>	<i>Comments</i>
Market-leading incumbent	<p>Regarding alternative legal services: This incumbent believed that such services were currently not perceived as problematic, but could be so in the future, as the company, given its high fixed costs, could not afford a decline in sales volumes. No specific reactions were taken yet.</p> <p>Regarding law firms integrated with large professional services providers, this incumbent reacts by aiming at customers at a higher segment of the market and by relying on superior HR policies.</p> <p>Regarding legal (front-end) chatbots: This incumbent was very active in R&D activities regarding artificial intelligence (AI) technology. However, it did primarily do so to use it in an internal, efficiency-increasing and thus sustaining way. It does not perceive a need to react to front-end chatbots, as this concerns another market: the legal issues this firm resolves are too unstructured to be resolved by a chatbot, even if it would provide more than just introductory legal advice.</p> <p>Regarding both innovations: This incumbent did not believe that the specific regulation of the industry could influence innovation or reactions to innovation. On the other hand, bar associations were said to be active in preventing that lawyers' activities would be reduced to their regulatory monopolies – for example, if law firms delegate all their work to paralegals and technology expect for court pleadings.</p>	<p>To research AI, this incumbent has acquired a stake in a AI-developing company, to prevent that this firm would be able to increase the performance of its systems based on the legal knowledge input from the incumbent, to subsequently license its technology to smaller firms.</p> <p>The company believes it is one of the few that is able to do R&D activities about AI, because of its large scale.</p> <p>This company believes that law firms even larger than itself, are not concerned about AI, as they are more able to access larger revenues streams just through their traditional way of doing business.</p> <p>This company states that this is the first time that technology with major potential impact on competitive dynamics enters the industry. Before this, no learning effects have been obtained.</p> <p>Investing in technology protects the company not only from disruptors, but also from associates that drop out of the company to start a competing spin-off, since this will be harder to do once the business of the company depends on technology that is not able to be moved or copied.</p> <p>This company observed to specific reactions from non-initiating new entrants de novo or de alio.</p>

<i>Interviewee/company</i>	<i>Reported/observed reactions</i>	<i>Comments</i>
	Furthermore, this company believes that in general, local law firms (that may be more threatened by these innovations) do not react to them, because they lack the knowledge and funds to do so.	
New entrant de novo (with respect to alternative services) / Market-leading incumbent (with respect to front-end, legal chatbots)	<p>Regarding its alternative legal services:</p> <p>This company has observed a law firm making the opposite move – building a broad legal service provider next to its traditional law business. Furthermore, all large, professional service providers have started a similar, independent law firm next to their own businesses.</p> <p>Regarding front-end, legal chatbots:</p> <p>This firm, helped by its ties with the technology division of the professional services business, has been developing AI systems and chatbots for a longer period of time. However, this firm prefers not to introduce these to clients or to involve these systems in marketing campaigns, as it wants to avoid the creation of overexpectations. The company has not changed this strategy after the introduction of the front-end, legal chatbot.</p> <p>This company does not believe that the currently existing, front-end chatbot is a threat to their business, because (1) its technology is not advanced enough to cover enough legal queries yet and (2) the current clients of the company do not demand such an innovation, as their queries are more complicated and unstructured.</p>	The company does not rule out the use of front-end chatbots in the future, but rather for marketing purposes (guiding clients to the right experts and to improve the digital customer experience) than as real core business. Although its initial success, this company was skeptical about the potential of the front-end, legal chatbot.
New entrant de novo (with respect to alternative services) / smaller incumbent (with respect to front-end, legal chatbots)	<p>Regarding its alternative legal services:</p> <p>This company remarked no reactions to its new service model, from any kind of company (incumbents, new entrants de novo, or de alio).</p> <p>Regarding its front-end, legal chatbot:</p>	This company guesses that there might be a connection between the collaboration willingness of a law firm and the seniority of most influential legal professionals. Recent graduates and professionals close to their retirement, seem to be less concerned about new technologies. However, the category in between seems to

<i>Interviewee/company</i>	<i>Reported/observed reactions</i>	<i>Comments</i>
	<p>This company has made significant marketing efforts promoting this innovation, and it has been observed by other legal service providers with much attention.</p> <p>Some traditional legal services providers have requested collaborations with this company after the launch of its chatbot. At the moment of the interview, this company was still considering whether it would engage in such collaborations or not.</p> <p>This company has not remarked any firm trying to develop a similar chatbot. Furthermore, no reactions from new entrants of any kind have been observed.</p>	<p>educate itself more about new technological possibilities and seem more likely to request collaboration.</p>
Bar association	<p>Regarding both innovations:</p> <p>The bar association, given its two objectives (see comments) considered itself as a party which is required to react to such changes which may have an impact on the legal profession.</p> <p>Regarding deontology, the bar association made sure that when its members reacted to an innovation, they did so in a deontologically acceptable manner.</p> <p>Regarding the facilitation of a proper professional practice, the bar association engaged in collective negotiations for the purchasing of certain technology which was deemed necessary for every bar member.</p> <p>Protecting the general interest of the lawyer profession, the bar association motivated its members to engage in innovative behavior, when innovations emerged that could hollow out the service package normally provided for by lawyers.</p>	<p>The objectives of the bar association are:</p> <ul style="list-style-type: none"> - To watch over compliance of its members with the deontological code for lawyers - To make proper professional practice possible

Appendix H – generic interview guide (Dutch)²⁴

Introductie

Voorstelling van het onderzoek:

- Mezelf nog eens voorstellen aan de geïnterviewde: student UA – Handelsingenieur in de Beleidsinformatica.
- Ik schrijf een masterthesis over innovatie in staffing / legal services
- Specifiek gaat deze thesis over soorten innovatie die een (grote) impact kunnen hebben op gevestigde, traditionelere spelers, zoals bijvoorbeeld digitale fotografie een grote impact had op Kodak – disruptieve innovaties.
- Bij dit soort innovaties is het belangrijk om te weten hoe traditionelere spelers zullen reageren. Dit is goed om te weten voor de ontwikkelaar van de innovatie, maar ook voor traditionele spelers zelf om te benchmarken.
- Daarnaast is het belangrijk om te weten of het concurrentieel landschap ook in andere opzichten verandert ten gevolge van de innovatie, bijvoorbeeld door het toetreden van spelers uit andere sectoren of door bijkomende startups.
- Echter, in de wetenschappelijke literatuur wordt zeer weinig gerapporteerd over dienstensectoren wat dit betreft.
- Vandaar dit onderzoek, om de wetenschappelijke theorie aan te kunnen vullen en de praktijk exploratieve handvaten te kunnen aanreiken met betrekking tot dit probleem.
- Het onderzoek is wel nog erg verkennend, wat betekent dat de output ideeën voor handvaten gaat zijn, die in een later onderzoek getest kunnen worden, eerder dan definitieve en geteste handvaten.

Anonimiteit garanderen:

- Ik wil graag nog eens benadrukken dat ik niet op zoek ben naar vertrouwelijke details over lopende projecten van jullie onderneming zelf, maar enkel een algemeen beeld probeer te vormen op sectorniveau.

²⁴ This interviewguide is included in Dutch because all interviews were conducted in Dutch. Furthermore, this is a generic interview guide not tailored to the specific situation of the interviewee and its organization. The interview guide served as a basis for semi-structured interviews. Interviews with trade associations mainly consisted of the validation of intermediary conclusions and of statements from earlier interviews, and are therefore not included in this generic interview guide.

- Toch zal alle informatie die jullie mij kunnen meegeven in dit interview, op een strikt correcte manier behandeld worden.

Het proces van deze thesis:

- Wat ik tot nu toe gedaan heb voor dit onderzoek, is een literatuurstudie: ik heb nagekeken wat er in de wetenschappelijke literatuur te vinden is over reacties op dit soort ‘disruptieve’ innovaties.
- Nu ben ik een fase verder, waarin ik via interviews zo veel mogelijk inzichten uit de praktijk probeer te verzamelen. Zo probeer ik de standpunten te kennen van traditionele spelers, maar ook van ondernemingen die als eerste bepaalde innovaties ontwikkeld hebben, en tenslotte ook koepelorganisaties.
- Tenslotte ga ik deze interviews analyseren en verwerken tot een definitief rapport.

Agenda:

- Gesprekstijd vermelden
- Eerst gesprek over innovaties en hoe daarmee omgegaan wordt in de sector;
- Vervolgens gesprek over de sector zelf en diens specifieke kenmerken.

Main section

a) Vragen voor ontwikkelaars van een DI:

- Kunnen jullie nog eens kort samenvatten wat jullie onderneming juist doet?
- Hoe zijn jullie op dit idee gekomen?
- Hebben jullie (voor het opstarten of later, formeel of informeel) een concurrentieanalyse gemaakt?
- Indien ja: welke (soorten) ondernemingen werden opgenomen in deze analyse (i.e. welke soorten ondernemingen beschouwden jullie als concurrenten)?
- Verwachtten jullie dat jullie innovatie bepaalde bestaande bedrijfsmodellen irrelevant of oncompetitief had kunnen maken?
- Welke reacties verwachtten jullie bij concurrenten in jullie analyse op jullie innovatie? Waarom hadden jullie specifiek deze reacties verwacht?
- (Indien wel of geen concurrentieanalyse gemaakt:) hoe hebben (deze) concurrenten (uiteindelijk) gereageerd?

- Hebben jullie ook significante reacties opgemerkt van bedrijven die niet waren opgenomen in deze analyse?
- Uit welke sectoren kwamen de bedrijven die uiteindelijk hebben gereageerd?
- Vermoedden jullie dat er (nog andere) startups zouden verschijnen in reactie op jullie innovatie?
- Zijn deze startups effectief verschenen? Indien ja, hoe zijn zij met jullie innovatie omgegaan?

b) Vragen voor incumbents / geen ontwikkelaars van een DI: (focus op wat, niet op hoe)

1. Zijn jullie in de laatste jaren regelmatig bezorgd geweest over innovaties of nieuwe bedrijfsmodellen die schadelijk zouden geweest kunnen zijn voor jullie bedrijfsmodel? Over welke innovaties ging dat concreet?
2. Hoe wordt daarover overlegd binnen de onderneming? (Door welke personen, op welke tijdstippen: ad hoc, als agendapunt op maandelijkse meeting etc.)
3. (Indien het om een beperkt aantal innovaties gaat, splits uit per innovatie:) Welke opties hebben jullie overwogen om te reageren? Waarom deze en niet andere?
4. Werden daar actiepunten aan gekoppeld? Indien ja, welke? Waarom zijn deze punten gekozen en niet andere?
5. Zijn deze actiepunten ook uitgevoerd? Waarom wel/niet?
6. (Indien er niet voor werd gekozen om de disruptie 'aan te vallen' door het eigen model te versterken of zelf te innoveren): waarom werd er niet agressiever gereageerd? Voelden ze zich niet bedreigd? Waarom niet?
7. Hebben jullie concurrenten vergelijkbare acties zien ondernemen?
8. Indien zij andere acties hebben ondernomen: weten jullie waarom zij voor een andere aanpak hebben gekozen? Indien zij dezelfde acties hebben ondernomen: zouden ze dat om dezelfde redenen gedaan hebben?
9. Hebben jullie gemerkt dat er in navolging van de innovatie, nieuwe startups verschenen zijn? Indien ja, hoe zijn jullie daarmee omgegaan?
10. Hebben jullie gemerkt dat er in navolging van de innovatie, gevestigde spelers uit andere sectoren, tot jullie sector zijn toegetreden? Indien ja, hoe zijn jullie daarmee omgegaan?
11. (Indien ze met een groot aantal innovaties geconfronteerd worden): hoe beslissen jullie welke gemonitord dienen te worden en welke niet? (Vragen b4 - b9 herhalen voor degene die wel gemonitord worden).

c) Vragen voor iedereen, over de sector:

1. Hoe zouden jullie de sector(en) zelf benoemen waarin jullie onderneming actief is?
2. Hoe zouden jullie deze sector(en) omschrijven? Heeft (hebben) ze specifieke eigenschappen?
3. Denk terug aan vijf jaar geleden, rond 2013 (datum aan te passen aan oprichtingsdatum van de onderneming, indien ontwikkelaar van een DI). Wie waren toen de belangrijkste spelers? Waar focusten zij op? Wat was toen belangrijk om competitief te zijn? Hoe zag de typische waardeketen eruit? Wie waren de typische klanten en leveranciers? Op basis van welke variabele(n) werd voornamelijk geconcentreerd?
4. Welke zaken uit vraag 3 zijn veranderd doorheen de tijd / ten opzichte van nu?
5. Werden naar jullie mening bepaalde klantsegmenten vijf jaar geleden *te goed* bediend, in de zin dat de in deze sector aangeboden diensten van een hogere kwaliteit waren dan strikt noodzakelijk voor deze segmenten (en er geen meer geschikt alternatief beschikbaar was)?
6. Werden naar jullie mening bepaalde segmenten *niet* bediend, in de zin dat bepaalde partijen gebruik hadden willen maken van de diensten aangeboden binnen deze sector, maar om een bepaalde reden (gebrek aan een aangepast aanbod, te hoge prijs, etc.) er geen toegang toe hadden?

Conclusie

- Belangrijkste punten nog eens herhalen (indien tijd over)
- Bedanken voor gesprek
- Laten weten wat de vervolgstappen zijn in het thesisproces
- Voorstellen om een kopie van de thesis / executive summary op te sturen.
- Vragen of ik geïnterviewde opnieuw mag contacteren als ik bij het verwerken van het interview nog een bijkomende vraag heb over iets was gezegd geweest is.
- Telefoonnummer en emailadres achterlaten.