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## Academics coping with business logic: A study at Indonesian universities

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### ABSTRACT

This paper presents coping mechanisms that address competing institutional logics in University-Business Co-operation (UBC). We examined academics at two Indonesian universities and in two science fields, computer science and electrical engineering. Our findings suggest that the level of the integration of business and science logic determines their coping strategies. Academics can act as a hybrid who bridges the two worlds by “compartmentalizing” them. This study infers that inexperienced academics must “learn” in advance about the logic of business before involving themselves in collaboration with business projects.

### 1. Introduction

Building a partnership with business communities has become a challenging task for universities worldwide (Etzkowitz, 1998; Siegel et al., 2001; Sauermann and Stephan, 2013). Many initiatives have aimed to investigate the inter-organizational issues, specifically with respect to how members of both types of organizations overcome the conflict of two institutional spheres, that is, between science and business practices (Cyert and Goodman, 1997; Elmuti et al., 2005; Jones, 2009; Bjerregaard, 2009; Lind et al., 2013). For instance, continuous learning and restructuring processes on both sides are the essential factors needed to narrow the chasm of cultures and norms between academic researchers and business professionals (Elmuti et al., 2005). Similarly, Bjerregaard (2010) suggests that both academic scientists and industrial researchers should use their (social) skills purposively to bridge these institutional gaps.

Based on these studies, examining the attitudes of academics dealing with these institutional demands is become crucial. This is due to that individual academics have been exposed with new societal pressures such as new public management in the science system, in general, and in the higher education, in particular (Ferlie et al., 2009). Such new policy relates to the attempt to increase the role of science in industries (Hoarau and Kline, 2014) and relates to the significant impact of industry fund that increases the number of academics to work with business (Bozeman and Gaughan, 2007). Moreover, academics will be exposed by two cultures and norms, science and business, as universities worldwide have endeavoured to ‘valorise’ and ‘transfer’ research to industrial applications (e.g., Mitev and Venters, 2009) of which scholars often label this as research commercialization (e.g., Lam, 2011). Academics may find this problematic because these values and practices are contradictory and divergent to each other (Jones, 2009; Bjerregaard, 2009; Evans, 2010; Murray, 2010). To successfully participate in UBC, individual academics should create hybridity in these (two) contradictive logics (Murray, 2010) which imply that they should able to diminish this institutional barrier (Bjerregaard,

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2010). Additionally, the “Mode 2” of research may vary across scientific fields (Whitley, 2000) suggesting academics in different field may react differently for UBC.

UBC is a framework that represents a complex interaction among institutions – between science and business, organizations – between universities and firms, and among individuals – between academics and business professionals. Out of many variations for discussing the interrelationships among these entities, the discourse on the role of individuals in the transformation of organizations and institutions is among those variations that have received less attention from institutional scholars (Thornton et al., 2012; Pache and Santos, 2013). For example, Lee and Lounsbury (2015) emphasize the importance of organizational actors in which they can shape the organizational responses toward institutional complexity, both directly and indirectly. These authors suggest that organizational actors may indirectly respond to the first order of logics or field-level of logics e.g. state and market logic. Instead organizational actors may directly respond to the second order of the logics named community logics such as political conservative and pro-environmental.

Accounting for individual actors in our study is important because they may shape or reshape the micro-foundation of institutional logics (Thornton et al., 2012); they play crucial roles in the forming of hybrid organizations (e.g., Pache and Santos, 2013; Murray, 2010); and they contribute significantly to institutional changes and praxis (Friedland and Alford, 1991; Townley, 1997; Seo and Creed, 2002; Battilana, 2006; Binder, 2007; Montgomery and Oliver, 2009; Reay and Hinings, 2009). Several studies of UBC have attempted to explain the role of individual academics in the on-going ‘production’ or ‘reproduction’ of new values and practices. Shane (2004) and Lam (2011), for instances, argue that the commercialization of research results has become the main ‘business logic’ for academics to collaborate with industries and to create spin-offs. Following this direction, Greenwood et al., (2011) argue that academics may recognize ‘business logic’ as “commercial logic” and the authors describe “business logic” as the ‘propriety retention and commercial exploitation of research results’ (p. 318). These studies suggest an interesting insight in which individual academics are varied in their respond to business logic, suggesting some may cope working with business successfully and others may be not (e.g. Sauermann and Stephan, 2013). Nevertheless, few studies have aimed to expose the strategies and response of individual academics towards the contradiction between business and science logics.

Our current study aims to respond to this dearth of research by providing empirical evidence on how macro-actions influence micro-actions (Coleman, 1990), particularly in a case in which individual academics are exposed to business logic, resulting in a competing institutional logic (Pache and Santos, 2013). The long term and the structured UBC programs in Indonesian universities provide us with an empirical site to study and advance this knowledge. Under a framework of the “third mission” of universities and the industrial research collaboration, a growing number of UBC projects have been initiated in recent decades by government agencies (and stakeholders) and universities to stimulate the academics’ engagement. Given this point, Indonesian universities and their academics have been ‘exposed’ to the logic of business for decades, and they simultaneously attempt to ‘develop’ such logic. Thus, this paper seeks to answer the following research questions: How do academics cope with competing institutional logics as being exposed or participated in UBC? And what are the academics’ roles and responses under the complexity of UBC? We structure the remainder of the paper into four sections. The first section is a conceptual framework that describes the concept of the institutional logics and the operationalization of the science and business logics. The second part presents the data collection and method consisting of the selection of research sites and cases. The third part is the results’ section and describes the data collected. The last part constitutes discussion and an implication for future studies.

## 2. Conceptual framework

Thornton and Ocasio define institutional logics as the ‘socially constructed, historical patterns of cultural symbols and material practices, including assumptions, values, [and] beliefs, by which individuals and organizations provide meaning to their daily activity, organize time and space, and reproduce their lives and experiences’ (Thornton and Ocasio, 1999, p. 804). Departing from this premise, we adopt the Mertonian norms (Merton, 1973) and the Intellectual and Social Organization of Sciences (Whitley, 2000) to operationalize the core elements of the science logic. As the counterpart, we adopt the counter-norms of Merton to operationalize the core elements of business logic (Mitroff, 1974), showing the values and practices of business used in university-industry strategic alliances (e.g., Cyert and Goodman, 1997; Elmuti et al., 2005; Lind et al., 2013).

### 2.1. Institutional logic of science

Merton (1973) proposes the general elements of how academics ‘practice’ science. He argues that academics produce and reproduce their research and teaching materials under the norms of (i) universalism – all academics can contribute to science, (ii) communalisms – an equal access to scientific goods and collective collaboration, (iii) organized scepticism – critical scrutiny of scientific claims before being accepted, (iv) disinterestedness – academics aim for a common scientific goal, rather than for personal gain. These Mertonian norms have been considered the first systematic approach to sketch out the normative isomorphism of science practiced by academics worldwide (Mulkay, 1980; Collins, 1982). Moreover, Whitley (2000) specified these norms and proposed that, in knowledge production, academics are mutually dependent upon one another and are doing research under uncertainty. The mutual dependence guides academics in recognizing their colleagues or peers which embodied as functional and strategic dependence. The functional dependence relates to a situation in which academics must use methods, procedures, and results corresponding to their peers’ results and procedures. This dependence can be high in fields that have highly standardized procedures, such as several Sciences, Technology, and Engineering fields but also in Economics and Psychology. In other fields, such as several general Social Sciences and Humanities, this dependence can be low because these fields have only a limited number of shared procedures.

Furthermore, the strategic dependence relates to the process of peers or colleagues' evaluation, suggesting one may be very dependent on the fields' elite for research resources, publication outlets, and position, but others may be less dependent. This variation indicates that strongly organized fields have a strong identity, and clear powerful elites; whereas weakly organized fields have a weak identity and less powerful elites. In task uncertainty, Whitley (2000) proposed the concept of the strategic task and technical uncertainty. The strategic task uncertainty refers to a degree of uncertainty in which a field of science is moving. This uncertainty can be high if field priorities are clear (for example, everyone is searching for the Higgs particle) or low when field priorities are unclear (as in many Social Sciences and Engineering fields). Subsequently, technical uncertainty refers to technical instruments and infrastructures used in research. In some cases, this uncertainty is undisputed and, therefore, a low technical-uncertainty goes with those instruments – but it may be high in other fields.

## 2.2. Institutional logic of business

UBC introduces the logic of business to academics. When academics conduct applied research or they happen to be working with business professionals, they will inevitably address the logic of science and the logic of business simultaneously. Because the logic of business is proposed to be the opponent to the logic of science as suggested by many studies (Cyert and Goodman, 1997; Elmuti et al., 2005; Lam, 2010, 2011; Murray, 2010), we use the counter-norms of Merton proposed by Mitroff (1974) to categorize the elements of business logic. The norms are as follows: (i) Particularism – a boundary in knowledge production, (ii) Solitariness – secrecy in findings and results, (iii) Dogmatism – following the incontrovertibly true set of rules, and (iv) Interestedness – personal interests rather than communal. For example, the world of business is highly related to competition, secrecy in Research & Development (R&D) results, and the planned products should meet the demands of the market (Cyert and Goodman, 1997; Elmuti et al., 2005). Furthermore, in the business world, (i) academics should not publish the results of research for the open community; (ii) research should meet the market demand, and (iii) the results should be produced in the agreed time (Cyert and Goodman, 1997; Elmuti et al., 2005; Lind et al., 2013). Table 1 shows the comparison between these two logics.

## 2.3. University's valorisation activity and co-operation modes

Universities have been practicing the institutional norms of science as the common practices of their organization (Merton, 1973).

**Table 1**  
Science and business logic and their operationalization.

Science Logic (SL)		Business Logic (BL)	
Merton (1973, p. 270 – 278) (General)	The Value of Mertonian norms in Whitley (2000) (Disciplines)	The Mitroffian Norms and The Norms of Business (Cyert and Goodman, 1997; Elmuti et al., 2005; Lind et al., 2013)	Mitroff (1974) (Proposed the Counter-norms of the Mertonian norms)
Universalism Equality in science and not depending on personal and social attributes. Adhered to Universalistic Standard. Collective Contribution	Strategic Dependency Collective Goal Clear Elite/Peers Recognition from Peers Only Core Journal/Publication Field Identity Research Agenda	Competitiveness Better than competitor Survive in high competent environment	Particularism Boundary of knowledge production, such as countries or organizations. Judging to Personal Knowledge
Communism Findings of science are assigned to the community. Common Ownership Collective Collaboration	Functional Dependency Standard methods and procedures Sharing ideas with colleagues Influences of colleague (s) work to the individual work To match work with colleague(s) work Dependencies on other field (s)	Disclosure Close-disclosure of research results, e.g. Patent, Intellectual Property etc. Competitive Advantage	Solitariness Secrecy in findings in the way to claim patent rights Aiming to be Top Notch (Individual or organizational) Not Incorporating Results
Organized Skepticism Critical scrutiny of scientific claims before being accepted to the body of knowledge. Empirical and Logical Criteria Disinterestedness Benefits for common scientific enterprise (collective gain) Less personal gain	Strategic Task Uncertainty Consensus about main research problems in field Hierarchy of problems Technical Uncertainty Stability of Problem Formulations Hierarchy of Problems Research Techniques are clear for every academic.	Complying and Adhering Business Model Defined Strategy Defined Distribution Defined Product Objectives Benefits for individual (organization) e.g., revenues and wealth.	Dogmatism Fixed practices and values No Further Scientific Explanation  Interestedness Personal (organizational) interests are the major goals rather than collective gain.

Nevertheless, for decades, universities have extended their mission to service the community or to 'valorise' the knowledge produced in addition to teaching and research (Perkmann et al., 2011; Sam and Van der Sijde, 2014). Engagement with social and business society have caused universities to adapt their organizational policy and strategy to be coherent with the logic of business. Aligned with this logic, universities 'changed' their research strategy to one that is 'closer' to the demands of business. Universities shifted part of their research orientation from 'Mode 1' – research is produced to gain scientific reputation, to 'Mode 2' – research is produced in the context of application (Nowotny et al., 2003). Consequently, academics may be in a dilemma of whether to adhere to such an organizational strategy or policy (Swan et al., 2010). Subsequently, academics who engaged in a UBC project (for example, in industrial research collaboration) must comply with the logic associated with this mode. In 'Mode 1' of knowledge production, the science logic rules, whereas in 'Mode 2', academics enter a potentially dilemmatic position. Beside of research modes, UBC has been performed in a variation of modes ranging from simple- to complex modes e.g. simple consultancy versus starting up a new UBC-based company (Freitas et al., 2013). Abreu and Grinevich (2013) defined these modes can be consisting of, among others, formal and informal channels. The formal modes of the co-operation often through IP protection method which are more engaged more senior academics than the younger ones. The informal modes may be formed in the creation of new physical facilities, consultancy and contract research, joint research, training, and meetings and conferences (D'este and Perkmann, 2011). These modes are varied in complexity depending on their nature and objectives. However, less of study have paid attention to investigate how distinct UBC modes relate to actions taken by universities or academics to cope the complexity of integrating business and science logic. The more complex of a certain mode such as Technology Venture (Ranga et al., 2013) require a high integration of business- and science logics which requiring a high level of hybridity or the ones who entitled as "hybridizer" (Pache and Santos, 2013; Bjerregaard, 2010; Marques et al., 2006). Oppositely, the less complex of a certain mode, for example giving advices and simple consultancy to industries; only requires the low level of integration of the two logics. These academics are called "Protectors", the ones who ignore the business logic but simply their science logic, where industries only use their expertise in science (Pache and Santos, 2013).

The field of science gives an edge to these co-operation modes. The physical sciences and engineering are more formal in form; and that in the social sciences, creative art and humanities, will favour more informal activities: as different modes may function differently in different fields (Whitley, 2000). We propose the formal modes of UBC may originate from fields that have high dependency because results of research in the field constitute of products and new methods. The informal UBC may originate from fields that have high uncertainty because it is seek to problem solving and solution. In our study, we focus on the coping strategies taken by the academics towards divergent logics, which then may form the modes of UBC.

#### 2.4. Coping mechanisms for addressing competing institutional logics

To understand the coping mechanisms towards competing institutional logics and the role of individuals in shaping and being shaped by the institutions, theories of human behaviour are needed (Thornton et al., 2012). They proposed that individuals may be situated, embedded, and bounded intentionally in certain institutional environments. The situated and embedded behaviours reflect on how individuals do their day-to-day work according to the 'template of action' (Oliver, 1991; Dunn and Jones, 2010) and bounded intentionality is defined as: 'individual intentions, guided by social identifications and individual interests and goals, are bounded by cognitive constraints on human behaviour' (Thornton et al., 2012, p. 80). Friedland and Alford (1991) propose that there are two crucial views to show the relationship between individuals and institutional demands, namely 'opportunity' and 'constraint'. These views may create boundaries for how individuals to act and comply towards institutional pressure. Given this point, Thornton et al., (2012) argue that individuals may 'learn' and 'adapt' the new values and practices to 'embed' with the changes or to follow the new 'practices'. For instance, the existence of 'prominent exemplar' may shape or reshape the coping strategies of individual academics. Bercovitz and Feldman (2008) argue that individual academics who are trained in departments or schools which are actively nurturing UBC; are likely to motivate themselves in such co-operation. The authors further found that if the chair of the department is actively (as a person) co-operating with business, it may result the members of the department emulate him/her to do so. Nonetheless, the study suggests that the engagement of academics by emulating the prominent exemplars is shown to be more symbolic than substantive. O'Reilly et al. (1991) suggest that academics comply to participate in UBC and have initiative simply to avoid sanctions.

Academics may refer to their dominant logic that determines their daily practices, for example, the logic that has originated from the profession and prior education (DiMaggio and Powell, 1983). D'este and Perkmann (2011) show that academics are different in their motives and expectations when engaging in UBC. The study shows that academics have been motivated to work with business by four factors: commercialization (commercial exploitation of research); learning (informing academics research via engagement); access to funding (combining public and industrial funds); and access to in-kind resources (industrial equipment, data and material). The study suggests that academics working with business in order to advance their own research rather than commercialize it shown by the lowest score of commercialization. Implied by this study, we highlight that participation of academics in UBC mostly driven by science logic suggesting the co-operation remained problematic via research commercialization.

#### 2.5. Adherences and responses to science logic (dominant) and the business logic (new logic)

Academics may either remain embedded in their dominant logic (science logic) (Jain et al., 2009) or they may try to combine it with a new logic (business logic). Randall and Procter (2013) propose that when a particular logic compels its material practices, it may dominate and, later, expunge its rival logic. However, Christiansen and Lounsbury (2013) argue that the organizational actors can 'combine' elements of their dominant logic – i.e., social responsibility – with their less dominant logic – i.e., the business logic and

that the combination may later provide space in reconstituting the organizational identity. Subsequently, the degree of adherence (acknowledgement) of academics who are embedded in science and business logics may vary depending on their 'knowledge' of the respective logics (Pache and Santos, 2013; Van der Sijde et al., 2014). To develop a complete schema of how academics have been situated and embedded in the dominant (science) logic and how they respond to a new logic (business), we adopt the model of coping strategies for competing institutional logics, proposed by Pache and Santos (2013) and approached by Murray (2010), which show the adherences, responses, and roles of the individuals. We adopt Lam's (2011) approach on academic entrepreneurship to group the identity of academics when participating in modes of UBC (research commercialization).

McPherson and Sauder (2013) propose that individual actors might "use" their dominant logic as tools to resolve conflict. These authors highlight that there is a degree of discretion of which logics are taken, which we interpret this as degrees of coping strategies. Given this point, Pache and Santos (2013) propose stages of individuals' embeddedness either in the constraint of their dominant or in a new given logic, as stages of adherence. The stages are ranging from novice, familiar, or identified in a given logic. In UBC, 'novice' academics refer to persons who have limited knowledge in both science and business logic, for example, young academics who are pursuing a PhD (Roach and Saueremann, 2010), who have recently graduated and have just started working in academia without any experience in the business world. The 'familiar' adherence to science logic refers to persons in a mid-level career as an academic, and in business logic, it refers to academics who have gained experience in the project roles held in the business world. The 'identified' adherence to science is reflected by the behaviour of highly experienced persons in universities, i.e., professors, senior lecturers or senior researchers. Persons who are 'identified' with business logic correspond to persons who have full knowledge of business, shown by years of experiences working with business. Subsequently, Pache and Santos (2013) proposed responses of individuals for these adherences, including ignorance, compliance, defiance, compartmentalization, and combination. Applying these responses to an academic who addresses the business world, we encounter similar situations, for example, when an academic has no response to business logic, in accordance with the adherences to science logic; the academic ignores (ignorance), complies with (compliance) or defies (defiance) that logic. Furthermore, an academic with a number of years of experience in academia and business compartmentalizes (compartmentalization) the logics, whereas the highly experienced academic in both logics (tries to) combines the logics.

## 2.6. Academics' roles and groups toward competing logics

Adopting the Pache and Santos (2013) proportions, we propose that in UBC, academics may play a role as 'novice' academics, which refers to persons who are new in the world of science and in business indicating that they simply ignore both logics. However, this stage is short lived because these academics can quickly 'learn' and 'adapt' from other organizational members (Thornton et al., 2012; Pache and Santos, 2013). When an academic is a novice with business logic but is familiar with science logic, suggesting the academics may ignore the business logic but comply with the science logic, the academic's role is likely to be a 'follower'. In other words, the academic has no knowledge about business and dedicates no action to establish university-business co-operation. Furthermore, academics identified in science logic are likely to act as 'protectors', suggesting that science logic is the dominant logic, thus showing that the academic also takes no action to cooperate with business. When an academic is familiar with science and business logic because both logics are comparable, he or she is likely to compartmentalize the logics and act as an 'intermediary', suggesting that the academics are able to 'bridge' between the two logics (Bjerregaard, 2010; van der Sijde et al., 2014). Academics familiar with business logic and identified with science logic are likely to play a role as 'integrator'. This role show that academics can increase the coalition between business and science logics or that they may 'push' in practicing the norms and values of science logic with business logic. When an academic is identified with business logic and familiar with science logic, the academic role is likely to be an 'advocator'. These attributes suggest that the academic is not threatened by science logic but maintains the integrity of business logic to avoid losing her identity. Finally, when an academic is identified with both logics, she is likely to act as a 'hybridizer' or 'hybrid', suggesting that she can combine both logics.

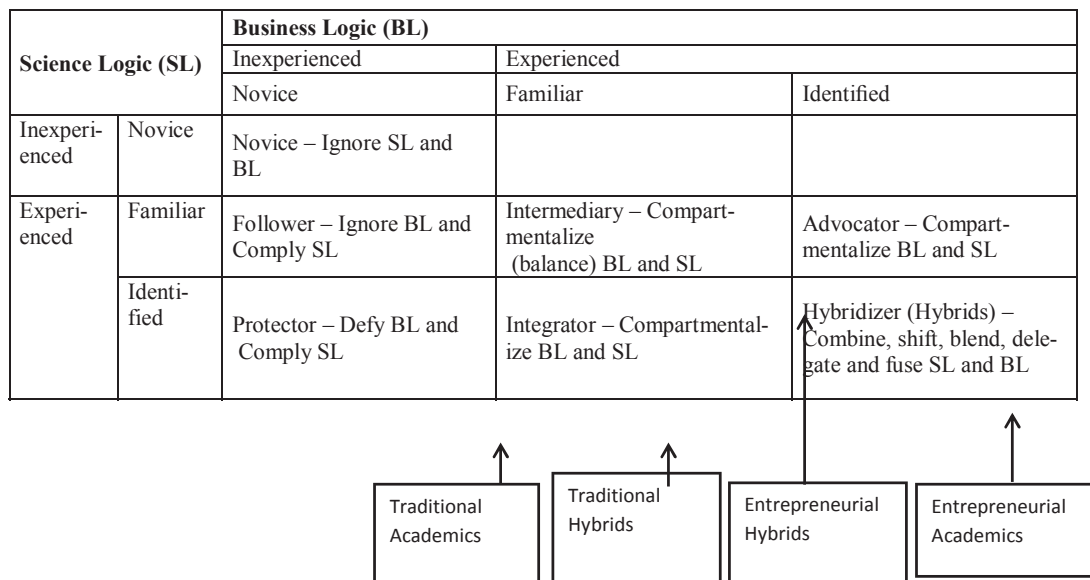
In our study, we explore the variations with regard to hybrids as formulated in the literature. Pache and Santos (2013, p. 26) describe hybridizers as "individuals who are able to change the current institutional order to craft new sustainable hybrid institutional arrangements". Other studies have attempted to define the term. Tuunainen (2005) claimed that hybrid practices are the ways of academics who are able to bridge the basic and applied research as well as are the ones who can "fuse" the science practices into commercial development. Jain et al. (2009) argue that the hybrid identity appears from the ability of academics to bridge the two worlds by "delegating" and "buffering" the science into business practices. Murray (2010, p. 378) attempts to provide another interpretation of hybrids and describes that "hybrids can arise from and maintain distinction between two logics". This encompasses to three situations, (1) hybrids emerge from "hostile world" where one logic compels another; (2) hybrids emerge from blending mechanisms that reduce distinction between institutions; and (3) hybrids emerge from "coexisting world" showing combination of material and cultures. Moreover, Murray (2010, p. 350) added even though the academic and commercial science is distinct but they are not "operate in isolation"; which leads that hybrids strategies sometimes are not clear. For example, Murray (2010) found that patents are indeed as the strategy of hybrids to resolve these contradictive boundaries. With respect to how hybrids resolve conflicts, McPherson and Sauder (2013) append that individual actors might "shift" and "use" certain logics to deal with institutional complexity. These authors suggest in the local context, individual actors might use the logic as tools to achieved individual and organizational objectives. However, academics remained stay in their dominant logics as (McPherson and Sauder, 2013, p. 23) suggests that "actors affiliated with a professional or organizational group will closely adhere to that group's primary logic". This shows while actors at the local level may practice logic as the tools, but in broader field, the boundary between the logics remains unclear and actors may filter the logics to comply with (Lee and Lounsbury, 2015). With all approaches mentioned above, we propose that in UBC hybrid academics are the ones who can handle with two logics, the dominant and new logic; in this case they can make an interface

between science and business logic.

Understanding toward the forming of hybrids over two competing institutional logics is important because this will elaborate how academics cope with such complexity. In respond to [Murray \(2010\)](#) about the need of study which further investigating the dynamics of hybrid formation and blending coexistence and distinction; and call from [McPherson and Sauder \(2013\)](#) about the need of study that examine how actors use and interpret the field logics; our study attempts to advance the knowledge regarding the degrees of coping strategies that lead to the stages of formation of such hybrids. Adopting the [Pache and Santos \(2013\)](#) proposition on the individual role in competing institutional logic, we purpose to give another interpretation that hybrids in UBC can be formed by an effort of individual academics to “combine” two distinct logics by playing roles as follower, integrator, advocator and intermediary. [Lam \(2010\)](#) approaches the coping mechanisms from the academics’ entrepreneurship perspective. The author argues that academics will negotiate and make sense of their roles and identities and recognise the boundary of science and business logic. Hybrids academics are the ‘active agents seeking to shape the boundary between science and business, and have developed different modes of engagement with the emerging knowledge regime’ ([Lam, 2010](#), p. 3). The study proposes that when academics are involved in UBC, and by combining with Pache and Santos propositions academics may have orientation as (a) Traditional – academics who adhere to the norms of science and make a clear boundary between fundamental and applied research; (b) Traditional Hybrids – academics who share the traditionalist view and are willing to implement research programs for industrial demands and emerging markets; (c) Entrepreneurial Hybrids – academics who can combine the entrepreneurial orientation with the values and norms of academic science; or (d) Entrepreneurial Academics – academics who see the boundary between university and industry as flexible and permeable and can bridge between the two worlds. The concepts given by [Lam \(2010\)](#) are useful to differentiate the identities of academics in UBC and to describe the role of academics towards business logic.

Previous study suggests academics’ motivation is related to the willingness and capacity of academics in coping two contradicting logics. [Lam \(2011\)](#) attempts to connect the academics’ orientation with their personal motivational factors. The study highlights that the Traditional Academics (Pure Traditionalist) and Traditional Hybrids are those academics who make a distinct boundary between science and business logics and ‘pursue success strictly in academic arena’ (p. 1360). It suggests that academics mainly pursue personal prestige or ‘ribbon’ ([Lam, 2011](#)). In coping strategies, [Pache and Santos \(2013\)](#) suggest the ones who act this coping attitude are grouped as ‘protector’ indicating (individuals) academics defy business logic and comply with science logic. Academics in this group are the ones who requiring less capacity of integrating of business logic.

[Lam \(2011\)](#) appends the Entrepreneurial Hybrid academics as the ones who recognise the boundary between these two institutional logics and assume UBC is important for scientific advancement. The desire of academics to engage in university at this group is majorly to gain more financial income to advance their scientific projects or ‘gold’ factor. [Pache and Santos \(2013\)](#) propose the group of this kind of academics may act an ‘intermediary’ who can balance the values of science and business. Last, academics who are Entrepreneurial are the ones who ‘believe in the fundamental importance of science–business collaboration for knowledge application/exploitation’ ([Lam, 2011](#), p. 1360). This group of academics is motivated by knowledge/curiosity of industrial collaboration ([Lam, 2011](#)) or ‘puzzle’ and act as hybrids as the ones who can combine or blend the two logics ([Murray, 2010](#); [Lam, 2011](#); [Pache and Santos, 2013](#)). In this group, academics engaged in UBC are the ones who have high capacity of integrating science and business logic.



**Fig. 1.** The coping mechanisms/strategies consisting of the adherence, responses and roles of academics for competing logics of science and business when exposing or participating in UBC, approached by [Pache and Santos \(2013\)](#), [Lam \(2010, 2011\)](#), [Jain et al. \(2009\)](#), [Tuunainen \(2005\)](#) and [Murray \(2010\)](#).

Fig. 1 describes the proposed coping mechanisms/strategies of academics towards the business logic constructed by adapting Pache and Santos (2013), Lam (2010, 2011), Jain et al. (2009), Tuunainen (2005) and Murray (2010). However, we exclude the roles of academics when they are familiar and identified with business logic but novice in science logic, because according to Fig. 1, they may be ‘protectors’ and ‘followers’. We propose that these circumstances are not applicable because these academics will not ignore the science logic. Thus, we argue that academics who are resistant to participate with business project may act as “traditional academics” who defy business logic and comply their science logic while the ones who participated in business project act as hybrids who compartmentalize and combine the two logics.

### 3. Research setting, data collection, and method

To explore the mechanisms through which academics cope with the world of business, we selected academics at two Indonesian universities. The reasons for selecting these institutions are as follows: First, all Indonesian universities have been adopting the ‘third mission’ or the Community Service Program (DGHE, 2003), since 1975. This mission, in addition to research and teaching, obliges academics and students to involve in the society and business community to increase the capabilities and competitiveness among small and medium-sized industries, entrepreneurs, farmers, and other societal groups. Nevertheless, academics can also engage with large and multinational enterprises and obtain ‘credits’, which is important in the pursuit of an academic career (DGHE, 2003). Second, the government of Indonesia through the Directorate General of Higher Education (DGHE) constantly offers funds for research collaboration via funds and programs under the Regional and National Innovation System (KIN, 2012). Thus, academics have an opportunity to collaborate with the business world via either their self-initiative and/or being facilitated by universities or government. Therefore, Indonesia provides us with an interesting context for studying the coping mechanisms of competing institutional logics in UBC. To explore a variation of a coping mechanism used by academics, two different types of public and private universities located in the same region in Indonesia were examined.

Research site I: We chose University A as research site I for the following reasons. The university is public and is among the oldest universities in Indonesia. Via its achievement in the three missions, the university has managed to obtain an “A” accreditation from the National Accreditation Board, together with 12 other leading universities in Indonesia (BAN-PT, 2014). The university is also denoted ‘Autonomous’ or ‘Mandiri’ in research, indicating that it can carry its own research agenda and manage government funds independently. Academics at this university have a high profile in research and publication, as shown by the high score in Scopus, which is equal to the other twelve Indonesian leading universities. In the valorisation activity, the university has purposively increased its co-operation with stakeholders and industries using research clusters relevant to industrial and stakeholders’ demands. For example, the university established research groups in Food Security, Pharmacy, Health, Disaster Management, Environment, Technology and Innovation and In Industry, Entrepreneurship, and Civil Society. Faculty members who are interested in applying for this UBC-type fund or the Research and Community Service Program can apply via the Lembaga Penelitian Pengabdian Masyarakat (LPPM) or the Unit for Research and Community Service. Moreover, academics in this university are civil servants; therefore, all files are under the governmental employee regulation (DGHE, 2003).

Research site II: We chose University B as site II to represent a private university and because it is one of the oldest technical universities in the region. Originated as an Advanced School (College) in Engineering, the university managed to become a “University” in 2002 after several reforms in the organizational structure and statutes. Unlike University A, University B focuses on technical research and teaching. University B serves research activities in Renewable Energy, Power Systems, Transportation, Informatics, Civil Engineering, and Survey Engineering. In research valorisation, in addition to LPPM, the university created a special unit named Badan Aplikasi dan Penerapan Riset (BAPR), or The Unit of Research Application and Implementation. Its task is to support valorisation of academic research and to commercialize it. Academics in this university have a status as the ‘Yayasan’, or Foundation employees with all aspects concerning their duties aligned with the university rules and obligations.

We selected fifteen academics at University A and fifteen Academics at University B from the departments of Electrical Engineering (EE) and Computer Science (CS) (in this study, the Informatics Engineering/Information System). The reason for choosing academics in these fields is that both EE and CS have the same root (Denning, 2000, 2005) and have a long history in UBC (Noble, 1977). However, although both are included as professional adhocacy and close-related disciplines (Whitley, 2000; Denning, 2005), the disciplines differ in the achievements of academics in these fields in UBC, as shown. For example, Bozeman and Gaughan (2007) show that academics in engineering (including electrical, mechanical, chemical, and civil) have a higher degree of involvement in UBC than do academics in computer science with respect to higher grants and the clearness of the contract. Accordingly, D’este and Perkmann (2011) show that academics in the field of electrical and electronics engineering tend to involve more UBC in form of meetings, consultancy, joint research, training, and the creation of physical facilities than do the academics in computer science.

Furthermore, in the Indonesia context, the EE field has produced 264 published documents and the Computer Science field has produced 239 published documents (SCImago, 2007). Nine academics at University A and 13 academics at University B participated, whereas the rest were unable to participate. We conducted face-to-face semi-structured interviews with 15 academics, video-conferences with 2 academics, and interviews by email with 5 academics, all in the Indonesian language (See Table 2). Each interview (excluding email-interviews) lasted between 30–40 min. The face-to-face and videoconference interviews were transcribed verbatim, and all interviews were analysed using qualitative software tool ATLAS Ti. We categorized the academics into two main groups, Experienced and Inexperienced.

- *Experienced academics* are the persons who have been involved in UBC-type projects more than the Inexperienced ones. This

**Table 2**  
Distribution and profile of the interviewees.

Departments	Respondents' experiences with business logic	SITE I (Univ.A)	SITE II (Univ.B)	Total
Electrical Engineering	Experienced	4	4	8
	Inexperienced	3	4	7
Computer Science	Experienced	1	2	3
	Inexperienced	1	3	4
	Total	9	13	22

includes engagement in a variety of modes such as long-term consultancy, industrial employment, commissioning, technology development, community service program, start-ups, joint venture, and implementation.

- *Inexperienced academics* correspond to persons who have been engaged at most in a small-scale Community Service Program and who have conducted the activity at most one time in an academic semester.

Both groups consist of mixing of early career researchers as well as established academic researchers. In the interview protocol, in science logic, we used the Mertonian norms as operationalized by Whitley: dependency (strategic and functional) and task uncertainty (strategic and technical) – (see Table 1), and competitiveness, objectives, disclosure and complying with business practices to operationalize to business logic, as defined by Mitroff (1974). Table 2 shows the respondents' distribution and experiences in business logic.

This study followed Eisenhardt (1989) on building a proposition from case studies. One of the main biases in a case study is the lack of generalizability. However, this study aimed to understand the coping mechanisms adopted by individual academics that may be applied generally (as suggested by Hartley, 1994), even from a single case of universities (as suggested by Gummesson, 2000). We prepared an interview protocol that consisted of topics on science and business logic. First, in science logic, we operationalized the concept of strategic and functional dependences and the concept of strategic task and technical uncertainty (see in Table 1). Furthermore, we determined subtopics that constructed the mentioned topics. For example, in strategic dependence, we constructed questions that related to how academics must persuade their colleagues and peers in research and publication, namely Persuading, Strategies, Convincing, and Collective Goal. In strategic uncertainty, we constructed questions that correspond to the stability of problem formulations and hierarchies of research problems. The main questions related to how academics define their research problem or whether they were working on the same set of problems.

Second, we constructed questions for business logic. The questions included how academics incorporate their research and business interests, whether they acknowledge the practices and the norms of the business world, and what drives academics to undertake research collaboration with industries – these questions provide information about the academics' knowledge of business logic. Finally, in the university valorisation activity, we prepared questions inquiring into three main topics, namely education, research and the third mission (i.e., the Community Service Program). For example, we formulated questions concerning the type of their university and whether experiences with businesses influence academics in preparing teaching materials for the classroom. We also asked questions that related to the third task, such as how the academics find ideas and topics, for example, their third-task projects, and what is the outcome of the third task performed by the academics.

## 4. Results

### 4.1. Coping strategies: compliance to dominant logic (science logic) and the inclusion of new logic (business logic)

This section presents results on the relationship between the adherences and responses of academics to the science logic in the department of electrical engineering and computer science. Following the Whitley's values (2000), our results suggest that the work organization of proposed fields corresponds to a low degree in strategic dependency. In other words, in conducting research, academics in these fields have a variety of goals. Concerning the collective goals, both inexperienced and experienced academics in science logic at both universities agree that they have no consensus about a greater degree of collective research topics, suggesting that the research problems have no hierarchies. Nevertheless, a lower degree of collective goals has been shown by academics in both fields. For example, an experienced (familiar) academic in science logic and an experienced (identified) academic in business logic at the department of electrical engineering of University A argue that the collective goal of his research refers to the group's goals or is of even smaller scope. He shows his compliance to this norm as follows:

"I comply with collective goals and do research on topics that related to such collective goals. The collective goals are determined by our research institutions and groups at our department in which the department sets a research agenda guided by the Long-Term National Research. Our department ratifies the agenda."

In recognizing the fields' elites or the clear elites, both inexperienced and experienced academics in science at both universities and departments argue that there are no clear elites existing for their research. All academics agree that peers from their departments, faculties, and governmental agencies are the elites of their research, but no particular elites in a broader scope were mentioned. The 'local' elites are the peers for research, for example, peers in the national research grants and publications. However, because EE and



CS are fields that have a nature as a professional adhocracy, suggesting research in these fields are mostly applied and contextual (Whitley, 2000; Denning, 2005), there is an open “space” for the academics in these fields to be recognized by ‘peers’ outside their university. An experienced (familiar) academic in science logic and an experienced (familiar) academic in business logic at the department of electrical engineering at University B states,

“For example, the department assigns me to conduct this course even [though] other colleagues are also competent. Further, the department allows me to give lecture[s] in Power System[s] because of my experiences in industry. If we have reputation as a “professional”, they (business professionals) will call us to solve their problem. They (business professionals) thought that we (academicians) are experts in their field, but instead, I gained the expertise from them.”

The next variable in the strategic dependency is the core journal. Whitley (2000) proposed that in these fields, there were no core journals; thus, there existed no main universal research topics or consensus. Most interviewees agreed with this assessment, in which they mentioned many types of journals and did not point to a specific journal. This view is also aligned with the recognition of peers, in which academics recognize their peers but in small scopes, which implicitly shows their adherence to the field identity. An experienced (identified) academic in science logic and an experienced (familiar) academic in business logic in the department of computer science at University B did not point to particular journals and stated,

“That will be the target of our colleagues (prof), in pursuing a PhD; for example, we pursue (to publish) in a well-reputation journal. So, we choose journals which are relevant to our research.”

The last variable in the strategic dependency is the Strategies or the Research Agenda and Setting that relate to how the research agenda or research setting has been prepared to reach the main goals of the research. Because there is no consensus about the common goals of research, the perception of academics towards the research agenda is varied. From all interviewees, we found that research agendas were highly referred to by the National Research Grants offered by the Directorate General of Higher Education of Indonesia and to the individual research roadmap. This framework is widely adopted by universities. However, inexperienced and experienced academics in the science logic have a different perception of whether research can be related to industrial needs or are only for scientific purposes. An experienced (familiar) academic in science and experienced (identified) academic in business logic at the department of electrical engineering of University A tend to compartmentalize the logic of science and business because he argues,

“My research is often based on the industrial needs. I (often) do research outside the university (topic) and let the industries select them.”

Accordingly, an academic who is experienced (familiar) in science logic and experienced (identified) with business logic at the department of computer science of University A shows the agreement with his colleagues from the department of electrical engineering. He says,

“We can use (cooperation) for our research topic, and I will involve students in this.”

However, inexperienced academics in business logic at the department of electrical engineering at University A and at University B have a different perception about the research agenda. They seemingly do not consider possible industrial applications of their research, and they show a tendency to follow the research agenda as it is formulated. An experienced (familiar) academic in science logic at University A shows his ignorance of business logic and his compliance with the science logic:

“All research topics have been prepared by our institutions, and my research has been selected by the national department (government agency).”

In addition, an experienced (familiar) academic in science logic and inexperienced (novice) academic in business logic of University B implicitly ignores the business logic and complies with the science logic because she argues,

“My research has been reviewed by three (university) examiners who are experts in the research topic.”

Whitley (2000) proposes that academics in the fields of EE and CS are high in functional dependence. In other words, academics in these fields shared standardized procedures and methods of research. All interviewees have a common perception that research methods and procedures are standardized and cleared for everyone in the groups. They also provide a hint that sharing ideas with colleagues and the influence of colleagues’ works on their work are more of local rather than wide scope. However, academics who inexperienced and experienced in business logic have a different opinion about working in multidisciplinary fields. An experienced (familiar) academic in science logic and experienced (identified) in business logic at the department of electrical engineering at University A states,

“It depends on the research and work we handle. In general, I am working on interdisciplinary research. However, there are several small pieces of research that [are] based on the individual and in the same fields.”

An inexperienced (novice) academic in business logic who is familiar with science logic at University A at the department of electrical engineering suggests a different opinion; he states,

“I am working with teams consisting of students and in the same field.”

In Task Uncertainty, we show how academics comply with the strategic task and technical uncertainty. Whitley (2000) argues

**Table 3**  
The compliance of academics to science (field) logic and inclusion of business logic.

Science Logic (SL)	Whitley's values for CS and EE	Computer Science (CS)				Electrical Engineering (EE)			
		Univ. A		Univ. B		Univ. A		Univ. B	
		E = 1	I = 1	E = 2	I = 3	E = 3	I = 4	E = 4	I = 4
Strategic Dependency									
Collective Goals	No	(1) <sup>a</sup>	(1)	(1)	(3)	(3)	(2)	(1)	(2)
Clear Elite	No	(1)	(1)	(2)	(3)	(3)	(3)	(4)	(2)
Recognition from peers only	No	(1)	(1)	(1)	(3)	(3)	(3)	(4)	(2)
Core Journals	No, depends on journals scope	(1)	(1)	(1)	(2)	(3)	(3)	(4)	(2)
Field Identity	recognizing peers	(1)	(1)	(1)	(2)	(3)	(3)	(4)	(2)
Strategies/ Research Agenda setting									
Can be related to business	Yes	(0)	(1)	(0)	(3)	(0)	(1)	(0)	(2)
Can be related to national policies	Yes	(1)	(1)	(1)	(3)	(3)	(3)	(1)	(3)
Functional Dependency									
Standard methods and procedures	Yes	(1)	(1)	(2)	(3)	(2)	(4)	(2)	(3)
Sharing ideas with colleagues	Local more than global	(1)	(1)	(1)	(2)	(2)	(3)	(3)	(2)
Influences of colleague (s) work to the individual work	Local more than global	(0)	(1)	(1)	(2)	(2)	(3)	(3)	(2)
Dependencies on other field (s)	Yes	(1)	(0)	(2)	(0)	(2)	(0)	(3)	(0)
Strategic Task Uncertainty									
Consensus about main research problems in field.	No	(1)	(1)	(2)	(2)	(2)	(2)	(4)	(2)
Hierarchy of problems.	No (individually driven problems)	(1)	(1)	(1)	(2)	(3)	(3)	(3)	(2)
Technical Uncertainty									
Established Research Techniques	Yes	(1)	(1)	(2)	(3)	(3)	(3)	(3)	(3)
Research Techniques is Predictable	Yes	(1)	(1)	(2)	(3)	(3)	(3)	(3)	(3)

E = Experienced with Business, I = Inexperienced with business.

<sup>a</sup> The number of academics who suggest the value, which not interpreted as quantitative amount.

that the fields of engineering and computer sciences are the fields that have a low degree of strategic task and technical uncertainty. In other words, academics in these fields address predictable research results and stability of problems. All respondents agreed that they have no difficulties in finding research topics and problems because the fields provide the flexibility to let the academics choose a greater variation of research topics. Furthermore, all academics suggest that they have a standardized method to conduct research. To summarize, we present Table 3 to describe the adherence of academics to the science logic in their field. Table 3 suggests that there is no difference in adherence to science logic between the universities and fields. This situation is also consistent with Whitley's values about field characteristics of strategic and functional dependency. However, we see the differences between experienced and inexperienced academics concerning the perception about the need for another "space" for a particular logic to exist. In Table 3, the experienced academics agree with the Whitley's value of the fields shown by their acknowledgement that their research cannot directly be related to business, but they can work in multidisciplinary environments. For example, an experienced academic at the department of computer science at University B argues that he cannot combine the science and business logic, but he can compartmentalize it because he suggests,

"So, the problem is that a misunderstanding of concept of (research) in information system as we (academic) perceived to what they (professional) perceived. They (business) cannot combine the scientific concept to what they need in practice. That is the big issue. When we propose open the idea of our research, they just say, 'please just do it'."

In line with this observation, an inexperienced (novice) academic in business logic who is experienced (familiar) in science logic at the department of computer science at University B suggests that he ignores the business logic and complies with the science logic:

"It is fundamental (research) and it is aligned with our university's agenda. The course for students consists of theory and application. I think my research should be fundamental, but in the end, it should be applied to business, but first I prefer to conduct the fundamental ones."

To conclude, the experienced academics in business are trying to compartmentalize the science and the business logic. Conversely, inexperienced academics in business are either ignoring or defying the logic of business. However, both academics are fully complying with their dominant logic, the science logic. Table 3 shows the propensity (the number of academics) of experienced and inexperienced academics in business logics to adhere to the science logic. Table 3 shows that there are no discrepancies in adherence to the science logic at either university or in either field; however, the experienced academics in business tend not to relate their research to business. Rather, they show a tendency to work in multidisciplinary research.

#### 4.2. Coping strategies: comply to business logic and inclusion of dominant (science) logic

This section presents how those inexperienced (novice) and experienced (familiar and identified) in business adhere to business logic. An inexperienced (novice) academic in business logic and experienced (familiar) in science logic at the department of electrical engineering at University A explicitly defies the logic of business; he argues that the business logic leads to a contradiction of his approach to research and teaching. He argues that his field is too far from application in industries, and although he applies his research to business, it does not benefit his academic reputation. He states,

“What I have been researching recently will be useless (for business), but for the scientific contribution it will be OK. If we seek to implement (my research) in the business world, it will be difficult because (in the industries) they work with just a simple theory, such as the Proportional Integrative Derivate (PID). Simple problems (in business) can be solved. In the real world (business), it is not so sophisticated. When we talk about theory, we talk about mathematics.”

Less experience in collaboration with business hinders academics in obtaining knowledge about business logic, which is shown by the lack of knowledge on competitiveness and the working habits of business. An inexperienced (novice) academic in business logic and experienced (familiar) in science logic from the department of electrical engineering in University B states an opinion about the difficulty in establishing collaboration with the industries is when to start a collaboration. Moreover, inexperienced academics may “learn” from experienced academics like experienced colleagues. Unlike the inexperienced academic in University A, he is not necessarily defying the business logic; rather, he is ignoring such logic. He argues,

“I never got fully in touch with business; UBC may be difficult. Because I’ve never tried it, I teach full time, unlike my colleagues who once have tried working with business and then they get used to it. If I know how to get in (with business) then I can continue the cooperation.”

In the department of computer science, an inexperienced academic in business logic and experienced (identified) with science logic at University A describes his objection to being involved with business as a consultant. Accordingly, he defies coping with such a condition; as [Mitroff \(1974\)](#) did, he proposed that Particularism corresponds to a situation in which academics must cope with a given situation rather than leading or organizing. Although it may benefit him, he seemingly defies being involved in business because:

“I would be losing much. First, I would be wasting my time; second, I would earn less economic compensation. So being a consultant (in company) is an inconvenient task for me. I would need to spend a lot of time there.”

This statement is also aligned with the opinion of an inexperienced academic in business logic and experienced (familiar) in science logic at University B. She agrees that academics should be involved in the valorisation activities, but she implicitly argues that valorisation may take away academics from their obligatory duties, such as teaching. Although she is not complying with the logic of business, she acknowledged that being involved in business is important. Concerning the Mitroff framework, the inexperienced academic acknowledges her personal interests and her own objectives as an academic. In this context, we label this academic as the person who complies with the science logic and ignores the business logic. She states,

“It is necessary (for business), for self-development as an academic and we can promote our university. For example, when we engage with business as a trainer, then people will know our university, and as person, people will know who we are []. However, there is a negative effect: academics who often [are] involved with business will leave their obligatory duties, such as teaching because they spend more times outside the university.”

For experienced academics both in science and business logic, collaboration with business has become interplay between the science and business practices. The most common cases are the difficulties with linking the interests between the practices of science and the practices of business. The difficulty with integrating Organized Scepticism and Dogmatism is an example. An experienced (identified) academic in science logic and experienced (familiar) in business logic at the department of electrical engineering in University A argues that, although it is difficult to combine the fundamental and industrial research, he can compartmentalize the need of industries apart from his research roadmap. Based on his experiences, he argues,

“I can incorporate the need of industries (with my research) by making identification of the industrial problems. For example, if there is a problem with equipment/sensors in the industry reported by my students. The equipment could be one of my next studies. If possible, we can communicate to that industry in case the research is good.”

He continues,

“However, it is difficult to combine the fundamental and industrial research. Fundamental research uses material and equipment on a lab scale, which is (in quality and quantity) different from the ones in industrial demands.”

The compartmentalization between science and business logic does not always occur for experienced academics in business logic. In Dogmatism, an experienced (identified) academic in business logic and experienced (familiar) in science logic in the electrical engineering department at university B argues that he must follow a business goal. Otherwise industries can terminate the collaboration. He states the following arguments:

“There is a conflict between the scientific standard (of research) and the business standard of research and problem solving. Regardless, we must follow what they (business) need for us to do.”

He continues,

“We followed them. If we push our academic standard clearly, we are not following them. We must keep pace with their Standard Operating Procedure (SOP). This is different from our own SOP (academic). It may lead to conflict. At the end, we have a lack of quality. On the one hand, we need research funds from them, and on the other hand, we must lower our academic idealism.”

Next, experienced academics in the computer science departments have similar thoughts about coping with competing logics in UBC. Adaptation with business procedures and working habits are the coping mechanisms to face the Dogmatism of the industries. An experienced academic at the department of computer science from University A suggests the importance of adaptation with business. We group this academic as one capable at combining business and science logics. He states,

“If we can adapt with them (business), it will make (collaboration) easier. First, do not use scientific terms, and if they (business) refuse that, do not insist. If they (business) are comfortable with us, all collaboration problems can be solved.”

Another experienced (familiar and identified) academic in business logic in the computer science department at University B argues that projects that have been conducted in collaboration between universities and business often suffer from a lack of commitment from business professionals. He also argued that UBC always occurred in unmatched conception but is easy in communication. We group this academic with persons who can compartmentalize the logics. His opinion is,

“The main problem is in the understanding in concept, an information system from the academics side with (maybe) less experience in the practical sides. They (business) are not able to combine concept in the academic way with what they need in the field/practice. That’s the major problem.”

To summarize, the compliance to business logic has been shown by the degree of experiences in business or industries and does not depend on the degree of experience in science logic. Table 4 describes points of the propensity of inexperienced and experienced academics working with the industries coping with business logic. Table 4 shows that the universities’ type and disciplines are not influenced by the academics’ knowledge of business logics but by experiences.

#### 4.3. Coping strategies: roles and groups of academics– compliance (comply science and defy business logic) and compartmentalization (intermediary both logics)

From 22 academics, we group them into the roles of the individual action in UBC. For inexperienced academics in business, we confirmed that there are 9 academics and another 13 experienced academics (agreed with Table 2). The novice academics in both logics are individuals who see that they are in the early phase of their academic careers and have not even started to do the community service program. However, this situation is limited to academics who have never worked in business before joining as an academic. Our finding suggests that the Pache and Santos framework fits this situation. Along with the rise of their academic career, academics who are novices in business logics begin to be followers and protectors. However, their participation in UBC may be symbolic rather than substantive (Bercovitz and Feldman, 2008). We interviewed eight inexperienced (in business logic) academics who act as followers. For example, an inexperienced (novice) academic in business logic who was familiar with science logic stated,

“I think to cooperate with business would be difficult because I have never been tried it before, but if I see my friends who tried it once, then they continued to do it because they know how to do it.”

Furthermore, we found only one respondent acting as a protector, suggesting that he defies the business logic and complies with science logic. This person is identified with science logic and as a novice with business logic. He argues,

**Table 4**  
compliance of inexperienced and experienced academics to business logic.

Business Logic (BL)	Computer Science				Electrical Engineering			
	Univ. A		Univ. B		Univ. A		Univ. B	
	E = 1	I = 1	E = 2	I = 3	E = 3	I = 4	E = 4	I = 4
Competitiveness								
Better than competitor	(1) <sup>a</sup>	(0)	(1)	(1)	(1)	(0)	(4)	(0)
Disclosure								
Close disclosure of research results	(0)	(0)	(0)	(0)	(0)	(0)	(1)	(0)
Complying and Adhering to								
Business Model	(1)	(0)	(1)	(1)	(2)	(0)	(3)	(0)
Defined Strategy	(1)	(0)	(1)	(0)	(2)	(0)	(2)	(0)
Defined Distribution	(1)	(0)	(1)	(0)	(1)	(0)	(3)	(0)
Defined Product	(1)	(0)	(2)	(0)	(3)	(0)	(4)	(0)
Objectives								
Benefits for Individual	(1)	(0)	(2)	(0)	(1)	(0)	(4)	(0)

E = Experienced with Business; I = Inexperienced with Business.

<sup>a</sup> The number of academics who suggest the value which not interpreted as quantitative amount.

“To be a consultant would be difficult; we have to spend more time there (in industries). That is problematic. However, to be a consultant, we are not obliged to be there (at industries). We stay here (in university) and focus on my task here (in university). If they want (business), we can leave for a while.”

Our results suggest that most experienced (familiar) academics in business logic are more likely to compartmentalize the logic and act as intermediary, integrator and advocator. We did not find any experienced (who both identified with science and business logic) academics who act as a hybridizer. Reasons for the situation are generated because no academics own (a) company. Furthermore, at the public university, it is prohibited to have a company due to the civil servant laws. Next, we found three respondents who are familiar with both logics, suggesting that they can compartmentalize the science and business logics and act as an intermediary, showing that these academics can bridge the practices between two logics. For example, an academic in the computer science department at University A states,

“To work with the business is easy, if we can adapt (with them). First, we do not focus on the use of scientific terms and don't be too straightforward or refuse them directly. If they are comfortable with us, however, we can solve the problems. We do not have to be aggressive frontal even though we have a PhD in this field.”

Subsequently, we found three respondents who act as an integrator, suggesting these academics may ‘push’ and integrate the practice of science and business logic. An experienced (identified) academic who holds a PhD with some years in academia tends to this role. For example, an academic in the electrical engineering department in University A suggests,

“To work with business, I have research on the Micro-Hydro (MH) controller. Last year, I tried it once, which was difficult. The turbines and the generator are easy, and the MH is the domain of the developed countries. I want to develop this, but I faced obstacles. Although I got a grant from the government, I do not know how to sell this to business society.”

However, the integrator academics determine their roles in UBC either as a leader or as a researcher in research implementation. As a “leader”, academics will lead or push their research or as integrator to initiate UBC, whereas as a “researcher”, academics will be members of projects. This strategy is consistent with when academics act as an advocator, when they use their knowledge in business logic to advance science and to keep their identity in science logic. As an advocator, an experienced (identified) academic in business logic and experienced (familiar in business) at the department of computer science in University B argues,

“Just like in Information Systems in our university, if we analyse the implementation of a system, we must know the role of business. The business logic of this is, for example, if students want to take courses, they should register online. We cannot interfere with the users in our university so I highlight this as high technology, but it has a low impact on our organization.”

To conclude, based on their adherences and responses, we group them into their roles concerning the business logic, and we group them in the degree of entrepreneurial action of the academics. Fig. 2 describes the roles of academics.

#### 4.4. Interplay between the university's valorisation activities and the compliance to business logic

The interplay between the science and business logic has been shown in the previous sections. This section aims to show the interplay between business logic in university's activities, for example in teaching, research and community service, and differences between the two universities. In teaching, for example, experienced academics in business logic from the departments of computer science at both universities have different opinions. An experienced (familiar) academic in business logic and identified in science

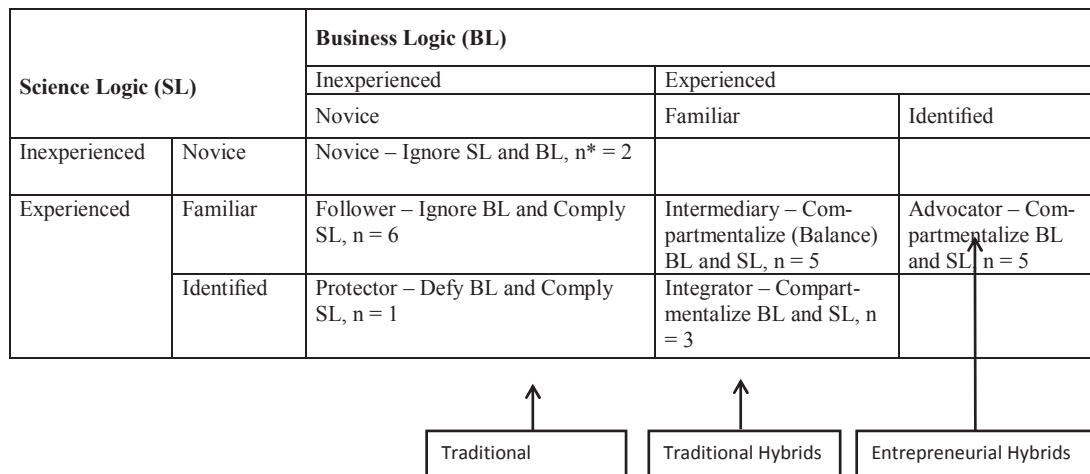


Fig. 2. The coping mechanisms/strategies consisting of the roles and groups of academics in UBC.

\*The number of academics who showed the values; which not interpreted as quantitative amount.

logic at the department of computer science at University A shows his concern about incorporating the business logic into teaching, as follows:

“I always (do) that thing, I do let students brainstorm for the course I’m responsible for; for example, in the Programming or in Control System course. I’ll give a hint as to the use of the course in the market or in the world of work. And, I also give them such motivation and experiences.”

A different idea is suggested by an experienced (familiar) academic in business logic and identified in science logic at the department of computer science at University B because he suggests,

“Since I have never taught that subject before, I do not want to incorporate (applied) (the collaboration) research into teaching. When you teach the bachelor/undergraduate level, you do not need to get the depth of science, except if you do a PhD. At the bachelor, you only need to teach very basic. For example, the Programming course is a pre-requisite of image processing.”

In research, although electrical engineering and computer science are fields close to industries (Whitley, 2000), the inexperienced (novice) academics in business do the basic research as their research strategy. An inexperienced academic in business logic at the electrical engineering department from University A states,

“What I have studied/researched at the university is somehow ‘useless’ but for the contribution to the science is OK. We can do the complexity of math in our research, but if we want to implement those to practice it should be in a very simple way.”

At Universities A and B, the experienced academics in the business logics of EE and CS indicate a preference that business logic would affect the nature of research. Experienced academics in business may augment the nature of research in their department because they have been exposed to ‘commercial logic’ for a long period, suggesting they have knowledge in how to address business. They have a compartmentalized thought that research should not only ‘stay’ at the university, but it must be practicable, implying that the commercialization of research has occurred (Shane, 2004). An experienced academic in business at the electrical engineering department at University A states,

“I have a research project that I think I can commercialize the product of. Fortunately, I got a grant from the government. I have a project in Micro Hydro Power Plant, which is designated to the rural areas. However, I wonder who will be the customer, since few of them were able to buy it.”

The third dimension of university practices is the ‘third mission’, or Community Service. This mission is an obligatory task and has been done since the 1970s at Indonesian universities (DRCS, 2012). Academics should be involved in any UBC project through the third task ‘credit’ to complete the ‘academic credits’ (DGHE, 2003). Experienced and inexperienced academics in business logic have performed a variety of approaches to do the community service. The ‘commercial logic’ has affected the practice of community service (see Table 4). Academics at University B have performed community service on an individual basis, while academics at University A have mostly been appointed by the university. An experienced academic in business logic at the department of informatics of University A who has been assigned to a UBC project expressed that this project is not fully useful to improve his reputation. In addition, he then said that the project is only a minor credit in community service and therefore does not affect much. He says,

“That (the community service) is regarded as the UBC project. I work there because I’ve been assigned by the university. I never do a UBC with the university’s grant; rather I prefer to get funding from outside (business).”

This statement is also aligned with an experienced academic in business logic in the department of electrical engineering of University B because he says,

“By being involved in UBC, I am more exposed to society. It is making me know them better, and at least they (society) have a sort of dependency on our university by letting us solve their (technical) problem. Then, we can engage their local authority, since we are not able to ‘change’ them.”

To conclude, there are a variety of coping mechanisms to incorporate the business and the university activities. Table 5 shows all the propensity of academics’ adherence to business logic related to university activity. The table shows that experienced academics in business try to incorporate the logic of business into university activities such as teaching and community service. Table 5 also suggests that UBC at both universities is different in terms of Community Service; UBC is personally driven at University B, whereas at University A, participation in UBC is mostly assigned by the university.

## 5. Discussion and conclusion

The purpose of this study was to examine how individual academics cope with the divergent institutional practices of science and business in the UBC framework. By contrasting two groups of academics (experienced and inexperienced with business) at two universities (public and private universities) and two fields of sciences (Computer Science and Electrical Engineering), we studied the variation of individual academics’ responses on competing institutional demands. With respect to the adherence to the science logic, there is no discrepancy in the practices and norms of science between the two universities, particularly in how science is interpreted (see Table 3). This shows academics at both universities and both fields are complying with the common values of electrical engineering and computer science education and research, which caused academics in these fields to comply with similar values and practices (Whitley, 2000; Denning, 2005). Academics with inexperience with business are labelled as “novice” with business logic. It

**Table 5**  
the propensity of the effects of business logic on a university's valorisation activities.

University's Activities	Computer Science				Electrical Engineering			
	Univ. A		Univ. B		Univ. A		Univ. B	
	E = 1	I = 1	E = 2	I = 3	E = 4	I = 3	E = 4	I = 4
Teaching								
Experiences with business are shared in the classroom	(1) <sup>a</sup>	(0)	(1)	(0)	(4)	(0)	(4)	(0)
Research								
The nature of Research								
Applied	(1)	(1)	(2)	(3)	(4)	(0)	(4)	(0)
Basic (Fundamental)	(1)	(1)	(0)	(3)	(0)	(3)	(0)	(3)
Research Outcomes								
Prototype/Product	(1)	(1)	(2)	(3)	(4)	(0)	(3)	(0)
Report	(0)	(1)	(0)	(0)	(0)	(0)	(0)	(0)
Papers/Articles	(1)	(1)	(2)	(0)	(4)	(3)	(4)	(3)
Method (s)/Simulation	(0)	(0)	(0)	(3)	(4)	(3)	(0)	(3)
The Third Task of University (e.g. Community Service)								
Ideas to do UBC								
Individually driven	(0)	(0)	(2)	(2)	(0)	(0)	(4)	(2)
From Business	(1)	(0)	(2)	(0)	(2)	(0)	(3)	(0)
Assigned by the university	(1)	(1)	(2)	(3)	(4)	(3)	(4)	(4)
Audience of UBC and knowledge dissemination								
Business/Companies	(1)	(0)	(1)	(0)	(0)	(0)	(3)	(0)
Government/Funding Agencies	(1)	(1)	(2)	(3)	(4)	(3)	(4)	(3)
Society	(1)	(0)	(2)	(0)	(2)	(0)	(3)	(2)
Relationship with business via Community Service								
Maintaining relationship	(1)	(0)	(1)	(0)	(3)	(0)	(2)	(0)
Improving over times	(0)	(0)	(1)	(0)	(0)	(0)	(2)	(0)

E = Experienced with Business; I = Inexperienced with Business.

<sup>a</sup> The number of academics who suggest the value which not interpreted as quantitative amount.

was argued that their research can be encompassed into two trajectories. The first trajectory is one that can be related to the business demand and complies with the setting of the research agenda. Academics that are inexperienced with business logic in both fields perceive that their field is “close” to the world of business, suggesting that forming a relationship with business is easy and doable.

However, a different situation exists for academics that are experienced with business, as they are labelled as “familiar” or “identified” with business logic. Electrical engineering and computer science are considered to be professional adhocracies, suggesting that research conducted in these fields is contextual and application oriented (Whitley, 2000; Denning, 2005). Experienced academics argue that involving themselves in UBC is difficult and challenging. Unlike academics that are inexperienced in business logic who perceive their field as “close” to the world of business, a perception not shared by experienced academic, they argue that working with business professionals is problematic. Table 3 shows a discrepancy between experienced and inexperienced academics regarding the dependencies of their fields on other fields. Experienced academics agree that their field depends upon other fields and they can work in multidisciplinary environments, whereas inexperienced academics are more likely to argue that the fields are “standalone”. While experienced academics perceive the presence of other fields in their research in a “Mode 2” research orientation (Nowotny et al., 2003), inexperienced academics prefer ‘Mode 1’ of knowledge production and independence from other fields.

To summarise, these findings suggest two dimensions. First, regarding Whitley's proposition about the nature of a field, our results indicate that, although the field of computer science and electrical engineering can be “applied” and contextual in its nature, it is not necessarily driving academics to work with the business world. In other words, even when there is leeway in a field, UBC is still problematic. Second, our results highlight an interesting point about how a “hybrid” academic copes with two competing logics. This supports the study of Murray (2010, p. 378) who argued that “hybrids can arise from and maintain distinction between two logics”. This suggests that experienced academics are able to maintain a distinction between the two logics during their engagement in UBC. However, our results are not fully in line with Pache and Santos's (2013, p. 26) proposition who argue that “hybrids are individuals who are able to change the current institutional order to craft new sustainable hybrid institutional arrangements”. This suggests we could not find academics who are fully able combining the two worlds, as described in Fig. 2.

Interesting results come from the adherence of academic to business logic where we highlight that a similar situation has occurred. Inexperienced and experienced academics use different coping mechanisms for business logic. Although this situation implies that both groups of academics have ‘knowledge’ of what will happen if they incorporate research, for example the basic versus applied research, Table 3 suggests that there was no experienced academics in our interviews. This suggested that their field was an open space for business work. As mentioned earlier, inexperienced academics argue that working with business is easy and doable, but inexperienced academics tended to defy business logic because they presume it will not fit with their daily practices or template of action (Oliver, 1991; Dunn and Jones, 2010). This situation describes the condition where academics, either experienced or inexperienced with business, may subconsciously “separate” the boundary between the two worlds, although they may embed themselves in the new material, practices, and values via participation in UBC (Pache and Santos, 2013).

In the interplay between university strategy and business logic, our results suggest that experienced academics in business logic have attempted to “combine” the values and practices of business with the universities’ practices, whereas inexperienced academics in business logic tend to stay within their scientific boundary. Research valorisation and commercialisation by a university have influenced the academics’ behaviour in coping with the conflicting logic. For example, in the public university, ideas to provide Community Service are mostly derived from the business’ and university’s project, whereas in the private university, ideas for the community service program are often individually driven. This shows that “pressures” from universities is greatly associated with the degree of adherence of academics in UBC. [Pache and Santos \(2013\)](#) propose that the degree of compliance to a new given logic may operate in conscious and subconscious states. Academics experienced in business logic in the public university may consciously comply with business logic because they were assigned by the university. Conversely, experienced academics in the private university may subconsciously comply with the logic of business because they are largely involved in UBC individually.

This paper, although it has limited empirical data, attempts to contribute to a number of academic disputes of the relationship between micro and macro action from the institutional logics perspective ([Thornton et al., 2012](#)). Our study aims to provide empirical evidence and advance our understanding about coping mechanisms and hybrid academics in UBC. [Lam \(2011\)](#) suggests hybrids are the ones who can “combine” the logics and the ones who can recognise the boundary between the two logics. [Murray \(2010\)](#) argues that hybrids emerge from a “hostile world” where, for example, business logic compels science logic or vice versa. Hybrids emerge from the blending of the two. In our study, we highlight that hybrids or the forming of a hybrid can emerge from organisational coercion due to the obligation of Indonesian academics to engage with UBC ([Swan et al., 2010](#)). However, there were few academics that we categorised as a “hybridiser”. This suggests that academics can fully combine both logics because none of the academics run a company or enterprise and none of them intend to incorporate their research into business demands. With regards to the coping mechanism, we provide the mechanisms of coping strategies for the context of UBC from the view of academics, meaning that there is a given dominant logic to which a second is added. We elaborated on how academics will respond when they are situated and embedded in situations with different institutional logics ([Thornton et al., 2012](#)) and how the responses may differ.

Our results show the identity and role of academics in two competing logics. Academics that are experienced in business logic play roles, such as the intermediary, integrator and advocator, and compartmentalise the practices of science and business when participating in UBC. Academics that are inexperienced in business logic are categorised as the follower and protector of the science norms. Experienced and inexperienced academics, however, acknowledge the boundary between science and business. Our results suggest that the variations of coping mechanisms are not solely based on the interplay between the two logics, but also arise from the setting of the logic. We highlight that coping mechanisms are not only a simply of rational choices or dialectical processes, but it is attributed to how much experience and exposure academics have to the business logic.

The next contribution is that we provide empirical evidence and test the Pache and Santos predictions of how individuals cope with the competing institutional logics within an organisation. [Pache and Santos \(2013\)](#) do not include the dominant logic in their framework. However, we argue that the science logic is the dominant logic. In the result, we extend their proposition about individual characteristics to organisational practices, as suggested also by [Thornton et al., \(2012\)](#). The effect of business logic on both universities is different in terms of how the university practices and believes the logic. University A has a legitimate means of establishing a UBC project with business by direct appointment of its academics. The tension has arisen because not all academics agree that UBC funded by the university is useful to increase the interaction with business people. Academics at University B are free to collaborate with business.

Our results suggest that academics can use one of several coping mechanisms when they face tension between science and business logic. We found evidence that traditional and entrepreneurial hybrids ([Lam, 2010](#)) emerge from academics who can compartmentalise these two logics as they play the roles as intermediary, integrator and advocator ([Pache and Santos, 2013](#)). However, we highlight that there is no real hybridiser ([Pache and Santos, 2013](#)) or entrepreneurial academic ([Lam, 2010, 2011](#)) who can fully combine or “blend” the two divergent logics of science and business. We highlight that hybrids are created according to the knowledge that academics favour a particular logic. For example, academics who are “familiar” with science logic and “identified” with business logic may act as an advocator. The results are in line with the approaches of the previous study of [Murray \(2010\)](#) and [McPherson and Sauder \(2013\)](#). While hybrids can “arise from and maintain distinction between two logics’ (Murray, 2010, p. 378), we note that the hybrids may be separated into three polarities as our results suggested (see [Fig. 2](#)). These polarities consist of hybrids who are “business oriented”, “equal in business and science”, or “more science-oriented”. We notice that the “hybrids” encompass those who attempt to blend the two logics but keep compartmentalising them, suggesting the boundary between science and commercial science are clear and present ([Bjerregaard, 2010; Murray, 2010](#)). Next, our study reinforces the arguments proposed by [McPherson and Sauder \(2013\)](#) whereby logics are one of the tools targeting organisational objectives. Individual actors may shift, use and “hijack” such logics. We highlight that academics may “use” their (dominant) science logic and transform it into “business logic”. Our study suggests individual academics compartmentalise the two logics, playing roles as integrator, intermediary and advocator.

We conclude that academics who are reluctant to participate in UBC may act as “traditional academics” that ignore or defy business logic and comply with their dominant (science) logic, while academics who are interested in participating may act as a “hybridiser”, showing that they can compartmentalise between the two logics. However, one of the weaknesses of building such a proposition from a case study is the lack of generality ([Eisenhardt, 1989](#)). However, our study has mapped the attitudes of academics toward business logic that may be replicated in other research settings. Although Indonesian universities are moving towards becoming “hybrid organisations”, the attitudes of academics vary greatly in regards to hybridity. Further study is needed to determine how a hybrid organisation is possible. Thus, a complete picture of how and why hybrids are forming is necessarily to understand the role of micro-action in constructing the macro field.



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