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A micro-level study of research impact and motivational diversity

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Abstract
What motivates academics to pursue technology and knowledge transfer has been a growing area of research with recent calls for a deeper understanding of this issue. Technology and knowledge transfer are being positioned by policymakers and universities as part of the wider research impact agenda. Against this background, the purpose of this paper is to explore at a micro level the motivational diversity among academics in pursuing research impact. Set in a business school context, our study uses self-determination theory and an interpretive approach. We focus on the main motivations to be an academic in terms of the core psychological needs of autonomy, competence, and relatedness, the consequent intrinsic or extrinsic motivations for research impact, and the attitudes towards institutional measures for this practice. We identified six research impact groups, *practice-oriented researchers, business seekers, instrumentalists, compliers, theoreticians, and relationship facilitators*. We also found some friction between the motivations to be an academic and for research impact.

Keywords Technology transfer · Knowledge transfer · Motivation · Research impact · Self-determination theory · Business schools

JEL Classification O32

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1 Introduction

How to realise research impact (RI) through knowledge and technology transfer is an ongoing policy challenge (Morgan Jones et al., 2017; Oancea, 2013). Different research evaluations such as SBIR in the United States (Chowdhury et al., 2022), the Research Excellence Framework (REF) in the United Kingdom (UK) (Weinstein et al., 2019), ExIn in Germany (Menter et al., 2018), VQR in Italy (Rebora & Turri, 2013), CEI in Spain (De Filippo et al., 2016), START in Austria (Seus & Buhrer, 2017), and PBRF in New Zealand (Buckle & Creedy, 2022) have attempted to demonstrate and estimate RI from investments in public research from different perspectives. There also has been an increase in empirical studies on the appropriate indicators to measure RI (Feller, 2017; Joly & Matt, 2022; van Drooge & Spaapen, 2022).

In simple terms, RI is defined as the "demonstrable contribution that excellent research makes to society and the economy" (UKRI). Chandler (2014) decomposed it by considering multiple conceptual perspectives. To begin, impact is *manifested* in diverse forms such as change, influence, or creation of benefits. Also, RI is made on specific *areas*, for instance a technological field, an industry, or public health, and has a *scope* of repercussion at global, community, or other societal levels. Morgan Jones et al. (2017) argued and justified a similar multifaceted conceptualization to consider different disciplines and topics. Alla et al. (2017) added what they call *avenues*, which are the elements that are directly impacted by research, for example processes, activities, and understanding. Finally, Reed (2018) explained that research could be applied by others to generate impact, which means that RI could be *direct* or *indirect*. A comprehensive example could be research-based, artificial intelligence algorithms jointly developed by business and computing scholars that are applied to business systems by a software manufacturer (indirect impact) to develop decisional logics (avenues) that derive in reducing the time that products are delivered to specific customers (manifestation) by logistic companies (area) worldwide (scope). Importantly, RI has to be *demonstrable* by evidence of the generation of impact and the contribution of specific research of the academics to it (Alla et al., 2017; Chandler, 2014; Morgan Jones et al., 2017; Reed, 2018).

From a micro level, from the researcher's perspective, the RI practice normally requires much time, skills, and risk-taking to jointly work with collaborators from practice. This involves the generation of ideas, research planning, execution, and impact realization (Bastow et al., 2014; Daley & Shinton, 2014; Kelleher & Zecharia, 2021; Pettigrew, 2001, 2011). RI encompasses technology and knowledge transfer mechanisms and channels (Alexander & Childe, 2013) and is often complemented by other engagement activities such as advice, writing reports, and facilitating workshops to build networks and strengthen long-term relationships (Bastow et al., 2014; Jackson, 2014; Korff et al., 2014; Pettigrew, 2011; Watermeyer, 2012).

The growing focus on RI is creating institutional tensions for universities as they rely on highly motivated academics to realize institutional outcomes based on individual efforts (Chubb et al., 2017; Weinstein et al., 2019). The impact agenda is interpreted by some academics as an additional pressure and a violation of their role identity and a threat to motivation (Chubb et al., 2017; O'Kane et al., 2020). Other academics have directly questioned its value (Chub & Reed, 2018; Pettigrew & Starkey, 2016; Watermeyer, 2015, 2016).

The motivation of academics to pursue knowledge and technology transfer has been a theme of ongoing research interest (see D'Este & Perkmann, 2011; Krabel & Mueller, 2009; Perkmann et al., 2013). Intrinsic and extrinsic motivations and factors such

as age, education attainment, academic status, research productivity, etc. have been used to better understand it (Olaya-Escobar et al., 2017; Neves & Brito, 2020). The results point to a "divergence" of academic responses (Olaya-Escobar et al., 2017:724). This is relevant since there has been a paucity of micro-level studies (McAdam et al., 2021). Accordingly, there have been calls for research to deepen our understanding of this important issue (Fini et al., 2019; Neves & Brito, 2020) and consider the differences in the motivation among academics who work under seemingly similar situations (Watt & Richardson, 2020).

Our paper responds to these calls by exploring the motivational diversity among academics towards RI in a single academic department. We used an interpretive approach and self-determination theory (SDT), which is based on the core psychological needs of autonomy, competence, and relatedness, intrinsic and extrinsic motivations, and the predispositions to favour or not new requirements (Ryan & Deci, 2017). Our study was set in a business school context which comprises numerous disciplines (MacIntosh et al., 2017; Pfeffer & Fong, 2002; Pettigrew, 2001; Tranfield & Starkey, 1998) and presents ongoing concerns on RI positioning and practice (Barley, 2016; Davis, 2015; Pettigrew & Starkey, 2016; Romme et al., 2015). Previous studies have also identified that business school academics engage in different RI-related activities to assist other departments (Wright et al., 2009; Nicotra et al., 2021), including supports for academic entrepreneurship (Walsh et al., 2021).

Against this background, the main contribution of our study is to extend our understanding of researcher motivations and RI at the micro level. Specifically, we identify the composition of their motivations to be an academic and how this relates to their motivation concerning RI and their attitude towards RI conducive contexts. In doing so, we have identified six groupings of academics, namely *practice-oriented researchers, business seekers, instrumentalists, compliers, theoreticians, and relationship facilitators*. This is a fundamental, person-centred view to interpret attitudes and behaviours on RI that uncovered sources of not only congruence but also incongruences with the main academic motivations that can be difficult to reconcile. We also build on our constructs to appreciate both the rich diversity in business schools and its inherent managerial challenges from a novel stance, and to suggest measures to foster and support RI from a group perspective.

Our paper is organised as follows. Our literature examines academic motivation, motivational diversity, academic motivation for RI, and SDT. We then present the research methodology and the findings for each group. We conclude the article with a discussion of our contributions and provide some managerial recommendations.

2 Literature considerations

The section is divided into three parts. The first explains the concept of academic motivation and introduces why this is an issue for RI and when considering academic diversity. The second part develops in detail motivation for RI. This expands the previous part in terms of diverse pressures, tensions, and challenges that affect academics at the micro level. This is also used to determine the characteristics of the theory to use in the study. We explain the theory, i.e., SDT, in the third part of the section.

2.1 Academic motivation and motivational diversity

Academic motivation can be conceptualised as "the overall processes that give rise to faculty members initiating, sustaining, and regulating goal-directed behaviours" (Daumiller et al., 2020: 3). The nature of scientific work (Merton, 1968), peer group recognition, publications, and career advancement (Bozeman & Mangematin, 2004; Cunningham et al., 2016; Mansfield, 1995) are some of the motivational factors for scientists as they seek to push knowledge boundaries. However, at the micro level, the expansion of the third mission in universities through technology transfer and research commercialization (Benneworth et al., 2015; Cunningham & Miller, 2021) is creating tensions for many academics in terms of how they allocate their time to realise wider research impacts (Cunningham & Miller, 2021; Link et al., 2008). Furthermore, some barriers prevent the realization of RI such as lack of experience, dedicated institutional support, resources, and suitable industrial partners (Bruneel et al., 2010; Cunningham et al., 2014; Galan-Muros & Plewa, 2016; O'Reilly & Cunningham, 2017; Siegel et al., 2004), which are more critical for early career researchers (Estabrooks et al., 2008). Consequently, the environment can negatively influence the motivation of academics concerning RI (Link et al., 2008; Grimpe & Fier, 2010).

In examining motivation among academics to engage with industry, D'Este and Perkmann (2011) highlighted two basic groups -the ones motivated to engage to pursue their research and those that are motivated by the potential to pursue entrepreneurial-based activities. Nonetheless, they also acknowledged the complexities of fully understanding the motivations to undertake knowledge and technology transfer. In fact, academics are motivated to engage by a myriad of factors (Civera et al., 2020; Hayter, 2011, 2015; Lam, 2011). Moreover, studies have highlighted that motivation varies in individual scholars depending on the domain or task and the context of work, ultimately affecting performance and well-being (Daumiller et al., 2020; Gagne & Desi, 2005; Orazbayeva et al., 2021; Watt & Richardson, 2020). From a diversity perspective, academics react differently to the same demands (Finch et al., 2016) and incentives (Finch et al., 2016; van de Burgwal et al., 2019). The issue of diversity is exacerbated because multiple identities cohabit within single departments; consequently, attitudes and responses to new managerial requirements tend to differ at that operational level (Boyer, 1990; McInnis, 2010; Owen-Smith & Powell, 2001; Whitchurch, 2010).

2.2 Academic motivation for research impact

There are limited studies that specifically focus on academic motivation for RI. Based on these studies some clear themes emerge (see Table 1).

First, the *background of the academics*. Focusing on trends from a disciplinary perspective, Chubb (2014) highlighted that intrinsic motivations to do research -for example, to influence practice in the social sciences, create new products in the earth sciences, or engage the public in the arts and humanities- help to explain academics' conceptualisations and approaches to RI. Attitudes are also affected when academics distinguish between applied and basic research (ibid.). Finch et al. (2016) argued that the (lack of) background in industry of the researchers can influence their willingness to produce research (not) actionable for practice, the groups they seek legitimacy, and the types of journals they target. Relatedly, female scientists tend to be more orientated to teaching and research than transferring knowledge to the market (Menter, 2022; Parker

Table 1 Motivations for RI; illustrative studies, themes, subjects, and designs

Author(s)	Main focus	Main theme for our review	Units of analysis	Target groups of academics	Main data sources and research approach
Chubb (2014)	Fits between impact agenda, motivations to do research, and RI	Background of the academics	Faculties of arts and humanities, social sciences, physical sciences, and life and earth sciences from a university	No specific target groups	Interviews - Inductive
Finch et al. (2016)	Antecedents that influence the choices of types of research and target journals (theoretical or applied)	Background of the academics	Business departments from different types of universities (e.g., research-intensive and undergraduate-oriented)	Accomplished publishers	Interviews - Inductive
Menter (2022)	Impact of gender diversity on university innovation in the three missions	Background of the academics	Multiple universities in Germany	No specific target groups	Secondary information on levels of innovativeness and proportions of academics by gender - Deductive
Parker et al. (2017)	Environmental factors and traits of women academic entrepreneurs	Background of the academics	General literature review with no specific units of analysis	General literature review with no specific target groups	Existing literature - Narrative review
Chubb et al. (2017)	Emotional responses to the impact agenda	Impact agenda	Faculties of arts and humanities, social sciences, engineering and physical sciences, and life and natural sciences from two research-intensive universities in the UK and Australia	Mid-senior career researchers, with relevant grant-writing experience. Many had been reviewers of applications and several authored impact case studies for assessment purposes	Interviews - Inductive
Chubb and Reed (2018)	Impact agenda effects on research bidding, quality, and culture	Impact agenda	Used the fieldwork of Chubb et al. (2017)	Used the fieldwork of Chubb et al. (2017)	Interviews - Inductive

Table 1 (continued)

Author(s)	Main focus	Main theme for our review	Units of analysis	Target groups of academics	Main data sources and research approach
Collini (2012)	Critiques of the short-term economic view of universities	Impact agenda	General conceptual monograph with no specific units of analysis	General conceptual monograph with no specific target groups	Existing literature - Critical position
Kidd et al. (2021)	Epistemic vices created by the impact agenda	Impact agenda	Used the fieldwork of Chubb et al. (2017)	Used the fieldwork of Chubb et al. (2017)	Interviews - Inductive
Manville et al. (2021)	Perceptions of the effects of the REF rules and procedures in research	Impact agenda	Multiple departments from different universities	No specific target groups	Survey, interviews, and focus groups - Deductive, analyses of means (report)
McCowan (2018)	Impact trajectories and critiques of the formal evaluation mechanisms of the impact agenda	Impact agenda	General conceptual article with no specific units of analysis	General conceptual article with no specific target groups	Existing literature - Critical position
Watermeyer (2016)	Effect of the marketized impact agenda on emotions and the academic environment	Impact agenda	General conceptual article with no specific units of analysis	General conceptual article with no specific target groups	Existing literature - Critical position
Weinstein et al. (2019)	Perceptions of the effects of the REF rules and procedures in research	Impact agenda	Multiple disciplines in different universities	No specific target groups	Survey - Deductive, analyses of means (report)
Francis (2011)	Analysis of dilemmas, difficulties, and practices created by the impact agenda	Impact agenda and interaction with policy and practice	General conceptual article with focus on education research	General conceptual article with no specific target groups	Existing literature - Critical position
Jerome (2020)	Misalignment between formal assessments of the impact agenda and real impacts	Impact agenda and interaction with policy and practice	An academic from an education department	An academic who authored an impact case study, who is also the author of the article	Author's own experience - Critical position

Table 1 (continued)

Author(s)	Main focus	Main theme for our review	Units of analysis	Target groups of academics	Main data sources and research approach
Mooney (2012)	Contextualisation of knowledge transfer and situating its learning by individuals and universities	Impact agenda and interaction with policy and practice	Faculty of Arts and Humanities from a university	No specific target groups	Survey and participant observation - Inductive and critical position
van de Burgwal et al. (2019)	Extrinsic incentives that influence effort and performance in the interaction with different types of stakeholders	Impact agenda and interaction with policy and practice	Faculty of life sciences from universities in the Netherlands	Professors and principal investigators	Survey - Deductive
Leyden and Menter (2018)	Analysis of the work of Vannevar Bush based on non-linear innovation processes	Interaction with policy and practice	General conceptual article with no specific units of analysis	General conceptual article with no specific target groups	Existing literature - Critical position
Sormani et al. (2021)	Extrinsic incentives to engage with society in joint research projects	Interaction with policy and practice	Business and economics departments from Latin American, European, and Australian universities	Mostly researchers with experience in collaboration with society	Survey - Deductive
Chikoore (2016)	Impact agenda effects on attitudes and behaviours about RI	Evaluation	Faculties of physics, health, engineering, social sciences, and arts and humanities from different universities	No specific target groups	Interviews and survey - Inductive
Feller (2017)	Expansion of the assessments of public-funded research from economic to societal impacts	Evaluation	General conceptual article with no specific units of analysis	General conceptual article with no specific target groups	Existing literature - Critical position

Table 1 (continued)

Author(s)	Main focus	Main theme for our review	Units of analysis	Target groups of academics	Main data sources and research approach
Oancea (2013)	Critiques to the top-down government approach to evaluate RI and the pressures it generates	Evaluation	Faculties of humanities, social sciences, and physical and engineering sciences from a university	Senior researchers	Interviews - Inductive
Morgan Jones et al. (2017)	Perceptions of benefits and burdens of the REF preparation of impact cases and assessments	Evaluation	Multiples disciplines in different universities, mainly in England but also in Scotland and Wales	Researchers working on impact case studies for assessment purposes	Focus groups, interviews, and survey - Inductive with predefined themes

et al., 2017), mainly due to a low external orientation, lack of networks, and a minimal entrepreneurial experience (Abreu & Grinevich, 2017; Cunningham et al., 2017b). However, when they overcome these issues, they usually are very efficient and good leaders (Cunningham et al., 2022a).

Second, the *impact agenda itself* creates an emotional dissonance among academics of various theory-driven disciplines (Chubb et al., 2017), for example, humanities and theoretical physics, in terms of academic freedom, autonomy, and ultimately identities (Watermeyer, 2016). Other academics, the less and mainly in the natural and social sciences, feel a moral responsibility to create impact and see it as inextricably linked to research and their contributions to society. There are also views that partially agree with the instrumental impact agenda. Some researchers note that scholars must keep independence to do research intrinsically motivated by theory development since it could give rigour to applied studies (van de Burgwal et al., 2019; Francis, 2011) or produce an unpredictable impact in the future (Jerome, 2020; McCowan, 2018). For academics undertaking applied studies, Chubb and Reed (2018) saw a risk that the relatively new extrinsic RI benefits could generate undesired behaviours such as sensationalist research proposals when expressing the estimated impact of their projects (Kidd et al., 2021; Jerome, 2020). Some researchers could try RI just to gain short to medium-term benefits for their careers (Mooney, 2012). The RI agenda could also cause time conflicts (Jerome, 2020; Mooney, 2012), the crowding out of conscientiousness and judiciousness for research (Collini, 2012; Kidd et al., 2021), and low prospects to getting highly rated articles from practice-based topics and the difficulties of their interdisciplinary nature (Manville et al., 2021; Weinstein et al., 2019). In fact, the change to a market-oriented audit culture can lead to a more stressful environment with a loss of skills for theoretical research (Chubb & Reed, 2018; Jerome, 2020; Watermeyer, 2016).

A third strand of research focuses on the *interaction with policy and practice*. For example, Mooney (2012) exposed some negative factors for the low interaction with external parties in the co-production of RI in the arts and humanities, particularly the concerns of academics that RI is not entirely under their control and the repercussions of this on their careers. Moreover, Francis (2011) noted that policymakers tend not to take seriously academic work if it is not aligned with their interests. She further argued that scholars could rely on partners (e.g., think tanks) for brokerage and engagement with practice due to the time and skills required for RI (Jerome, 2020; Mooney, 2012). In contrast, access to funds, data, expert networks, and pecuniary reasons are typical motives to undertake joint research with practitioners (van de Burgwal et al., 2019; Sormani et al., 2021). From a systemic perspective, Leyden and Menter (2018) emphasised the social networks necessary to enrich the heterogeneity of relationships and increase the capabilities of interaction among the entities that produce theoretical and applied research in innovation processes that are inherently non-linear and initiated at any point of the network.

Finally, the *evaluation of RI* is another theme that affects RI motivation (Chikoore, 2016; Francis, 2011; Jerome, 2020; McCowan, 2018; Oancea, 2013). Scholars have broad and fluid views about the manifestations of impact, mostly depending on the discipline, but the formal assessments are too linear and rigid to represent this diversity (Chikoore, 2016; Feller, 2017; Oancea, 2013; Morgan Jones et al., 2017). Government evaluations tend to affect independence and create conflicts regarding the audiences that academics want to help, their public engagement activities, and dissemination channels (Chikoore, 2016). Also related, Oancea (2013) highlights that assessments and appraisal systems in some universities employ short-term measurements of the visibility of the researchers, topics, and findings. Furthermore, some academics may focus on areas in which impact is

driven by applied questions and easily attributable, at the expense of "blue skies" research and systemic topics (Morgan Jones et al., 2017).

Universities rely on highly motivated academics to undertake RI (Chubb, 2014; Chubb et al., 2017; Weinstein et al., 2019), but many of them have resisted this relatively new, unregulated, and somehow optional practice (Chandler, 2014; Chubb, 2014; Chubb et al., 2017; Pettigrew & Starkey, 2016; Watermeyer, 2015, 2016). As explained above, there are numerous motivational aspects that create pressures, tensions, and challenges at the micro level to do RI, for example the incompatibility between theoretical and applied research (Chubb, 2014), that the success of RI does not entirely depend on the researchers (Mooney, 2012), concerns about academic freedom (Watermeyer, 2016), and the inadequacy of some evaluation mechanisms (Oancea, 2013). 'Impact is therefore either critical to academic agency -inherently related to motivation and responsibility; or is instead feared, where control and identity are lost through the experience of impact agenda' (Chubb & Reed, 2018: 559).

As appreciated in Table 1, these studies reveal important contextual trends and general interpretations of RI in broad units of analysis and predefined target groups. They are valuable to guide interventions at policy level and high levels of leadership in universities. However, our interest lies in the composition of motivations at micro level within departments since RI is materialised by their diversity of individuals. Moreover, departments have freedom to formulate their own managerial initiatives to encourage and support RI.

We also noted that it is undesired and difficult to make all academics undertake RI, mainly because theoretical research is necessary, the RI practice itself is very challenging, RI exacerbates conflicting priorities, and some individuals could find the profession undermined and the new pressures unpleasant. This raise concerns on diversity and change potential, and points to measures driven by the characteristics of the individual.

The corpus of research in this area is fragmented and each study focuses on the explanation of the effects of specific factors. Although they are excellent entry points to study RI, this also implies that there is a need of broader studies to explicate RI from an integrated perspective. Connectedly, we have not identified the full use of a through theoretical framework to empirically explain in detail diverse interconnected aspects constitutive of motivation since most of the studies are either inductive, or deductive about few factors, or conceptual critiques of the impact agenda.

In conclusion, we needed a broad theoretical framework that not only helps to comprehensively understand different motivations regarding RI at a micro level but also guides in the assessment of the change potential of the academics and the formulation of managerial measures for different groups of individuals. SDT explicitly meets all these requirements. SDT states that individuals could differ in their motivations for the same activity based on diverse psychological factors, and that each person can react differently in front of the same context conducive to that activity due to the way they take decisions and personal traits. Thus, SDT advocates to understand diversity before designing personalised measures to foster and support change.

2.3 Self-determination theory

SDT explains how different sources of motivation affect the psychological needs of individuals, and how this is altered by factors external and internal to the person, which impact the sense of volition and initiative and ultimately the cognitive development and choices of people (Ryan & Deci, 2000b).

2.3.1 Motivations and psychological needs

SDT differentiates between intrinsic and extrinsic motivations (Ryan & Deci, 2000a; Sansone & Harackiewicz, 2000). *Intrinsic* motivation is when individuals perform an activity because they find it satisfying, interesting, and/or directly generates a valuable outcome. *Extrinsic* motivation is when individuals undertake an activity to obtain an indirect outcome. The theory also asserts that people have three basic psychological needs to motivate the self and act, namely *autonomy, competence, and relatedness* (Ryan, 1995; Ryan & Deci, 2017). Autonomy is being the causal agent of our decisions and actions, competence regards our expertise and control of activities, and relatedness is the bidirectional connections and attachments to valued people. Two sub-theories of SDT explain how intrinsic and extrinsic motivations can be shaped by the environment that affects the basic needs: cognitive evaluation theory (CET) and organismic integration theory (OIT) (Deci & Ryan, 1985a).

2.3.2 Cognitive evaluation theory

CET states that the context impacts the intrinsic motivation to perform activities perceived as valued. For instance, threats and deadlines might reduce one's sense of autonomy (Amabile et al., 1976), whilst well-communicated and constructive feedback can boost one's perceived competence (Vallerand & Reid, 1984). Extrinsic rewards may negatively affect intrinsic motivation if they become the main driver for action (Deci, 1971; Pritchard et al., 1977).

2.3.3 Organismic Integration Theory

OIT posits four types of extrinsic motivation -external, introjected, identified, and integrated. They are based on the degree that the locus of causality is internalized within the self (Ryan et al., 1985) and, accordingly, the distance that behaviour stands from autonomy (Ryan & Connell, 1989), as a continuum (see Fig. 1).

Externally regulated motivation produces behaviour with no autonomy because it obeys the mandate of extrinsically imposed rewards or punishments. Introjected behaviour conforms to external demands but to avoid shame and hence preserve or build self-esteem. In behaviour

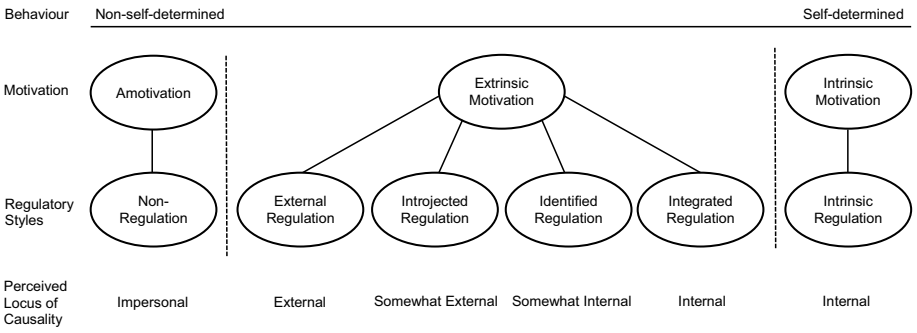

Fig. 1 Taxonomy and continuum (organismic integration theory). Source: Adapted from Ryan and Deci (2000b) with permission of the American Psychological Association

through identification, there is a personal acceptance of the underlying relevance of the activity. Integrated regulation occurs when the activity and extrinsic directives are appraised concerning our beliefs and assimilated into the self as something usual, but still the self-determined behaviour and outcomes remain distant from our main interests.

According to OIT, motivations to perform activities perceived as unvalued can be manipulated to become internalized. However, exclusive reliance on measures that support competence and relatedness normally leads at most to introjection (Deci & Ryan, 1985a). To reach integration, there should also be initiatives which give a rationale for the activity and foster autonomy (Deci et al., 1994). In contrast, people will be amotivated for unvalued activities in contexts that assault the three basic needs, especially competence (Bandura, 1996; Pelletier et al., 1999).

2.3.4 Causality orientation theory

Contexts affect basic needs, which affect intrinsic and extrinsic motivations regarding activities (Deci & Ryan, 1985a). Connectedly, our literature review on academic motivation for RI presented issues on diversity and change potential of groups under similar contexts. In this line, contextual measures would have varying effects because each individual can understand and interpret them differently and this shapes the decisions they make and how they behave when confronted with competing activities. Accordingly, causality orientation theory (COT), another sub-theory of SDT, explains three ways in which individuals generally react to contexts and prioritize activities (Deci & Ryan, 1985b). First, autonomous orientation, which occurs in people who choose what they do and how they act based on the analysis of the activities, the context, and their personal preferences and capacities. They are usually motivated by intrinsic factors but are also open to identifying relevant aspects of activities and integrating external directions. Second is controlled orientation, in which individuals behave according to imposed contingencies. Controlled people are driven by extrinsic goals in external and introjected forms. Third, impersonal orientation, which is manifested in people who feel that the outcomes of their work are out of their control, cannot adopt effective behaviours, prefer the status quo, and lack intentionality. They are mostly amotivated and overwhelmed by the context and their self.

Importantly, each person has a different mix of the three orientations. Although one normally predominates, any of the three can become more noticeable depending on specific domains (Ryan, 1995; Vallerand, 1997). Causality orientations and classic traits such as adaptability, loyalty, and persistence also help to understand psychological states and attitudes in specific scenarios, which may or may not be perceived as congruent with individuals' main orientations and may or may not lead to behaviours in line with the predominant or imposed environment (Ryan & Deci, 2017; Ye et al., 2013). For instance, highly autonomous and capable people may become very amotivated about an unvalued domain that is immersed in a context that they comprehend as externally controlled. This could incite them to take an impersonal posture and influence that context or seek a different one (Hodgins et al., 2006; Ryan & Deci, 2017).

3 Research methodology and design

The purpose of this study is to examine at the micro level the motivational diversity among academics in pursuing academic RI. Our research is interpretive as we explored the diverse meanings that academics give to RI (Yanow & Ybema, 2009). We developed a case study (Cunningham et al., 2017a) of a business school in a research-intensive university in the UK that took a strategic decision to enhance its RI because of the REF exercise of 2014. Our rationale for choosing a business school as a critical case (Yin, 2014) was that they are populated by a marked diversity of scholars across different disciplines and associated norms and expectations (MacIntosh et al., 2017; Pettigrew, 2011; Pfeffer & Fong, 2002; Tranfield & Starkey, 1998) with ongoing concerns about RI positioning and practice (Barley, 2016; Davis, 2015; Pettigrew & Starkey, 2016; Romme et al., 2015). We believed, and then confirmed, that this critical case would be a source of important diversity of motivations for RI. Each of the 49 participating academics specializes either in accounting, economics, entrepreneurship, finance, information systems, innovation, marketing, operations, or organizational studies, and were at different career stages.

3.1 Data collection

We used triangulation of various sources of data to strengthen the validity of the results (Denzin, 1989). We conducted semi-structured interviews with the academics in 2014, read their profiles on the university website and social networks such as Google Scholar, Academia.edu and LinkedIn, and read their journal articles and other information about them online. Each interview took between 30 and 90 min, were face-to-face, tape-recorded, and transcribed in approximately 615 pages. The interview guide focused on their understanding of RI, their past RI-related activities and achievements, plans for the future, personal and institutional barriers and enablers, opinions on the role and initiatives of the government and university regarding RI, and personal feelings about RI. Ethical approval was obtained from the university, which guaranteed the anonymity and confidentiality of study participants.

We complemented our data by reading policies, procedures and news about the university/department and relevant organizations such as funding bodies, Research England, the Chartered Association of Business Schools, and other academic and professional bodies to verify the context of work. We also had numerous informal conversations with the participants and observed their work between one and six years, depending on whether and when they left the university to work in other institutions. The longitudinal observation of their activities and the ongoing follow-ups of their web presence have been important for appreciating their career paths and any change regarding RI. This helped to corroborate and refine our findings (McCoy, 2017; Thomson & McLeod, 2015).

3.2 Data analysis

Regarding the analytical process, we used the interactive model of Miles and Huberman (1994) (see Fig. 2). We condensed the data by writing self-memos on the interviews and other information relevant to motivation at the micro level. As an outcome of this stage, we realised the utility of incorporating the main motivations of the academics to contrast and better understand motivations for RI as well as to appreciate the possibilities to drive and equip academics to self-regulate their work to perform this complex and relatively

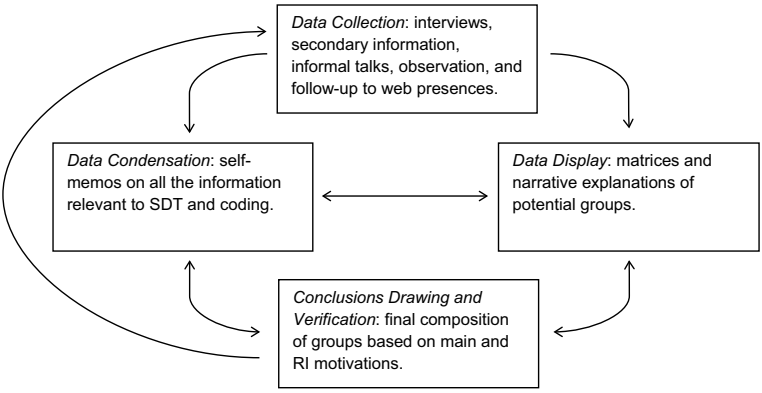

Fig. 2 Interactive model for qualitative analysis. Source: Adapted from Miles and Huberman (1994)

new role in an environment characterized by competing goals and limited resources (Lord et al., 2010; Neal et al., 2017). These contrasts took us to aspects analogous to intrinsic and extrinsic motivations, competences, autonomy, relatedness, and causality orientations. At this point we found that SDT could be a proper theoretical lens, which helped us to structure and formalise our constructs. We identified participants with similarities across the SDT components to build the initial groups and displayed their characteristics in matrices and written narratives. Our groupings were drawn from considering main motivations and basic needs as antecedents to shed light on the motivations and causality orientations towards RI. For example, main motivations and basic needs (i.e., competences, autonomy, and relatedness to materialise main motivations) are more aligned to RI in some groups than in others, which can also inform about potential managerial measures and the possibilities to drive academics to this practice. We finally used NVivo and coding based on the SDT components to confirm and refine the groups (see Table 4 in Appendix 1). We did various iterations of the whole exercise jointly with rounds of data collection to extend and verify the constructs until we achieved theoretical saturation (Corbin & Strauss, 2014).

4 Findings

We have used the structure suggested by Patton (2015) to report qualitative research. It includes relevant antecedents for each category which are then used, with the support of a theoretical framework, to explain attitudes and behaviours about a social phenomenon or practice. In our study, (1) the antecedents are aspects related to the main motivations to be in academia, including the main motivations themselves, the activities to materialise their main motivations, background of the individuals, and their consequent basic needs. Next, (2) we consider these antecedents to reflect on RI. First, we identify if the academics feel an intrinsic or extrinsic motivation towards RI, or if they feel amotivated. We also consider, according to COT, any similarity or conflict between the academics' causality orientations and traits, and their perceptions of potential RI-conducive contexts, with the aim of obtaining autonomously oriented staff and avoiding counterproductive results. Based on our analysis, we identified six groups of academics -practice-oriented researchers, business seekers, instrumentalists, compliers, theoreticians, and relationship facilitators (see Table 2).

Table 2 Academics, main career motivations and basic needs, and RI motivations and orientations

	Discipline areas - Quantity of academics	Career stages - Quantity of academics	Gender - Number of academics	Main motivation to be academics	Composition of basic needs regarding the main motivation			Motivation regarding RI	Causality orientation regarding RI
					Autonomy	Competences	Relatedness		
Practice-Oriented Researchers	Economics – 1 Entrepreneurship – 2 Information systems – 1 Innovation – 1 Marketing – 1 Operations – 3	Professor – 2 Reader – 1 Senior lecturer – 1 Lecturer – 5	Female – 1 Male – 8	Intrinsic: Research useful for and used by practice and the community	There are not problems that affected the realization of their main motivation	• Collaborative research with practice • Identification of value for practice • Relationship building • Risk tolerance • Multitasking and time mgmt.	Outside and inside academia	Intrinsic	Autonomous
Business Seekers	Economics – 3 Innovation – 1 Marketing – 2	Professor – 3 Senior lecturer – 1 Lecturer – 2	Female – 0 Male – 6	Extrinsic: Non-research services to gain financial rewards and prestige outside of academia	Teaching buyouts and school pricing policies block the realization of their main motivation	• Practical knowledge of industry • Research of aspects that nurture their future services • Demand generation • Consulting and similar services • Multitasking and time mgmt.	Mainly outside academia	Extrinsic by identification	Autonomous

Table 2 (continued)

	Discipline areas - Quantity of academics	Career stages - Quantity of academics	Gender - Number of academics	Main motivation to be academics	Composition of basic needs regarding the main motivation			Motivation regarding RI	Causality orientation regarding RI
					Autonomy	Competences	Relatedness		
Instrumentalists	Information Systems – 1 Marketing – 2 Strategy – 1	Professor – 1 Reader – 1 Lecturer – 2	Female – 0 Male – 4	Extrinsic: Promotions and notoriety in academia by performing activities in line with the changeable demands of the school and higher education sector	There are no problems that affected the realization of their main motivation	• Adaptation • Goal-oriented, political and doers • Intensive use of their past knowledge and network of collaborators • Strong focus on personal priorities	Mainly inside academia, but becoming balanced	Extrinsic by integration	Autonomous

Table 2 (continued)

	Discipline areas - Quantity of academics	Career stages - Quantity of academics	Gender - Number of academics	Main motivation to be academics	Composition of basic needs regarding the main motivation			Motivation regarding RI	Causality orientation regarding RI
					Autonomy	Competences	Relatedness		
Compliers	Accounting – 1 Economics – 2 Entrepreneurship – 1 Marketing – 4 Operations – 3 Organizational studies – 2	Professor – 4 Senior lecturer – 2 Lecturer 7	Female – 7 Male – 6	Intrinsic: Research to inform theory, with some minimal interaction with practice	Further interaction with practice required by the university and funding bodies	• Theoretical research • Externally and non-externally funded research • Very committed to all traditional academic roles: research, teaching, and administration • Multitasking and time mgmt.	Mainly inside academia	Extrinsic by external regulation	Controlled

Table 2 (continued)

	Discipline areas - Quantity of academics	Career stages - Quantity of academics	Gender - Number of academics	Main motivation to be academics	Composition of basic needs regarding the main motivation			Motivation regarding RI	Causality orientation regarding RI
					Autonomy	Competences	Relatedness		
Theoreticians	Accounting – 1 Economics – 4 Entrepreneurship – 1 Finance – 2 Information Systems – 1 Organizational studies – 4	Professor – 3 Senior lecturer – 4 Lecturer – 6	Female – 3 Male – 10	Intrinsic: Research to inform theory, with no interaction with entities outside academia	There are no problems that affected the realization of their main motivation	• Theoretical research • Research that almost does not need to collect primary data • Research that does not need external funding • Networking with peer researchers	Inside academia	Amotivated	Impersonal

Table 2 (continued)

	Discipline areas - Quantity of academics	Career stages - Quantity of academics	Gender - Number of academics	Main motivation to be academics	Composition of basic needs regarding the main motivation			Motivation regarding RI	Causality orientation regarding RI
					Autonomy	Competences	Relatedness		
Relationship Facilitators	Entrepreneurship – 3 Organizational studies – 1	Senior lecturer – 2 Lecturer – 2	Female – 4 Male – 0	Intrinsic: Being useful for practice and the community by linking practitioners either to researchers (subgroup 1) or academic programmes (subgroup 2)	There are no problems that affected the realization of their main motivation	• Knowledge of the academic and practitioner environments • Translation and alignment of work in academia and practice • Subgroup 1 knows about research and external funding, and already works in RI-related activities	Outside and inside academia according to the work of subgroups 1 or 2	Subgroup 1: Intrinsic Subgroup 2: Amotivated	Subgroup 1: Autonomous Subgroup 2: Impersonal

4.1 Practice-oriented researchers

4.1.1 Main motivation

The general motivation in this group is intrinsic to being useful for practice and the community. They focus on academic research that is connected to current issues in society. They feel as much devotion to organizations outside academia as to the universities in which they work. A lecturer in innovation (interviewee eight) remarked, "if you can establish this [two-way interaction] where it's a win-to-win situation for both sides, then it's quite interesting because there's also a sense of satisfaction for you, that out of the time that they're providing to [your research], you can really help them to improve their work". They constantly apply for external funding, either jointly with practitioners or to calls opened by practitioners to work with them. The interaction with practice is usually heavy, starting with the definition of aims, passing through the design, planning, fieldwork, and analysis, and in many cases persuading and helping practitioners to take on board the findings and contributions. This was illustrated by a lecturer in entrepreneurship (interviewee seven), "you can generate new ideas [with practitioners] and you want them to validate what you've been saying… if you say that you've survey items and they respond that you [should] do a regression, which is on that variable, and you go. And then they say, 'No that's not what it's like; it doesn't make any sense to our industry'. In which case, you've to question the premise of the whole study… it's better if you've them involved throughout the process".

They manifested that must cultivate strong relationships with practitioners beyond their projects and under the pressure of other obligations such as teaching and administration. Sometimes they must first deliver value for practice and then work on their academic research and publications. Connectedly, their work is also risky since some of their efforts to create ties with practice may have no results. They must define courses of action with great independence in complex and dynamic competing situations. A professor in information systems (interviewee 25) told us about his experience, "we've done a lot of work pro bono over the past five years. We've done that, understanding that that would lead to something bigger… when you do things pro bono and people let you off it's a bit raggedy at the edges… like I say, [setting practice-oriented research] is a hobby. You're doing it at your own risk".

We found their path in academia is influenced by one or a combination of factors, including the practical and interdisciplinary orientation of their PhD or the research centre where they started their career, a high specialization in one industrial sector or functional area, and some industry background. Their work gives them very well-developed feelings of autonomy, competence, and relatedness to both the university and the world outside of universities, even more nowadays that their work is acknowledged by the higher education system and their school by adding it to the promotion criteria and supporting it via special external and internal funding.

4.1.2 RI motivation

The practical value of their research and their strong interaction with practitioners indicate that their main activities are in or are very close to the RI domain, thus representing an intrinsic motivation for it. They behave with a notorious autonomous orientation about the topics they research, which practitioners they work with, and how they nurture their relationships with different stakeholders. This is the approach of a professor in operations (interviewee 41), "you can extend or reinterpret that theory and develop it for a different

sector… it's having many balls in the air and looking for connections and transferability… you've to understand your stakeholders and how to develop trust relationships, so you can give them something which may not be of fantastic value to me, but that give me access to something that I can make a lot of value out of".

4.2 Business seekers

4.2.1 Main motivation

These academics feel extrinsically motivated by financial rewards and gaining prestige outside academia. They are predisposed to deliver consulting and other paid services to practitioners, mainly based on their research and vast knowledge previously gained in industry. A professor in marketing (interviewee two) commented, "my former boss at a university said that there are only two reasons for doing something. One is reputation and the other one is money, ha. While I don't fully agree with that, there is some truth about it".

Their research is usually grounded on their industrial background, including the creation of theoretical frameworks to investigate issues relevant to companies or to policy. A few take this road because their research focuses closely on one industry or because their first job was in an academic group with a working model that included paid services to practice. We found they have several methods for becoming known in the practitioner community, including writing practice-oriented books, organizing and participating in seminars and conferences, providing informal advice, and having a heavy web presence. Some of them even run consultancy businesses in parallel to their jobs in academia.

Given their extensive industry profiles, they tend to have well-developed feelings of competence and relatedness mainly to outside organizations. However, they do not have enough time to implement their aims due to unfavourable teaching buyout policies to deliver these services which is only possible for very high levels of income.

What is more, we found that school pricing policies drastically reduce their monetary compensation from the income they could generate. A professor in marketing (interviewee 40) stated, "when it comes to payment… the University gets 50 per cent [after deducting non-salary direct costs]. The rate also must be lower than a full-time consultant because you're from the University and that's expected. So, although you do the same as a full-time consultant you've to pitch on the lower level and then 50 per cent is taken off. Then you've to pay taxes. I haven't done consulting since I came [to the University], but we will have to see". These environmental aspects seriously curtail their main motivation and their possibilities for autonomy and self-regulation.

4.2.2 RI motivation

Although their target activities are somewhat related to RI, their objectives are not. They accept the value of RI and have the necessary competencies and relationships to perform it, but it is not a priority. However, they do not rule out trying RI in the future. Thus, they feel some degree of identified motivation for RI, but it is subordinate to their main motivation. Also, time pressures create conflicts between their academic roles and the ones they would prefer such as consulting. The disadvantageous position of RI is exacerbated because although it has become effective to climb the career ladder, it is not the only way and is still optional. A professor in economics (interviewee 16) said, "The bottom line in this job is publications. And you've to look after that first. If you don't do that then you're

in troubles… My constraint in my job is the REF, and it's tough publishing these days… I mean, the reason I don't do [RI] is because I haven't the time". We believe that the facilitation of their central activities could create synergies with RI and potentially nurture the strong autonomous orientation of these experienced and purposive individuals and generate a sense of integrated extrinsic motivation for RI.

4.3 Instrumentalists

4.3.1 Main motivation

Academics in this group have a main extrinsic motivation for promotions and prestige within academia, as highlighted by a lecturer in marketing (interviewee 46), "if I want to reach a professorship, I've to follow the policies we've in the UK: the impact project… my agenda is that in five years I must [progress from lecturer to] professor, otherwise I'll leave academia." They focus on aspects relevant to their goals, which change over time depending on higher education and school demands. They are goal-oriented, political, networkers, and doers. A professor in information systems (interviewee 36) notes, "the higher education system [has been a major] barrier [to RI], where they specifically determine what you should do, what is rewarded and what isn't. For example, a lot of informal advice may be valuable, but why should you do it? What is in it for you? … you may just decide that you're going to publish your top journals, without having any impact whatsoever, and who cares, because you still may manage to get some promotion or good post somewhere… contrary to what I said, there is, at least, a change [regarding RI]".

Each of them prioritizes different roles to become promotable, but research is at centre stage for all of them. They do not need to be so knowledgeable about the activities they focus on, notably research, to be achievers under the evaluation criteria of the academic system. Also, they can be extremely quick to do tasks that are not central to their objectives. This approach is reinforced by collaboration with academic organizations such as research bodies and journals. They have very good track records of publications in well-ranked journals, but little history of interactions with industry and funding bodies. To be efficient in producing and publishing articles they cleverly use their networks in the academic community and intensively exploit their theoretical or methodological areas of expertise. For instance, some concentrate on a few journals for an important part of their publications, contribute to several co-authored articles through the application of a specific analytical method, or publish a similar type of research several times applied to different contexts.

Finally, we found a very strong sense of autonomy and competence in planning, coordinating, and getting things done, plus a highly developed relatedness to strategic parties within academia. They also have some interactions outside universities according to their needs, for example, to get guest speakers or minor support for their research.

4.3.2 RI motivation

As mentioned, RI has in recent years become an important factor for promotions and is facilitated through diverse funding. RI has therefore won a prominent place in their agenda. A lecturer in marketing (interviewee 47) stated, "I'm interested in [the RI] path, but if I'm allowed to say, in a more opportunistic way… I'm encouraged to produce impact case studies which, now, are something I like in my CV, bringing in some income to the business school so I can apply for promotions. Things like that can boost my career and help me to climb the ladder".

Their adaptive views of academia and the current contextual measures in favour of RI have certainly created a powerful extrinsic motivation towards it. They choose and perform their activities in a highly autonomous fashion, having already started RI-related activities, convinced of its value and under a well-integrated sense of regulation. They have already realised some results, such as securing external funding to research and work with firms.

4.4 Compliers

4.4.1 Main motivation

These individuals have a general intrinsic motivation for research to inform theory. They also adhere to other traditional academic roles, including teaching, administration, and getting external research funding. They have worked in universities for their entire careers and try to be all-round academics. They are heavy collaborators in research communities, including roles in academic bodies, organizing conferences, and editing academic journals, special issues, and research-oriented books.

Although part of their research could have some practical connotation, they do not think the connection with practice is strong. They also focus on articles that could be considered for REF assessments, which they believe to be incompatible with impact generation. A professor in organizational studies (interviewee 30) observed, "you've that double-edged sword… you want to provide something useful and feedback that is relevant to [external organizations], but you also want a four-star journal article. To get that article, you must provide a critical perspective that discovers something novel. The two don't necessarily sit well together".

We found that they have a good sense of competence and relatedness but mostly within academia. Their relationships with practice are mainly aimed at gaining access to interviewees, data, and ideas for topics, with not much reciprocity from the researchers except for some organization and participation in seminars, sporadic invited presentations, and minimal informal advice. A professor in organizational studies (interviewee five) explained an experience about that, "[some industry bodies] appoint me and then I don't hear from them ever again… I had an hour conversation [with an industry association] and that was it… there have been no fees, no contracts, no projects, no deliverables, nothing like that… my research may have practical implications but I'm not the one providing them… it's a system of favours. They might give me some time [for interviews] and then they might invite me to facilitate a conference or workshop or give a paper". We also found that some believe that practitioners do not consider academics as part of their group, are not interested in academic papers, and do not like the non-exclusivity of research results.

4.4.2 RI motivation

There is a clear mismatch between their career focus and RI, including their research which is not so suitable for practice and their underdeveloped relationships with stakeholders outside universities. Certainly, RI is not one of their goals in their busy agenda. Nevertheless, most are willing to accommodate some aspects related to practice when required by funding bodies or their school in addition to their usual academic research, for example, practitioners in the steering committees of their projects and far-reaching plans for the dissemination of results.

Overall, this group we found behaves with moderate autonomy and a controlled orientation and feels an external extrinsic motivation to address a few RI-related activities, but they are very far from structured and purposive RI. A professor in marketing (interviewee 27) commented, "what doesn't make much sense is to put pressure on the academics who work together within the project, just for having these projects… It's encouraging to work together with firms, but I don't want to work on projects just for having them on the CV, or whatever… It's not the data, it's not the money that motivates me to work in this project, but it's mainly that the University expects this. I don't have too high expectations associated with the project". We believe that under the right measures they could improve their competencies and relatedness concerning RI. Since they accept the value of RI, a logical objective should be to make them feel extrinsic motivation by identification as a path to a more integrated autonomous orientation.

4.5 Theoreticians

4.5.1 Main motivation

The academics in this group are characterized by intrinsic motivation for research to inform theory. They do basic research but, generally, do not need to engage with practice to get data. They rely on, for instance, publicly available datasets and texts, financial information of companies, or theoretical simulations. Sometimes they interview easily recruited individuals or share data within their research network. Furthermore, some write papers that do not need data such as literature reviews, developments of theoretical models, or formulations of research roadmaps. A professor in organizational studies (interviewee 20) observed, "I haven't been able to undertake empirical research since 2005… that was my last empirical work that I personally undertook. So, since then the only thing I've been able to do is work with pre-existing datasets".

We found that they have been academics throughout their careers, and several have non-business/management degrees as relevant components of their formation. They perform research, teaching, and administration but do not generate external income because they do not need much funding due to what they research and the ways they access data. They also think that their subjects, topics, and contributions are highly theoretical, abstract, and difficult to connect to issues important to current businesses, therefore they do not have an immediate or significant practical impact. Some speculate that practitioners have further reasons to not work with them, including that practitioners know their industries better, potential breaches of secrecy, and that the research results may not be specific to their firms. These scholars have good feelings of competence and relatedness but within academia. Notably, their sense of autonomy is very high and in line with their view on research.

4.5.2 RI motivation

The clear incompatibility between external engagement activities and the path they follow in their careers, the marked disconnection between their research and current practice, their lack of relationships with bodies outside academia, along with their non-business background mean that they feel very amotivated regarding RI. Although RI has become important in the school and there is some pressure to undertake it, RI is definitively not on their agenda. They have a very highly impersonal orientation to RI. This is the position of a professor in finance (interviewee 14) about RI, "it isn't the academic's job to think about non-academic applications… that isn't our advantage…

that isn't our distinctive feature… if you're a good academic, you're good at inventing new things or creating new knowledge, and not about how it can be used to improve A or B because you don't know about A or B". We consider that efforts to foster and support RI for them would bring no benefits or be counterproductive due to the very strong autonomous orientation that they employ in pursuing their main intrinsic objectives. A professor in organizational studies (interviewee 28) stated, "Well, if they start telling me that [we must do RI], then I would say, 'no', or I would leave".

4.6 Relationship facilitators

4.6.1 Main motivation

These academics are driven by an intrinsic motivation of being useful for practice and the community. They achieve this by connecting and facilitating interactions between academics and practitioners, through both research and non-research endeavours. They see their role as highly useful because they can align and translate different interests, expectations, ways of work, and technical languages. This predisposition is driven by the fact that they have worked in industry and have many contacts there, but they are not research active. A lecturer in entrepreneurship (interviewee 35) explained her dual role, "that culture clash between the real world and universities is one that if you've only worked in universities or you'd only worked in the real world, you'll never understand, but, because I've worked in both I can set expectations… for instance, [our contract with a company] would be ready in a year… they're resigned but still happy to go ahead because I've translated the internal processes of the University so that at least they understand. It's like having a foot in each camp. It's being a 'pracademic'".

Along the same lines, a lecturer in entrepreneurship (interviewee 17) commented, "[a company required] management training and wanted the school to quote on it… I had to bring the work and set up the relationships… also, among academics, they develop jargon. They know what they mean… but I've seen in [companies] that they were just talking their jargon, inside their company, to one another… there should be communication layers. Some people will use me in that role".

We found that their background makes them very positive about their autonomy, competence, and relatedness to both academia and non-academia. These feelings are reinforced by the importance given by the school to RI. However, their specific role is considered as a supplementary criterion for promotion, which is a relevant factor to explain why they have not been promoted since their appointment. The focus of their work differs depending on if they have research qualifications. Staff with PhDs mainly embrace collaborations that require funding, including applied research, writing reports and executive training, whereas those without PhD concentrate on nurturing academic programmes, for example through project-based dissertations, consultancy projects, and guest speakers.

4.6.2 RI motivation

Their activities are connected to RI. This is stronger for the individuals with research education, but the others can still establish initial contacts for RI and complement these relationships through their usual engagement activities. The latter feel neither competent

in research nor relatedness to researchers, which is exacerbated because some academic work is disconnected from practice. They face two challenges to participating in research collaborations with industry. One is to basically understand research and impact, and how they are related. The other is to encourage their participation in research bids. Those with research degrees behave with an autonomous orientation to choose and plan their activities and feel an intrinsic motivation to collaborate with RI, whilst those without a PhD are currently amotivated and feel an impersonal orientation about RI.

However, the academics with no research qualifications are willing to work in RI activities if they perceived participants as genuinely interested in creating value, as a senior lecturer in organizational studies (interviewee 42) pointed out, "[I'd collaborate] if something interests me and gets me excited about the subject, and that could be anything. If I see benefits to society, the economy, or the local environment… then, 'great, yes, that's interesting, I'll have a go'… [I wouldn't collaborate] if it seems like people doing something because they've to, because they're following a procedure… and they aren't really motivated". If well channelled, the people in this group could develop an autonomous orientation and intrinsic motivation concerning RI and be useful for the other groups.

5 Discussion

There have been calls to deepen our understanding of RI that incorporate elements of formal and informal knowledge and technology transfer (Fini et al., 2019; McAdam et al., 2021; Neves & Brito, 2020) and why academics respond differently when they experience the same or similar contextual situations (Finch et al., 2016; van de Burgwal et al., 2019; Watt & Richardson, 2020). The fragmented literature on RI has mainly focused on identifying factors and explaining how they affect motivation to pursue it (e.g., Chubb, 2014; Civera et al., 2020; Lam, 2011) but there continues to be a lack of a comprehensive understanding as to what motivates to engage in and sustain RI efforts from a fundamental basis centred on the person. The contribution of this study is that it illuminates how the main motivations to be an academic explain the motivations for RI. Consequently, there are differences at the micro level among individuals concerning RI. We used SDT as a theoretical lens to unpack the underpinning main motivations and the compositions of basic needs. Our study highlights how these antecedents shape the RI motivation across six groups and the causality orientations to appreciate the potential responses to contexts conducive to RI.

Acknowledging previous studies on motivations to undertake RI, our approach differs. First, we take a single department setting and a micro-level perspective. Second, we focus on understanding how each academic conceives their career motivation and from there how they interpret, position, and behave in relation to RI. We suggest that the research on RI motivations cannot be considered in isolation from the main motivations of an individual to be an academic. Interestingly, we found that there are groups in which there is a considerable misalignment between their main role motivation and RI, namely compliers, theoreticians, and some relationship facilitators. At a micro level, our study sheds light on sources of motivation friction that constrains, frustrates, and can cause individual academics to even question the value of RI (Pettigrew & Starkey, 2016; Watermeyer, 2016). This could also be seen as a role identity violation (O'Kane, 2020) and could be explained by various factors including how academics internalise the impact agenda pressures (Chubb et al., 2017), the difficulties to interact with policy and practice (Francis, 2011), and the rigidity of the RI

evaluation mechanisms (Morgan Jones et al., 2017). Our groups raise wider issues of how institutions create supportive environments and the necessary entrepreneurial architecture to support very diverse compositions of academics (Cunningham et al., 2022b).

Academics of different disciplines have particular views on the manifestations of RI (Chubb, 2014; Oancea, 2013) and the career stages could influence the effectiveness of RI efforts (Estabrooks et al., 2008; Watermeyer, 2015). Our study adds a different perspective to ongoing and growing debates by emphasising that attitudes and actual participation in RI are explained more by the underpinning motivations to be an academic, an idiosyncratic motive of the person, rather than those exogenous aspects. Accordingly, we found that diverse career stages spread across each of the six groups that we unearthed, and RI is not confined to one career stage. Moreover, our findings also indicate that RI is experienced across a variety of disciplines in a business school context. Our findings also demonstrate the reluctancy of many female researchers to undertake RI since only 1 out of 11 -in contrast to 18 male researchers out of 34- are part of the groups that are closer to doing RI, namely practice-oriented researchers, business seekers, and instrumentalists (see Menter, 2022; Parker et al., 2017). Our groups not only confirm but further illustrate why the management of RI is a challenge in such a diverse community of career views (Hodgkinson & Starkey, 2011; MacIntosh et al., 2017; Pfeffer & Fong, 2002; Tranfield & Starkey, 1998).

Our study also contributes to the discussions on the relevance and impact of business schools (Pettigrew & Starkey, 2016; Wright, 2012; Wright et al., 2009). We argue that business schools are well positioned with a variety of knowledge and expertise to not only create RI from its research but also to collaborate in the materialisation of knowledge and technology transfer initiatives led by other departments (Nicotra et al., 2021; Walsh et al., 2021; Wright et al., 2009), for example with the participation of practice-oriented researchers in interdisciplinary projects to realize the impact on complex societal issues (D'Este & Robinson-Garcia, 2023), with relationship facilitators as boundary spanners between university entrepreneurs and the regional ecosystem (Goethner & Wyrwich, 2020), and with business seekers through the development of business plans and giving commercial and management advise to spinoff teams (Wright et al., 2009). Our constructs acknowledge that the marked diversity in business schools can create contradictions regarding perceptions of legitimacy, above all the positioning of RI (Pettigrew & Starkey, 2016; Romme et al., 2015), but that this diversity reflects multifaceted missions and objectives that business schools should seek to deliver to create value through the flow of knowledge between academic and practitioner communities (Cotton et al., 2001; Hogan et al., 2021; Orwig et al., 2007).

6 Conclusions

This study explores the diversity of academic motivations to perform knowledge and technology transfer in academics that work under the same contexts. With the support of SDT and set in a business school, we conceptualised six groups of academics based on the contrast between their main motivation to be in the profession and the requirements of the RI practice, namely practice-oriented researchers, business seekers, instrumentalists, compliers, theoreticians, and relationship facilitators. Our research has also some practice-based considerations. Within academic departments and at the highest levels in universities there is a need to acknowledge and legitimize the motivational diversity among academics to pursue RI. The challenge for university leaders is how best to support this motivational diversity that meets individual needs while ensuring the aggregated institutional position

Table 3 RI impediments and recommendations

	RI impediments	Recommendations to support RI
Practice-Oriented researchers	None	They already do or are close to doing RI. Although some of the measures stated below could benefit them, extrinsic rewards could negatively overtake their intrinsic motivations (Deci, 1971; Pritchard et al., 1977)
Business seekers	• Not being able to undertake their main motivation: non-research paid services • Time to do RI • Resources to do RI	• Favourable teaching buyout policies for non-research paid services • Improvement of compensation for non-research paid services • Reduction in the number of REF publications • Internal funding for RI
Instrumentalists	• Past ambiguous relevance of RI in the promotion criteria • Low experience and knowledge of RI • Lack of supervision of their RI activities • Resources to do RI	• Strengthen RI in the promotion criteria • Training on the planning and production of RI • Quality assurance and feedback on RI • Internal funding for RI
Compliers	• Past ambiguous relevance of RI in the promotion criteria • Low experience and knowledge of RI • Lack of initiative to do RI • Low relatedness with outside academia • Time to do RI • Resources to do RI	• Strengthen RI in the promotion criteria • Training on the planning and production of RI • On-the-job training as members of transdisciplinary RI teams • Support from personnel specialized in relationships and work with practitioners • Reduction in the number of REF publications • Internal funding for RI
Theoreticians	Too many impediments, above all their extreme impersonal orientation for RI	None because it could be counterproductive
Relationship facilitators	• Low and supplementary recognition of their facilitating role in the promotion criteria Subgroup 1: None Subgroup 2: • Lack of knowledge of research and RI • Lack of knowledge of external funding	• More prominence to their role in the promotion criteria Subgroup 1: Nothing else since they already collaborate with RI Subgroup 2: • Basic training on research, impact, and how they are connected • Basic training on funding bodies and bidding processes

given the environmental conditions that universities face. In doing so, we suggest interventions, based on CET and OIT, to either improve intrinsic motivations or make progress in the continuum of extrinsic motivations for the groups identified in our study (see Table 3).

The periodic individual development reviews can be aided by the distance between main motivations and RI requirements. Our contributions not only explain gaps but also provide potential policies that when summed from the needs of each person would identify the combined needs in a department. This aggregated analysis should then be used by the head of department and the research director to appreciate the organizational gaps between long-term strategic objectives and the current attitudes and work of the staff, which in turn should be used to determine recruitment needs, developmental targets at group levels, and support priorities for the department at large.

Our study is not without limitations. SDT is a comprehensive framework that explains motivation from the interconnection of contextual causes and individual processes. However, there are other theories on motivation at work that could shed light on different perspectives. For example, Maslow's hierarchy of needs theory (Maslow, 1943) could be employed to study how academics respond to environments orientated to RI to progress to or keep satisfaction at the highest levels of the hierarchy, above all when there are frictions between main motivations and RI and when considering career stages. In that regard, goal-setting theory (Grant, 2012) could guide researchers to investigate the desirability and effect of externally imposed goals, while expectancy theory (Vroom, 1964) would help to examine if the additional efforts required for RI would lead to a good performance. Furthermore, social cognitive theory (Bandura, 1996), which relies on self-efficacy constructs, could be used to comprehend the beliefs of the academics on their capacity to succeed as a relevant antecedent to motivations and behaviours towards RI.

These related perspectives warrant comparative studies of business schools in different institutional and policy environments to deepen our understanding of the effect and sustainability of external contexts on motivational diversity for RI. In tandem with these studies, a research avenue needs to explore the structures and measures that academic departments have in place to nurture motivation among academics and how they conceptualise and consider diversity, including gender, and the nature and practice of RI. This would be fundamental to explain how individual academics manage tensions and the repercussions on well-being. Future studies of motivational diversity and RI need also to be extended on a comparative basis across broader disciplines (Chikoore, 2016; Oancea, 2013), in universities with different research intensities and orientations to industry engagement (Finch et al., 2016; Weinstein et al., 2019) in different countries (Chubb et al., 2017; Sormani et al., 2021). This could lead to modifications of the groups, additions, and understanding of the preponderance of some of them depending on the context.

For technology transfer offices and professional staff that are tasked with supporting academics to realize RI through technology transfer and research commercialization, understanding primary and RI impact motivations enables for more agile approaches and structures to effectively support academics. For individual academics, we suggest that they reflect and consider their own motivation and ambitions regarding RI to be proactive and self-direct their professional development. Our groups provide a starting point for such reflections. Finally, we would encourage other scholars to build on our study.

Appendix 1

See Table 4.

Table 4 Illustrative quotations

Second-level coding	First-level coding	Illustrative quotations
Main motivation to be an academic	Intrinsic: Research useful for practice and the community	"There's no point doing research which hasn't [practical] benefits. So, if the only benefit is to an academic community, then I'd see that as very limited… there should always be either policy or managerial implications" (interviewee 23, reader in marketing, practice-oriented researcher)
	Extrinsic: Gain financial rewards and prestige outside of academia	"Time is one type of incentive. Then you would get time for other activities. The other incentive is monetary compensation and that has to be somewhat attractive enough that it offsets the other projects. I have colleagues who work out money in terms of papers. They say, 'one paper in a three-star journal is worth so much money and if I do a project like [consulting], I'm taken away from writing and I'll only get a small amount of money'. These are always the things; time and money" (interviewee 40, professor in marketing, business seeker)
	Extrinsic: Promotions and notoriety in academia	"Unless the [university] system, instead of dissecting [academic publications and interaction with practice] and looking at them individually, somehow tried to build them into one profile, then I think we're always going to have that kind of [careerist] behaviour… still the system does really encourage [publications], unless you've that implicit motivation [to interact with practice]… [but] there is a [recent] understanding that we need to interact with practice more… just because impact had become so important, more than we were acknowledging it in the past. So, I'm not sure whether the driver for change is the right one, but nevertheless it's happening… impact now is a game in its own right, but at least institutions will need to play that game, will allocate some resources… suddenly there is a bit of help there… it plays from both sides" (interviewee 36, professor in information systems, instrumentalist)

Table 4 (continued)

Second-level coding	First-level coding	Illustrative quotations
	Intrinsic: Research to inform theory	"[To interact with practice] isn't why I went into academia. I went into academia to do research and teaching… research impact is what you measure by publications and references… I see also research impact through other researchers in other fields. I've been working with biologists, medical researchers, and a PhD in theology… I'm working with a philosopher at the moment. That's more important for my research than to the general public in the end… I'd say that impact is to make sure that the results from economics are also used [by academics from] medicine, theology, biology so we can make bigger crush projects across fields… an impact, for example, [happened when] somebody had applied a method that I've been using in a journal. He started to use it in another application. That's impact" (interviewee 29, senior lecturer in economics, theoretician)
	Intrinsic: Linking academia to practice	"How do you find [the business school's] specialists? Those specialists have got the opaquest descriptors. How do you find out who you're supposed to contact? It's really, really difficult… my oldest son's best friend's father works at [a public organization] … he says, look, he's got a piece of work, a bit of management training that he'd like done and he wants the business school to quote on it. But he hasn't been able to work out who to contact. He enters the website, and he can't see. Do I think the business school will be interested in anything like that? And I thought, 'yeah, definitely', but I had to bring the work, I had to set up the relationships then for them and the quote will go in if we're going to, today or tomorrow. But he couldn't work it out and he's a smart man" (interviewee 17, lecturer in innovation, relationship facilitator)

Table 4 (continued)

Second-level coding	First-level coding	Illustrative quotations
Autonomy regarding main motivation	No problems affect the realization of their main motivation	"I don't have anything specific planned [regarding knowledge exchange] … I think there is a potential for quite a big gap between the top accounting journals, for example, and the actual profession of accounting… the focus, as you know at [the university], and I think at other places, has been very much on hitting these elite journals… for some of us who are maybe slightly more old-fashioned academics, we tend to research in areas that are of interest to us… Most of the stuff I do, isn't really resource dependant… I don't do a lot of research that is involving people, going abroad, and doing interviews and stuff like that" (interviewee 39, professor in accounting, theoretician)
	School policies block the realization of their main motivation	"The funny thing is that we cannot buyout hours [to do non-research paid services] unless we get incomes of over [a very high amount of money]… it means that if I got an external income of [a little below the minimum], that is a huge project, I'd have to work weekends, evenings and even during my holidays… it'll scare a lot of people" (interviewee 1, lecturer in innovation, business seeker)
	Further interaction with practice is required	"Because of the pressure for publications, I need really good data from [knowledge exchange activities] … the nature of the problem has also to be really close to my research area… Besides, the time, which type of people we work with, and how easy is to [understand] the problem or get the data [are relevant considerations], because priorities are still research and teaching… also, lots of problems from companies aren't worthy for doing research. The problem could be quite basic, that is why I'm really thinking that if I guide my students, they can do it… I think that the government has realised that research impact is very important instead of just focusing on publications. Now we try to look at research impact or some kind of cases… as a group we can supply a [case study to the REF], but I don't think I individually can really prepare a case… each of us can contribute a lot but someone should lead us and design a good case" (interviewee 31, lecturer in operations, complier)

Table 4 (continued)

Second-level coding	First-level coding	Illustrative quotations
Competences regarding main motivation (a selection of)	Collaborative research with and identification of value for practice	"I've done lots of [collaborative research with practice] I suppose, in the last three years… one project was looking at lean implementation in small and medium size enterprises and the other one was looking at evaluation of transformational change in [a public organization]… the project was designed to see how small and medium enterprises could use academic thinking in terms of lean and how it can be applied, because in the literature you can look at lean is applied to a lot of automotive companies and maybe it's gone to a quite particular [type of] organisations…. we worked with a delivery expert who's done a number of these initiatives before, so we were kind of a team where we'd turn up together, he'd do the implementation part and I'd do the research part" (interviewee 33, lecturer in operations, practice-oriented researcher)
	Adaptation, and goal-oriented, political and doers	"I'm kind of predicting that they're… I've always been the type of person who sees where things are going and get ready for it. It's part of my nature, the way I grew up. I've to always be adaptable. I don't get fixed into any one way of doing things. I know these things change. They're subject to change. They change due to politics, they change due to a whole range of things" (interviewee 6, reader in strategy, instrumentalist)
	Research aspects that nurture their future services, demand generation, and consulting and similar services	"The [organization] was interested in possibly commissioning some consultancy… it was because they wanted advice in regard to my research area but then they couldn't find the funding to pay for me… I wasn't going to do it for free… [my interaction with practice] depends on whether or not there is a pay-off for me in terms of revenue generation or impact…possibly access to data or purely financial remuneration. That interests me… occasionally I'm contacted for consultancy, and we investigate that… I've been in contact with a local [public] organisation to discuss what we could do together. I instigated that through a personal network… there is a paper that I'm working on, and I intend to contact [a public organization] because it's to do with a change of regulation that they've just initiated. In that case it's clearly and directly related to my research so I'd instigate it [to generate impact] or I would if there was a clear [monetary] benefit… If companies approach me then I'm happy to give them a price" (interviewee 44, lecturer in economics, business seeker)

Table 4 (continued)

Second-level coding	First-level coding	Illustrative quotations
Relatedness regarding main motivation	Inside academia	"No [I don't interact with practice, but] with academics… I've a couple of guest speakers in who are practitioners, to talk in my module, but that's it, I mean I don't really engage with practitioners at all. I try my theories, so I don't really deal with those sorts of people" (interviewee 45, lecturer in entrepreneurship, theoretician)
	Mainly outside academia	"Getting to talk to people from industry isn't that much of a problem… I'd [classify my work] under consultancy rather than contract research… the way it works is that through my network of connections, say, I might get invited to participate in bids, for instance, the European Commission approached me directly and told me, 'Okay, we want your opinion'… I was really surprised to see to what extent the personal connections play a role in the airline business… what is going on within academia, okay that's really a kind of club… there are journals, then the editors, and so you send your paper to the editor, they will sort it. Your research is, as far as publishing and scholarly journals go, in most cases evaluated within the club… so, I'm sometimes sceptical and people say, 'within our profession'; it's not a profession, it's a club. You're a professional economist in my case only to the extent that you're able to take your research outside of academia, and kind of making some splash there" (interviewee 38, senior lecturer in economics, business seeker)
	Outside and inside academia	"I'm looking to put in a bid with other [academic] colleagues for some knowledge exchange funding to do some more work with those firms… we've a steering group who are also very keen - particularly the chair, who's from [a multinational corporation] - to make sure this continues to be a research project… I want to do a lot of the work myself because that's the relationship" (interviewee 49, senior lecturer in innovation, relationship facilitator)

Table 4 (continued)

Second-level coding	First-level coding	Illustrative quotations
Motivation Regarding RI	Intrinsic	"I think it's a bit of a two-way interaction because I think what is really interesting is that if you're collaborating with a company, it's not only, 'what will I get most out of it?' but in my view, it's also a two-way interaction, what will I be able to offer them in terms of my work? So, I think if you can establish this dialogue where it's a win-win situation for both sides then it's quite interesting because then there's also a sense of satisfaction for you, that out of the time that they're providing to you, your interaction with them, you can really help them to improve their work" (interviewee 8, lecturer in innovation, practice-oriented researcher)
	Extrinsic by integration	"I'd like to continue working in [small projects with companies] because one of the main reasons why I'd like to do that, obviously I've to think about my career. I think [these projects] are a good path to follow to develop impact case studies, apart from publications. I think it's relatively more straightforward to demonstrate some impact compared to academic papers… I'm focusing on impact case studies which can benefit my career… I know that my service isn't going to save the world. I'm not going to discover any planet or something like that… I'm driven by enhancing my career and climbing up the career ladder… I had a discussion with [the impact director of the school] about the [small projects with companies] and said probably an impact case is going to be too soon for this REF but it's something that we can consider for the next, so I'll have these discussions nearer the time" (interviewee 47, lecturer in marketing, instrumentalist)

Table 4 (continued)

Second-level coding	First-level coding	Illustrative quotations
	Extrinsic by identification	"My contact with non-academics has probably been as part of consultancy… I've done a lot of this policy related work down the years… [now,] the bottom line in this job is academic publications. And you've to look after that first… [but] once they start piling on teaching then it's difficult to recover from that position… they just wanted me to be a rolling expert, you know, I was like a consulting expert in this. One day an expert, someone else the next day and that is just not the way to do it. That makes a monkey of you… [to be an expert, it] has to be based on some solid piece of research, not that you happened to give a lecture on income tax and therefore you're an expert on taxation policy… it has to be based on your academic research… let's lead the world of consultancy. [Any interaction with practice] has to be more rooted in sound academic work. I think that is how you've an impact, other than through consultancy" (interviewee 16, professor in economics, business seeker)
	Extrinsic by external regulation	"I'm just worried that being driven by impact is like, in a way, saying, 'let's forget about doing basic research and let's do only applied research'… too much interference from the government in academia, in intellectual activities, is never good… maybe I have an impact, but I don't know if I have enough publications to submit so I'm not going to be REFable. You know, how [is the university] going to balance the two things? Maybe I'm not REFable but I do have an impact case. Are you going to treat me in the same way or am I still considered [a very poor academic] because I don't have enough publications to be REFable, you know?" (interviewee 22, lecturer in economics, complier)

Table 4 (continued)

Second-level coding	First-level coding	Illustrative quotations
	Amotivated	"The concept of knowledge exchange, I'm very sceptical of it, if I may say so from the outset. Because it's, kind of, the broadness of it makes it about everything and nothing at the same time… I'm not particularly interested in that if I'm honest… there is a decision-making orientation [in the work with practice] which turns into somehow, like academic consultancy. I don't see that as my strength… I'm more on the side of critical, so, I wouldn't class myself as [practice-oriented], and I do side myself on [the other] end of the spectrum. So, I find it very difficult to really engage with someone and attempt to, kind of, play the academic that has answers, because I don't have any answer… that is the issue of making the complex mundane so that you can get money for it" (interviewee 18, lecturer in organizational studies, theoretician)
Causality Orientation Regarding RI	Autonomous	"If you're in a business school, I think it's also important to have some understanding of the issues and problems external organizations are facing so that what you're teaching, as much as anything else, has relevance. So, I think there's a reason for [doing research impact] … we're forming more links with individuals in [external] organisations, which clearly can have a number of spin-over effects. It might attract students to come and do higher degrees here, lead to further research, new ideas… I don't think I've necessarily been waiting for [the government to foster research impact], let's face it, [since] a number of academics [like me] have been doing this long before there was any requirement of impact" (interviewee 43, senior lecturer in operations, practice-oriented researcher)

Table 4 (continued)

Second-level coding	First-level coding	Illustrative quotations
	Controlled	"We've currently so many things to do, and also based on my personal experience, sometimes it's very… I don't have a say basically… your focus is on these three-star papers, not even two stars… [the requirement to do RI] comes from a top-down strategy, so if they say, well, you're encouraged to do this and [if I'm given] allowance to do this, like two points [in the workload allocation model], you can use these points and can produce something… to do this, I've to be attached to another [colleague] who's been involved in the industry long enough to have anestablished network already… we just have a new colleague [in the school], who has been involved in food supply chain and knows some people involved with supermarkets. We've already started working. I think this sort of things happens without our notice and if someone could link the project with three-star publications, it's a win-win situation… This isn't a proactive thinking, it's kind of reactive. Whatever comes I'll do it, whatever opportunity is available I'll follow. It's not like, 'oh I think this is interesting, okay, so I go and find a company which can help me with'" (interviewee 3, lecturer in operations, complier)
	Impersonal	"No, [I wouldn't do knowledge exchange with industry] even if [that was paid]… it would put my main career back… a guy approached me to do [practical] work on security standards, but that stuff bores me so… [the government initiatives to foster research impact are] alright if you do research that is making this link between how you have an impact and external parties, but my research doesn't… it's unlikely [to produce a REF impact case] because my work is theoretical in nature" (interviewee 11, senior lecturer in information systems, theoretician)

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Declarations

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