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Faculty of Business Economics

Master of Management

Master's thesis

Corporate venturing and the economic reality of its alterity and sharing: A study of the passive resistance in open innovation.

Joshua Salawu

Thesis presented in fulfillment of the requirements for the degree of Master of Management, specialization Strategy and Innovation Management

SUPERVISOR :

Prof. dr. Jean-Pierre SEGERS



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Abstract

Past research revealed that many new products and services fail in a collaborative environment as a result of passive resistance to innovation. Findings from extant research have gone a step further to confirm resistance to change (RTC) and status quo satisfaction (SQS) as the antecedents. However, with limited empirical evidence such an assumption becomes difficult to generalize. Furthermore, most of these studies on innovation resistance tend to examine resistance from the individual consumer's conscious or active action. Consequently, this qualitative study attempts to investigate the role of passive resistance in adoption-related behavior using a case study of corporate venturing. Corporate venturing allows the investigation to be considered from both individual and firm identity. The concept is also becoming widespread with about 90% of organizations implementing these practices or planning to do so in the next three years. In light of this debate, the study combines interview data from ten collaborative projects/labs with a multiphase survey.

The result revealed that failed or abandoned innovations in a collaborative environment may be a consequence of actors' resistance to change and/or their satisfaction with the status quo. Thus, challenging the assumption that all economic actors and communities willingly share in collaborative projects. The study's findings go further to reaffirm that ambiguity can trigger anxiety when interpreting, assimilating, and exploiting external knowledge. By exploring how firms organize and implement open innovation at both theoretical and empirical levels. Furthermore, the research contributes to the current literature on passive resistance to open innovation. The study may also have helped to stimulate further research on cultural dynamics, with the revelation that an open collaborative project in a high-power distance culture will most likely lead to an unequal relationship between the large firm and the startup firm. Invariably, helping managers plan better in relation to specific cultural requirements associated with open innovation in other settings besides North America.

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Firstly, I am grateful to God for His grace, guidance, and provision throughout this journey. This great achievement could not have been realized without the tremendous support of my family (wife and children), who supported me spiritually, physically, and morally. I would like to appreciate my supervisor, Prof. dr. Jean-Pierre Segers, for the constructive feedback, critical analysis, and immense support throughout the process of the master thesis. He was always there, constantly thinking of how to help me progress with my master's thesis. I am ever so grateful for the articles, the one-on-one advice/meeting at the Diepenbeek campus and his approach to mentorship which is second to none. I would also like to acknowledge some of my friends, especially those I met here at Hasselt University, the list is endless so I won't be mentioning names but you are all special and would remain my friends for life. Finally, I would like to thank everyone who participated in this study, including the experts (Dr. Christian Tidona, Prof. dr. Marcel Bogers, Prof. dr. Ioana Stefan, and Prof. dr. Jaime Bonnin Roca) that took the time to offer advice without them this project won't have been accomplished.

Introduction

Introduction

Over the years, scholars have used a variety of approaches to conceptualize and operationalize the innovation construct. Take this popular definition, for example, where innovation is defined as “an idea, practice, or object that is perceived as new by an individual or other unit of adoption” (Rogers, 2003 p.12). Another prominent study by Aarikka-Stenroos et al. (2017) defined innovation as a novelty, often including digital, but not limited to the process or the diffusion of products and services into the market. The implication from the latter definition would suggest that innovation has evolved over the years, with more and more firms now seeking external ways to market. The practice of this sort is often referred to as open innovation, Chesbrough and his colleagues defined it as “the use of purposive inflows and outflows of knowledge to accelerate internal innovation and expand the markets for external use of innovation, respectively” (Chesbrough et al., 2006, p. 1).

This definition clearly highlights how organizations in their bid to capture or create new ideas, open up the company’s boundaries to all types of external stakeholders. The concept is becoming widespread with about 90% of organizations implementing these practices (i.e., key pillars of OI) or planning to do so in the next three years. (Economist Impact, 2022). This is especially common among large established corporations, seeking to sustain competitive advantage through idea sensing in collaboration with innovative start-ups (Chesbrough 2014; Battistini et al., 2013). These corporations use mechanisms such as hackathons, strategic partnerships, corporate incubators, corporate accelerators, corporate venture capital (CVC), venture clients, acquisitions, etc., to gain knowledge and agility from start-up firms. The mechanism selected in any case tends to depend on whether the new business created is situated within or outside the organization.

Data from the European Commission Joint Research Centre (EC-JRC) report also indicates that the number of annual corporate investments in start-ups has more than tripled, from 980 to 3,232,

between 2013 and 2019 (Siota et al., 2020). In monetary terms that would mean that the total size of investment in corporate ventures has risen by a multiple of seven, from \$19 billion in 2013 to about \$134 billion in 2019 (see Siota et al., 2020). Academic interest in corporate venturing has also increased globally, leading to a number of empirical studies on its antecedents, forms, processes, and outcomes. According to Cubero & Segura (2020) study, corporate venturing is the exploration and commercialization of new technologies or products structurally separated from the corporate organization through the open innovation practice. While "Corporate venturing capital investment refers to incumbent firms making small equity investments in start-ups with good technological potential" (Gompers & Lerner, 2000 p.141).

As firms however turn their innovation activities toward collaborating with external partners, they often face additional challenges in relation to knowledge sharing and management. Some scholars investigating open innovation have gone a step further to highlight these challenges with the argument that the novelty-seeking paradigm undermines adoption-related behavior when it focuses on newness and stimulus (e.g., Dubouloz et al., 2021; Heidenreich & Handrich 2014). Especially, given that the barriers to open innovation are not simply negative counterparts of antecedents. In other words, the benefits of open initiatives remain inadequate if the underlying reason solely focuses on the drivers of adoption and no consideration for its barriers. Wieland et al. (2017), highlight the significant role of barriers with the argument that complex value flows are further complicated in open innovation scenarios where knowledge variation is permissible. The study went on to suggest that the consequence of focusing only on the drivers of adoption is project failure as some actors resist, and others postpone or reject collaboration on the basis that more effort will be required to adequately share and assess each other's knowledge once innovation becomes open (Wieland et al. 2017).

A case in point is the Coca-Cola founder's incubator which shut its doors in 2016, this organization along with many others (e.g. Diageo, Ericsson) have closed down their venturing units due to additional challenges faced during knowledge sharing (Gocke et al., 2021). In open innovation scenarios, complex value flows become more complicated due to the variation in knowledge, many of the start-ups involved are often limited in cognitive capacities, organizational flexibility, and collaboration experience, all of which can create barriers to the open initiative's effectiveness (Cubero & Segura, 2020). The high failure rate of these mechanisms has called for the development of additional applied research in business literature (Calof et al., 2018; Chesbrough, 2014;

Narayanan et al., 2008). Some have even called for the need to look beyond the drivers of adoption, with the argument that passive resistance barriers may offer a more plausible explanation for the high failure rates of innovations (e.g., Heidenreich & Handrich (2014). This is consistent with EC-JRC study which suggests that ventures can experience direct resistance and even attempts to kill it off by people in the organization who (a) do not believe in the venture, (b) do not believe in the manager, or (c) feel the venture is interrupting their comfortable routines. Lastly, Prud'homme van Reine's (2022) study also discussed at length the danger of portraying innovation as a panacea or a solution for all problems, warning that it may make learning from past mistakes and failures in innovation processes difficult.

1.2 Research Motivation

The developments as outlined in the introduction raise important questions about the open innovation model, particularly in relation to how corporate venture is organized. Therefore, I seek to apply a barrier approach to open innovation, as it remains a limited research stream when compared with studies that examine the drivers of innovation (Popa et al., 2017). Furthermore, most studies on innovation resistance examine resistance from a conscious or active action (Talke, Heidenreich 2014; Heidenreich et al.,2016). While this contribution attempts to investigate the inhibiting role of the unconscious or passive action (i.e., passive resistance behavior) through corporate venturing. Passive resistance refers to an unconscious action to resist innovations prior to the evaluation, often driven by the individual's resistance to change disposition, and satisfaction with the status quo (Heidenreich and Kraemer 2015). Furthermore, the literature on corporate venturing predominantly views collaboration through the lens of large corporations in North American settings (Usman & Vanhaverbeke 2017). Whereas, adoption-related behavior may differ from country to country and it may also be considerably different between small and large organizations, especially in relation to business development and organizational priorities (Narayanan et al., 2008). It is from this perspective that the study addresses the following research questions:

1.3 Research questions

- How do firms understand and adopt corporate venturing?
- Why does passive resistance behavior in open innovation lead to project failure?
- How does personality (individual/firm) influence resistance to open innovation in the case of corporate venturing?

- How do different cultural contexts influence corporate venturing implementation?

1.4 Structure of the Dissertation

The content of this first chapter of the dissertation focuses on the background information as well as providing a detailed explanation of the relevance of this research topic. Here in this chapter also, justification for choosing to explore the barriers affecting how firms organize and implement open innovation through a case study of corporate venturing is discussed. The literature review is discussed in chapter two. While, Chapters three, four, and five address the research questions, and research gap by providing detailed objectives of the research study. Lastly, in chapter six the research limitations as well as future research directions are proposed.

Literature review

2.1 Innovation as a panacea

Innovation models may have changed over the years but it still remains an integral part of a company's competitive advantage and sustenance. When a closed innovation model is adopted, the firms concerned have no choice but to depend on internal competencies to generate and develop novel ideas that can be commercialized (Herzog 2008). According to past studies, firms are now gradually moving away from this simple linear model (i.e., closed innovation paradigm) and as their innovation activities turn toward collaborating with external partners, they are met with additional challenges in relation to intellectual property (IP) and technology management (e.g., Laursen & Salter, 2014; Chaudhary et al., 2022; Battistini et al., 2013). Extant literature has also indicated that the historical approaches to innovation have been somewhat inadequate because they are mostly anecdotal (Prud'homme van Reine 2022). Take Schumpeter's definition for example, where innovation is defined as "new combinations of new or existing knowledge, resources, equipment, and other factors" (Schumpeter 1934). Or Rogers' account in which innovation is defined as "an idea, practice, or object that is perceived as new by an individual or other unit of adoption" (2003 p.12).

This traditional paradigm of innovation coined by Western scholars seems to focus more on the industrial revolution and information technology and as such offers recipes for innovation based on an inventory of past successful innovations (Prud'homme van Reine 2022). This view thus implies that innovation is inherently positive and should be used to resolve virtually all problems (Prud'homme van Reine 2022). In other words, companies, organizations, and projects only fail when innovation is lacking. Another commonality in many of the traditional paradigms of innovation is that they mostly focus on the driving effect of technological innovation on economic growth, social competitive advantage (Crossan & Apaydin, 2010), and value gain in the process of innovation (Teece, 1986). A more ambivalent attitude to innovation would help realize that innovation waves

do not automatically deliver positive results, as it is often a tale of two halves. For instance, “previous innovation waves brought us monopolies in the energy sector that actually hindered further innovation and have contributed to the root causes of climate change (Prud’homme van Reine 2022 p.II)”.

Furthermore, as the innovation paradigm evolves the focus is shifting toward a broader dialogue between scientific research, technological innovation, and social development (Stilgoe et al., 2013). This is reflected in some of the recent studies on innovation, where innovation has been defined as a novelty, often associated with digital, or business models, including but not limited to process or the diffusion of product and service into the market (e.g. Aarikka-Stenroos et al. 2017; Tidd & Bessant, 2013). The view of these scholars somewhat acknowledges that innovation is full of tensions, dilemmas, and contradictions and that innovation challenges cannot be mastered with one-sided recipes (Prud’homme van Reine 2022).

2.2 Open Innovation Model and Innovation Failure

This study draws inspiration from such studies that have developed a relational approach to the challenges of innovation, i.e., the debate on whether to stay closed or use open innovation approaches (e.g., Carlile 2004; Deken et al. 2016; Trott & Hartmann, 2009). The challenges of innovation across boundaries were made known by Henry Chesbrough, who in his 2003 study coined the term “open innovation” to highlight how organizations in their bid to capture or create new ideas, open up the company’s boundaries to all types of external stakeholders (Chesbrough 2003). In a later study, Chesbrough and colleagues teamed up for a revised definition that now states that “open innovation is the use of purposive inflows and outflows of knowledge to accelerate internal innovation and expand the markets for external use of innovation, respectively” (Chesbrough, Vanhaverbeke, & West, 2006, p. 1).

Since then, there’s been a significant paradigm shift in strategy as more firms opt for the values of alterity and sharing in order to sustain a competitive edge and market expansion (Johns and Hall, 2020). So, what has changed, and why are firms moving away from the original concept that is firm-centric to embrace the open innovation paradigm? Some of the factors considered in the literature include the high mobility of skilled labor, the increasing presence of high-tech start-ups, and venture capital (Costello et al. 2007). Other studies have attempted to explain the sharing ideals and novelty-seeking paradigm through the lens of inbound and outbound open innovation. Inbound open

innovation involves a scenario in which the organization receives external knowledge or technology flow, (i.e., an outside-in process) from external sources.

Eli Lilly is a good case in point, as this large pharmaceutical firm acquires a substantial portion of its technologies from external partners in the form of biotechnology firms (Lichtenthaler, 2011; Schwartz & Huff, 2010). The benefits of such inbound innovation include the ability of firms to recognize and access external knowledge, which invariably reduces the time required for product development, and likewise, the time it takes to access new markets (Conboy & Morgan, 2011).

While outbound open innovation is an inside-out process where ideas or technology created internally in one organization are signed off for use in another organization that has the capacity to further develop and commercialize the knowledge (Chesbrough, 2003). In other words, knowledge exploitation and Philips Electronics is a perfect example being that it generates hundreds of millions of dollars annually from the licensing of technologies (Alexy, Criscuolo, & Salter, 2009). The benefit here is that outbound innovation allows firms to focus on externalizing their innovations, share the risks associated with developing and manufacturing new products or services and internal ideas get to market more quickly as a result (Torchia and Calabro`, 2019; Enkel et al., 2009). Some firms also rely on both inbound and outbound open innovation simultaneously (van de Vrande et al., 2009). A case in point is cross-licensing agreements, where one firm transfer in-house technology to another in exchange for access to external knowledge (Grindley & Teece, 1997). Although, past studies on open innovation have focused predominantly on large firms and multinational companies (Bogers et al., 2017; Gassmann and Enkel, 2007). Small companies (especially start-ups) also are an important source of innovation where they serve as technology providers to the large company in outbound open innovation (Usman & Vanhaverbeke 2017; West et al., 2014; Segers, 2017).

In an attempt to strike a balance, this study considers the phenomenon from these perspectives; the users as innovators (Bogers, Afuah, and Bastian 2010; Piller and West 2014), innovation communities (Fleming and Waguespack 2007; West and Lakhani 2008) and from the practices that are more inclined to both types of organization (e.g. inbound and outbound open innovation through alliances). A concern is also reflected in Vanhaverbeke (2012), where the study suggested that open innovation practices suitable for large companies cannot simply be applied to small and medium-sized enterprises. Other scholars have since then investigated the impact of the practices on small and medium-sized enterprises (SMEs) and the conclusion from many of these studies is that SMEs are good at inventions but lack sufficient resources to commercialize them (West et al., 2014).

Therefore, the “liability of newness and smallness” surrounding small companies is often a justification for their lack of access to resources, this deficiency invariably increases their quest for external partners at various stages of the innovation process (Usman & Vanhaverbeke 2017). Another definition that emerged from the process-based approach, considers open innovation as “systematically performing knowledge exploration, retention, and exploitation inside and outside an organization’s boundaries throughout the innovation process” (Lichtenthaler & Lichtenthaler, 2009).

The commonality in the definition of open innovation described above is that they all seem to suggest that the actors involved hold altruistic values of open and reciprocal knowledge sharing (Johns and Hall, 2020). Yet the effect of the open innovation model on actors remains ambiguous, especially about how knowledge is generated and shared between the parties involved (Chesbrough et al. 2014; Benner & Tushman 2015). Several other studies on open innovation have also highlighted some of its downsides, for example, Laursen and Salter, in their 2006 study argued that excessive focus on open innovation may negatively affect firm performance. This is also reflected in Cruz Gonzalez’ et al., (2015), where the downsides of diversity in the case of open innovation are suggested to have resulted in open innovation failure and a fragmented body of knowledge.

The other antecedents of open innovation failure identified in past studies include; challenges with appropriation, risk aversion, the transformation of knowledge, the lack of stakeholder commitment, the lack of trust, and resistance to change (Han, Thomas, Yang, & Cui, 2019; Greco et al., 2019; Rojas et al., 2018; Nakagaki et al., 2012; Veugelers et al., 2010; Keupp & Gassmann, 2009).

Figure 1: Drivers of open innovation failure

Inbound Innovation	Driver(s)	Reference(s)
	Risk of unintended knowledge spill-overs	Bogers, (2011)
	Firms unwilling to partner for ownership of intellectual property	Jarvenpas & Wernick, (2011)
	In-licensing suffers from Not-invented-here syndrome	Lauritzen, (2018); Chesbrough, (2003b)
	Lack of trust between partners	Veugelers et al., (2010)
	Over commitment to internal R&D	Chaudhary et al., (2022)
	Rigid culture	Calof et al., (2018)
	Lack of search strategy	Laursen & Salter, (2006)
	Lack of business model fit	Saebi & Foss, (2015)
	Lack of stakeholder commitment	Rojas et al., (2018)
	Resistance to change	Heidenreich and Kraemer (2015)
Outbound Innovation	Risk of partner company gaining proprietary knowledge	Chesbrough, (2003b)
	Loss of market exclusivity	Chesbrough, (2003b)
	Lack of prior knowledge	Han, Thomas, Yang, & Cui, (2019); Usman & Vanhaverbeke (2017); West et al., (2014)
	Rigid culture	Calof et al., (2018)
	Lack of business model fit	Saebi & Foss, (2015)
	Resistance to change	Heidenreich and Kraemer (2015)

Source: **Adapted Bhatnagar et al., (2022)**

According to Nakagaki et al., (2012) for instance, the consequences of the not-invented-here syndrome continue to affect how established firms collaborate with external partners in the open innovation process. The study further added that, though the original conceptualization of open innovation is firm-centric many R&D employees in established firms have become known for resisting or rejecting the solutions developed by external partners on the basis that acceptance could be perceived as internal R&D failure (Chaudhary et al., 2022; Nakagaki et al., 2012). In other words,

as gatekeepers in value creation opportunities, individual employees are exposed to numerous challenges, especially those in knowledge search roles due to their increasing engagement with external actors (Chaudhary et al., 2022). Extant research nonetheless acknowledged both customers' and employees' capability to influence open innovation outcomes (Dahlander et al., 2016).

In retrospect, these concerns are nothing new as Carlile's (2004) study on knowledge properties at a boundary once suggested that the interpretation of difference, dependence, and novelty often triggers resistance. Bilichenko et al., (2022) also highlighted how a paradigm shift in the innovation process depends on the degree of complexity and the nature of change. In other words, a confirmation that these factors identified can either encourage innovation development or cause negative consequences. The attention of this study is however dedicated to the effect or consequences of resistance to change (RTC) on both firm and individual identities (level).

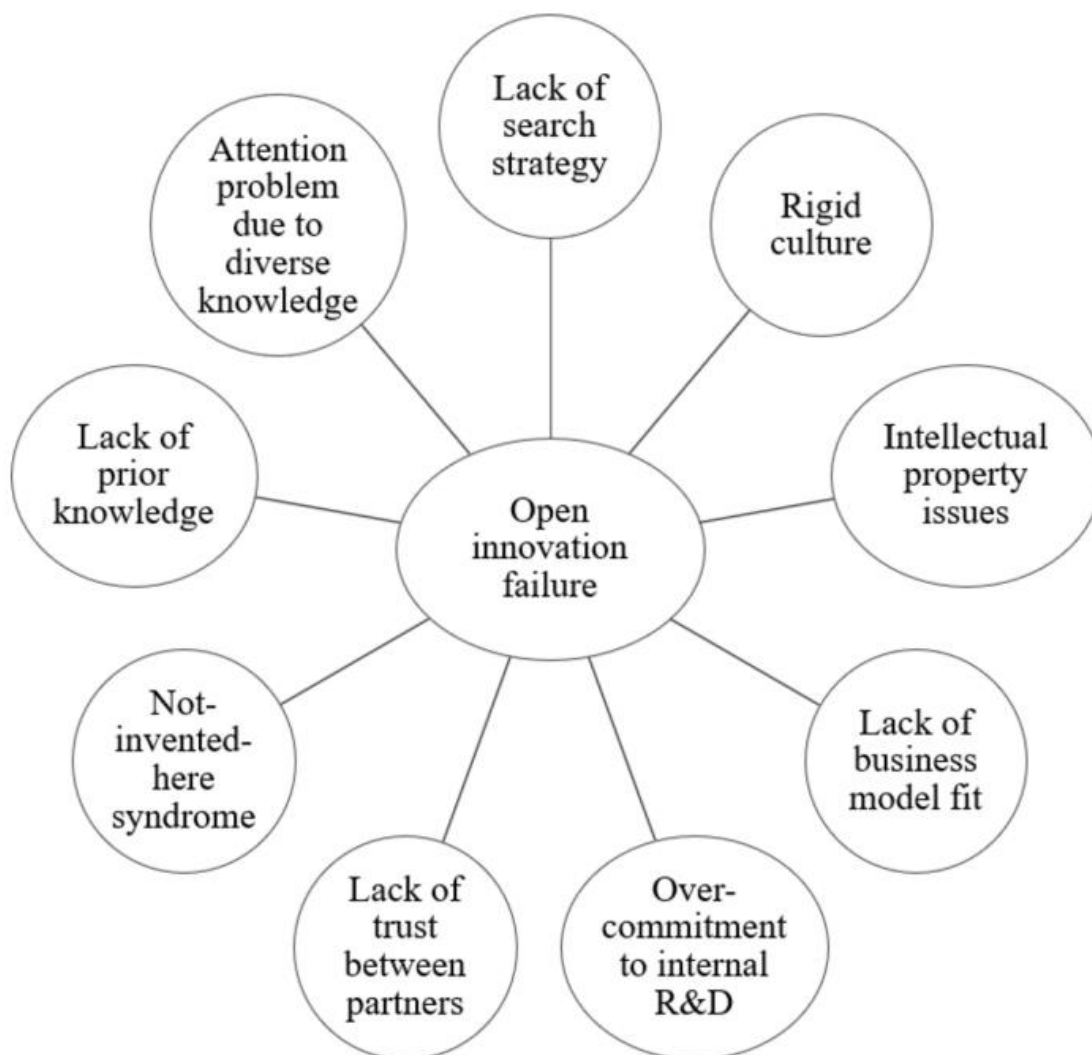
2.3 Innovation Resistance

What, then, is resistance? The notion of resistance to organizational change is considered in the context of different concepts, for example, resistance from the context of innovation was defined by Szmigin and Foxall (1998) as consumers' responses derived from a conscious choice. While Ram and Sheth (1989) define innovation resistance as "the resistance offered by consumers to an innovation, either because it poses potential changes from a satisfactory status quo or because it conflicts with the consumer's belief structure". According to strategic management, resistance is seen as a multifaceted phenomenon that causes unforeseen delays, additional costs, and instability in the change process (Bilichenko et al., 2022). Some scholars simply consider resistance as the opposite of readiness, by defining it as a state of mind reflecting willingness or receptiveness to change (Hultman, 2014).

In a nutshell, the existence of two schools of thought as some literature considers resistance as a personality-related inclination (i.e. passive resistance) to resist changes to, or to express satisfaction with, the actual status quo (e.g. Talke and Heidenreich 2014). While the other argues that resistance is an active action and a negative attitude following the evaluation of a new offering (Szmigin and Foxall 1998; Laukkanen et al. 2008). The consequence of the opening of a company's boundaries to all types of external stakeholders is that it often exposes members of that organization to two difficult choices; to either become a supporter or agent of resistance to innovation (e.g. Bilichenko et al.,

2022; Talke and Heidenreich 2014; Carlile 2004). The actors who resist collaboration, do so on the basis that more effort will be required to adequately share and assess each other's knowledge once innovation becomes open (Lifshitz-Assaf 2017; Heidenreich and Kraemer 2015). This behavioral change is a direct consequence of the fact that innovation carries uncertainty and is perceived by certain individuals as a threat to their stable position in the existing social system (Bilichenko et al., 2022; Heidenreich and Kraemer 2015).

Figure 2: Open Innovation failure



Source: **Chaudhary et al., 2022**

2.4 Corporate Venturing

Corporations have been complementing open initiatives with internal R&D since the mid-1960, though the growth of corporate venturing activities at the time was only visible in the bull market

with rising share prices (Battistini et al., 2013). It rose to prominence again at the height of the dot-com boom because of some large firms seeking ways to promote innovation and as such many of them turned to corporate venturing in a bid to retain the entrepreneurially minded employees in their organization whilst also creating a window of opportunity for new technologies. Furthermore, rapid technological change in recent decades and the increasingly competitive environment of globalization have made the entrepreneurship approach more mainstream and widespread among large firms who now actively search for ways to conquer new markets, develop new technologies and create new business models (Schulte 2021). Corporate venturing may have helped to manage some of the uncertainties from such a paradigm shift, as corporations look for entrepreneurship models or mechanisms that cater to the development and implementation of new businesses in equilibrium with exploration. Corporate venture is defined as the collaboration between established corporations and innovative start-ups often to conquer new markets, and develop new technologies and new business models that are structurally separated from the corporate (Cubero 2020; Siota et al., 2020).

Most of the organizations involved in corporate venture use different mechanisms such as hackathons, strategic partnerships, corporate incubators, corporate accelerators, corporate venture capital (CVC), venture clients, acquisitions, etc., to gain knowledge and agility from start-up firms (Siota et al., 2020). This would often depend on the form of corporate venturing, as each differs from the other in terms of business and operating model. Innovation venturing for example employs the methods of the venture capital industry to undertake traditional functional activities such as research and development. The process begins with the setting up of a separate unit by the managers placed alongside the existing function, to help assess and monitor progress through stage-gate targets (Campbell et al. 2003). While in harvest venturing, the innovation process involves the conversion of existing corporate resources into commercial ventures and subsequently into liquid assets (Campbell et al. 2003). In other words, the business model in harvest venturing is different from that of innovation venturing because it is externally focused to generate cash from selling or licensing corporate resources.

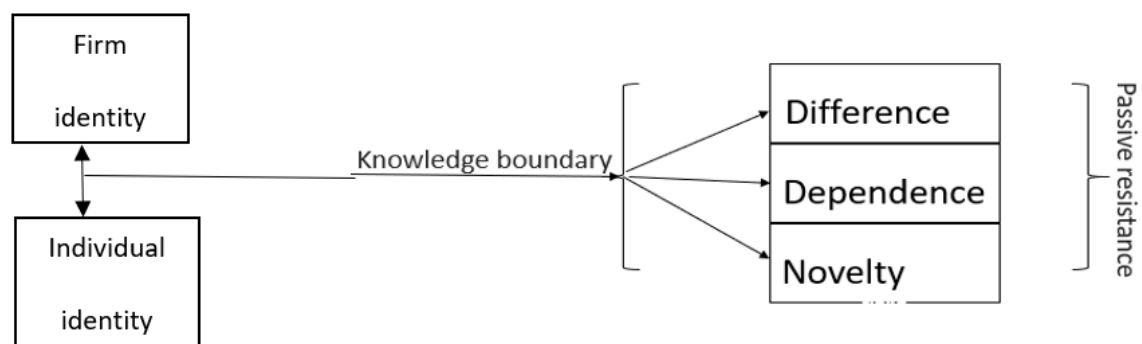
2.5 Passive Resistance and Corporate Venturing

However, many of the corporate units set up to develop significant new businesses were unsuccessful, either as an internally focused or externally focused business model (Campbell et al. 2003). This entrepreneurial strategy of embracing the values of alterity and knowledge sharing has

not been effective nor successful in most organizations because of inertia or the need for a paradigm shift (Eley 2021; Johns and Hall 2020). When inertia is incrementally injected over time into work practices, the organization by default reacts based on experience and shows strong internal resistance to change (Salawu et al., 2019). Some scholars have even suggested that organizations establish routines around their regular activities in order to maximize efficiency, this statement interpreted differently would imply that organizational behavior is sometimes derived from organizational inertia (e.g. Huang et.al., 2013; Nelson and Winter 1982).

Corporate venturing like all other open innovation models is not immune to this behavior, as it entails change that endangers the status quo, particularly the redefining of knowledge boundaries when multiple actors from different professions or background attempt to co-create value (Carlile 2002; Carlile 2004). In such a situation, change becomes less desirable as people establish boundaries to help maintain psychological balance, having associated role identities with traditional professions (Heidenreich et al., 2016; Zuzul and Tripsas, 2019). According to Santos and Eisenhardt (2005), a boundary is a demarcation between the organization and its environment, and this is often based on four organizational objectives: efficiency, power, competence, and identity. Here, the study focuses purely on these objectives, i.e. the effect of passive resistance and the role of identity on knowledge properties at a boundary.

Figure 3 Identity’s impact on knowledge properties at a boundary



Source: Author

The difference in knowledge at a boundary refers to how the amount of knowledge accumulated in a collaborative project varies from actor to actor. Take the case of Marks & Spencer (M&S), for

example; this was the UK's most profitable retailer up until the late nineties. M&S reported profits of £2bn in 1998 and its share price hit a record high of 664p per share in that same year (Eley 2021). M&S in the early 2000s even set up a venture unit by putting money into two start-ups; Splendour.com, an online lingerie business, and Talkcast, a media start-up (Eley 2021). Unfortunately, the venturing unit was abandoned about 18 months later due to the additional challenges of knowledge sharing in collaborative ventures (Campbell et al. 2003). At Marks & Spencer, specialization of knowledge seems to extend beyond the actor's role or identity, and such a difference may complicate knowledge interpretation resulting in resistance from the other economic actors (Carlile 2002; Carlile 2004). The consequences of this behavior (i.e. an actor's resistance) can also be felt by other knowledge properties like a novelty.

Novelty is the second knowledge property considered in this study, and it refers to when a result has been presented in different interests among actors with no common agreement, partly because the approach excludes the actor's past experiences (Deken et al. 2016). By definition, novelty refers to the quality of being "new" as it underscores the participatory and relational nature of what an actor needs to share and assess during a moment of uncertainty (Carlile 2004). However, as demonstrated in the case of M&S, this process tends to trigger internal biases that favor certainty and predictable results, leaving little or no room for the innovation process to evolve into something new. This kind of situation makes new innovation very hard to survive with past experiences influencing what actors see and do under conditions of novelty, the dependencies between their different interests soon became problematic, and may later lead to one party being left on the sideline (e.g. Lifshitz-Assaf 2017; Zuzul 2017; Carlile, 2004).

Dependence refers to a condition in which two entities consider each other as likely to be able to meet set goals. This would imply that when interests are in conflict, the knowledge developed in one domain generates negative consequences in the other, as common knowledge and domain-specific knowledge are subject to a transformation in a bid to effectively share and assess knowledge at the boundary. This, therefore, highlights how the effect of knowledge properties at a boundary influences the identity of the individuals. Furthermore, since knowledge takes investment time and resources to acquire, the costs considered by these actors may also extend beyond the costs of learning a new skill to include the costs of transforming "existing" knowledge (Lifshitz-Assaf, 2017).

It is not uncommon for the routines in this process to lead to resistance to change (RTC) and satisfaction with the status quo (SQS). In other words, an unconscious resistance emerged from the

perception that more effort would be required to adequately share and assess each other's knowledge once the amount and/or type of domain-specific knowledge significantly increases (Carlile, 2004).

This is consistent with other studies which suggest that costs negatively influence the willingness of professionals to make the required changes, and so many maintain the status quo on the basis that the new idea will impose a more negative cost on their psychological balance (e.g. Talke and Heidenreich 2014; Heidenreich et al. 2016). Past studies have offered suggestions in response to the perceived violations felt by these actors and their communities (e.g. Pratt, Rockmann, and Kaufmann 2006). For instance, in cross-boundary collaboration, boundary objects have been proposed as an important tactic for revealing differences and promoting collaborative consumption (Zuzul 2017). Boundary objects such as drawings and prototypes have been introduced into collaborative ventures to help all the actors co-create value (Bechky, 2003b: 352; Carlile, 2002, 2004); these objects have proved effective in providing a concrete means of representing different functional interests and facilitating their negotiation and transformation in relation to innovation development (Carlile 2004).

Research Methodology

3.1 Data collection

To investigate the research questions, a systematic, multiphase research design that combines a survey with interviews was adopted (Hoque, 2018). By combining survey data with interviews, the study leverages the opportunity to gather empirical data and information on firms through the use of questionnaires whilst also reducing the risk of non-response bias often associated with surveys (de Villiers and Dumay, 2014). Moreover, semi-structured interviews remain an acceptable method for providing further evidence on empirical data raised through a questionnaire (Orlikowski and Baroudi, 1991). It is also a useful means of increasing data validity, especially in this instance where a survey might be deemed insufficient to explicate the underlying barriers of open innovation failure. Furthermore, a qualitative research approach that combines deductive and inductive seems to be appropriate for studies that attempt to understand a phenomenon rather than seeking a single objective response (Yin, 2009; 2012). Prior to the data collection, the questionnaires were pre-tested via a semi-structured interview with subject-matter experts on open innovation from universities. This evaluation step ensures that the questions being asked accurately reflect the information in the research model and that the respondent can and will answer the questions. Furthermore, with this approach, the study aims to shed light on the differences in perception, whilst also giving room for relevant reflections on the results obtained from respondents in those regions that have less productivity in innovation.

3.2 Sample

Interviews. For this study, ten participants from both small and large firms were interviewed. The sample selection began with a general request sent to participants at the annual KIKK market. This was done by the use of purposive sampling, which is a form of non-probability sampling where the participants were selected based on their characteristics (Vennix, 2019). In non-probability sampling, the participants in research are chosen according to the researcher's judgment, this may however lead to limitations in abstraction as some subsets of the population are potentially omitted but this has been compensated for with the survey data. The approach nonetheless led to three

successful interviews and it was at this point that the researcher introduced the “snowball effect”, which brought the total number of participants to 10. The interviews lasted between thirty-three (33) and sixty-five (65) minutes and all were transcribed verbatim.

During the interviews, questions were asked in relation to vision, mission, identity, corporate venturing implementation (i.e. their experiences and planned actions), funding, use of digital technologies, opportunities, and challenges in relation to the entrepreneurial activity (i.e. inbound and outbound open innovation). The participants were asked to describe their actions, for example, what they had been doing to progress their individual projects, which other actors they had engaged with, and how they perceived the actions taken. In this way, this study would have explored how firms organize and implement open innovation at both theoretical and empirical levels. Thereby, providing a specific framework generated from the integration of a literature review and empirical data. This form of data collection can also help to gain a deep understanding of value co-creation and/or value co-destruction among multiple actors in an open innovation environment (Wieland et al. (2017)).

Figure 4 Profile of research respondents

No	Organization/project/hub	Total work experience in years	Gender	Sector	Duration of the interview in minutes
1	TRAKK	6	Female	R&D/ Creative Ind.	49
2	Openfab	14	Male	Cultural creative Ind.	33
3	Dot bank	12	Male	Fintech	36
4	Fablab Leuven	32	Male	R&D/ Creative Ind.	65
5	Poligon MakerLab	8	Male	Cultural creative Ind.	48
6	Zenith bank plc	25	Male	Traditional bank	45
7	Fablab Zagreb	28	Male	R&D/ Creative Ind.	56
8	Cardiff Fablab/Maindee	5	Male	R&D/ Creative Ind.	43
9	Wytworknia Lab	8	Female	Cultural creative Ind.	58
10	Biomed X GmbH	10	Male	Research Institute	41
11	Mälardalen University – Assistant Professor	7	Female	Tertiary education	62

Source: **Author**

Survey. In order to investigate the role of passive resistance barriers in open innovation failure, the study administered a survey to top management executives (this includes CEOs, managing directors, and some middle managers) who are either involved directly or indirectly in corporate venturing. The invitation to participate in the online questionnaire came in two forms, one part was distributed to targeted audiences solicited through Survey Monkey. While the second invite originated from the interview referral, in which the zonal head of Zenith Bank, Lagos had put me in contact with the CEO of the Dot Bank to help facilitate the process. Another element that made Dot Bank of interest to this study is its mission which includes identifying and understanding the disruptive trends that will define the future of finance and commerce in the region. The questionnaire to Dot Bank was distributed to participants through a direct link sent via email to the human resource. This data collection procedure is similar to that used by Hausberg and Spaeth (2018), where the online element seems to facilitate the estimation of a response rate. Although it is not stated if and how the respondents from Survey Monkey were incentivized, I assume this to be the case given that it was a paid service.

Figure 5 Screening Question

Q2: In the last 5 years, did you co-create in a third place (e.g. hackerspace, start-up incubator, FabLab, etc.) or attended a related event as an exhibitor?

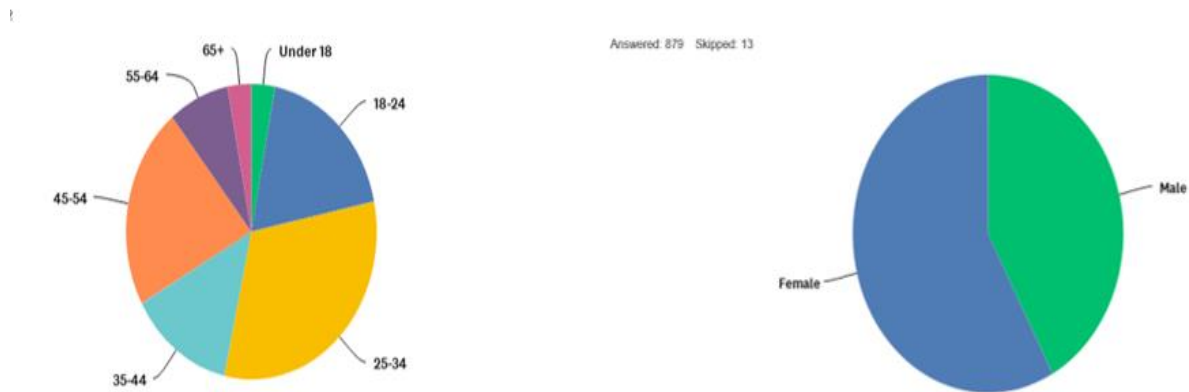
Answered: 887 Skipped: 5

ANSWER CHOICES	RESPONSES	
Yes	25.82%	229
No	74.18%	658
TOTAL		887

The data gathered through survey monkey came to a total of 892 participations across different cities in the USA, while 6 people participated (i.e., filled out the questionnaire) in the second survey administered at Dot Bank in Nigeria. Out of the 892 participants gathered through survey monkey, 661 were disqualified on the "screener question", (see Figure 4 above) resulting in an average completion rate of 46% of which 237 are usable responses. That is a significant response rate with 237 respondents indicating that they had either co-created in a third place or attended a related event as an exhibitor in the last 5 years. The participants included 46.19% men and about 54%

women, with ages ranging from 18 to 65+ years old. Furthermore, about 30% of the usable participants indicated that they had completed a bachelor’s degree, 18.67% had a high school degree or equivalent, and only 6.22% did not have a high school degree.

Figure 6 Pie chart of participants’ age and gender



The closed-ended questions in the survey were structured on a 7-point Likert scale, anchored at “strongly agree” and “strongly disagree” except for the questionnaire administered in Nigeria which was reduced to a 5-point Likert scale. Given that the literature on corporate venturing predominantly views collaboration through the lens of large corporations in North American settings (Usman & Vanhaverbeke 2017). By combining data from both the USA and Nigeria the study would have explored the difference in adoption-related behavior from a country that is less researched and lower educational background than the USA. The adoption-related behavior in the open innovation questionnaire included several specifications in which the items referred to situations involving passive resistance to innovation in corporate ventures. According to Heidenreich and Handrich, (2014), passive resistance to innovation is an unconscious action to resist innovations that are derived from a degree of change with a measurement inventory of two second-order factors: (1) inclination to resist changes and (2) satisfaction with the status quo. These factors reflect behavioral, affective, and cognitive aspects of the inclination to resist change (Oreg, 2003).

In this study, the inclination to resist changes has been adapted from Godkin and Allcorn (2008) using 4 of the 6-item scale, and the factors enlisted are (1) Insight inertia, (2) Action inertia (3) Psychological inertia, and (4) cognitive rigidity. The second-order factor is status quo satisfaction which consists of a 3-item scale adapted from Laursen and Salter (2006), Lichtenthler (2009), and Duh et al. (2009): (1) Inbound open innovation, (2) Outbound open innovation and (3) Firm performance. Since inbound and outbound open innovation are two related but distinct constructs,

the researcher implemented them as separate variables within the design model. To measure inbound open innovation, the researcher adopts and adapts from Laursen and Salter (2006), which captures the role of openness in explaining innovation performance among U.K. manufacturing firms. For the analysis of outbound open innovation, the researcher adopts and adapted from Lichtenthlér (2009) and Heidenreich and Kraemer (2015) in order to capture firms' eagerness to seek novelty and variety. Finally, we use the subjective difference between change-seeker indices to assess perceived stimulation and firm performance in line with the change-seeker index of Heidenreich and Kraemer (2015). The data collected from the respondents are analyzed qualitatively to help provide answers to the research questions as well as provide managerial advice.

3.3 Data analysis

By adopting the general procedures for building grounded theory (Charmaz, 2014) our understanding of the actions and interaction of the actors in such a novel setting (i.e. open innovation) significantly improved. The analysis is described as follows:

I began the exploratory analysis by reviewing the antecedents of inertia (passive resistance to be precise) using prior literature, in combination with the survey data (Gioia et al. 2013; Charmaz 2014). I elicited the main dimensions that distinguish these behaviors by open coding the data (Guest et al., 2012; Golden-Biddle and Locke, 1997) to allow me to discover a number of dominant codes, such as "open innovation processes", "past experiences" and "feeling of uncertainty," "dependency in role allocation," and "differences in knowledge interpretation." This was useful in understanding the critical role played by passive resistance dynamics. I delved deeper into the thematic analysis of passive resistance dynamics through many cycles of coding, reading, and reviewing the survey data until the first-order codes were aggregated into groups (Graebner et al., 2012). For example, groups of codes that emerged from this analysis were the degree and/or nature of ambiguity around alterity and knowledge management in collaborative ventures.

The next exploratory analysis focused on how the open innovation model affected the actors involved in collaborative projects. In order to investigate the inhibiting role of passive resistance, I analyzed the actors' mental maps of the open innovation project in relation to alterity and sharing and the unconscious behavior displayed in the moment of uncertainty (Cohen, 2013; Lifshitz-Assaf, 2017). According to past studies, innovation processes involve high levels of technological uncertainty, tensions, and debates that may lead some individuals to reject, postpone or oppose change (e.g. Seidel and O'Mahony, 2014; Kleijnen et al., 2009). The fine-grained analysis produced a rich

categorization of the actors' divergent views on the need to open up boundaries or why certain boundaries have to be controlled and closed for all collaborative projects.

I did not rely solely on the statistical analysis of the survey results in order to answer the research questions, the analysis went further with the introduction of NVivo for open coding of interview transcripts (Graebner et al., 2012). Since all the organizations and or entrepreneur activity in my corpus had very similar contextual features, the empirical data obtained from the surveys were helpful in guiding the formulation of the interview questions and in advancing the theories on knowledge management in open innovation (Capurro, et al., 2021). I began the analysis with a cross-group analysis of the behavior types to look for, differentiating characteristics that the literature indicated might explain the variance in reactions to the open innovation model (e.g. Zuzul, 2017). These findings are presented in the following chapters.

Results and Discussion

The analysis reveals the underlying opportunities and challenges in the notion of alterity and knowledge sharing portrayed in corporate venturing as well as in other open innovation initiatives.

RQ. How do firms understand and adopt corporate venturing?

The findings suggest that firms understand the need for open innovation and the important role corporate venturing plays in transforming the R&D landscape. However, due to the challenges posed by increasingly globalized markets for technology, most firms are diverting their attention to strategies and practices (Enkel et al., 2009; Dushnitsky 2006). When an organization for instance addresses small innovative businesses using funds from its corporate venturing unit, the process ultimately speeds up the rate at which the company gains access to external resources and time to market. According to the CEO of BioMedx and I quote:

“In our business, we identify the problem first, and once it has been established that there is currently no solution, then we put it on our crowdsourcing platform in search of a solution worldwide” (Respondent 10; BioMedx; CEO)

This outcome is achieved only because the knowledge gained from the external partner(s) has facilitated the rapid development of their own resources. In other words, open innovation represents a real alternative to traditional strategies for achieving positions of competitive advantage, simply because the risk is being mitigated through the widening of access to resources required for innovation (Keil, 2002). This rapid technological change and the increasingly competitive environment of globalization alluded to above have made corporate venturing more mainstream and widespread among large firms who now actively search for ways to conquer new markets, develop new technologies and create new business models (Schulte 2021).

“It would be great if this lab is self-sustaining in such a way that royalty is received from inventors that become successful in their startup venture as such funds can be used to employ other inventors on a proper salary” (Respondent 5; poligon; project manager)

The response above thus suggests that corporate venturing makes it possible to enhance knowledge produced outside the company by transferring it within. However, the ability of firms to recognize and acquire external knowledge often depends on the effectiveness of the common language

adopted across these organizations. In an instance where there is no similarity in the knowledge base, the acquisition of new knowledge across organizational boundaries becomes a challenge (Gurca et al., 2021). The following response describes how actors at both small and large firms developed cognitive representations in relation to **difference**; this is because over time openness or sharing meant different things to the actors including those in top management (Zuzul and Tripsas, 2019).

“Everyone on the project worked for their own company first before coming together as a team to work on the TRAKK project” (Respondent 1; TRAKK; project manager).

This quote from one of the experts on the TRAKK project illustrates how knowledge variation on the subject of open innovation can be interpreted differently when identity/personality collide. Identity gradually becomes a key component for some of the open innovation project’s inertia, as actors act in a manner consistent with their preferred/identified organization and so reject or resist the alternative proposed by others (Zuzul and Tripsas, 2019). To some of these actors, entrepreneur activity or collaborative project is only a connector for businesses, while others see it as a value co-creation and idea-generation unit. This is, however, not surprising as most of these experts had no precedent for what the open innovation project should be, for example, those research centers/creative hubs from the university tried to draw inspiration from ideas generated by top universities in North America, while the experts from the industry (e.g. fintech and pharma firm) sought inspiration from the creative industries, making it difficult to decide on which idea best fits the model intended.

RQ. Why does passive resistance behavior in open innovation lead to project failure?

In this regard, prior literature has described this phenomenon as concept ambiguity, i.e. the lack of clarity about what open innovation is or what it meant in the context of corporate ventures (Zuzul, 2017). According to BioMedx CEO, most open innovation projects fail because the problem they should solve was not carefully articulated:

“Innovation needs applicability, when the solution is created to look for a problem then it doesn’t find one and this in my view is not innovation” (Respondent 10; BioMedx; CEO)

In general, organizations face numerous challenges while interpreting, assimilating, and exploiting external knowledge, there is a scenario in which limited or excess knowledge can lead to an imbalance in the relationship (i.e. lack of critical mass), and this imbalance may later lead to the

project failure. It is also worth mentioning that firms' ability to incorporate knowledge often tends to depend upon the nature of that knowledge. Where there is an excessive similarity in the knowledge exchange, for instance, firms struggle to generate novel ideas or innovation (Lichtenthaler, 2011). Another reason why organizations face challenges in corporate ventures could be a result of role allocation when external knowledge has not been fully internalized.

"I don't understand how or why this initiative was undertaken by the university given that we are the business experts" (Respondent 1; TRAKK; project manager)

From the above quote, the allocation of a role seems to trigger explicit conversations about how certain value co-creation initiated by a particular group of experts would have been better or well-received if designed and executed by another group. This type of conflict often manifests in the form of passive withdrawal (i.e. an unconscious response) that promotes a significant rise in stereotypes of other collaborators (Zuzul, 2017). In other words, there is a collapse in **dependency** as the view of actors is now being shaped by incumbent organizational identity rather than a unified identity based on the open innovation project. The actor's internalized identity becomes the guiding principle for both internal and external behavioral standards, any activity that violates such identity may promote the "not-invented-here" (NIH) syndrome and invariably invoke negative emotions that may result in the rejection of external knowledge (Zuzul and Tripsas, 2019). The open innovation model has certainly once again revealed the debate on social influence with the view on the opening of work boundaries, to which some actors feel threatened, whilst others embrace and seek ways to change their identity in response to the potential of the open innovation model, (Lifshitz-Assaf 2017).

RQ. How does personality (individual/firm) influence resistance to open innovation in the case of corporate venturing?

While the focus was on the actors' cognitive dimension/representations, one category considers actors' emotional reactions to change/novelty. Here I observed that when individual(s) from a group reluctant to lose control and confront new rules or cultures, the change diminishes their confidence and reduces their desire for value co-creation (Lifshitz-Assaf 2017; Mukherjee and Hoyer 2001). In other words, once in a state of uncertainty, ingroup identity tends to favor the status quo over other identities that emerge from the open innovation process, making it difficult to achieve recombinant innovation (Carlile 2002, 2004).

The lack of consensus on an accepted view for how external knowledge can be interpreted, assimilated, and/or exploited amongst the experts also came through strongly in the participants' narratives, conveying a somewhat confusing vision of what a venturing unit may (or ought to) have been or become (e.g. Johns and Hall, 2020). Even though the idea of alterity and sharing dominated every conversation, most of the organization still struggled with property rights (including intellectual property) as participants were somehow confused about what was there and how much of it can be shared or the degree of freedom to choose with whom to share it. In theory, however, "valuable ideas can come from inside or outside the company and can go to market from inside or outside the company" (Chesbrough, 2003, p. 43). This is not the case with many of the creative hubs that participated in the study and certainly not the case for the firms from the financial sector (i.e. Dot. Bank and Zenith Bank)

This is because when most of the entrepreneurial activities (i.e. open innovation initiatives) were launched, there were no established or accepted models that clearly define open innovation projects. The creative hubs for instance use the fabrication laboratory (FabLab) or hackathon events as their main attraction, but often the lack of consensus about what each phase would entail and how long it would take, and who will own the intellectual property, continues to give rise to tensions.

Furthermore, comparing the data from the selected creative hubs with the secondary data (i.e. literature) on collaboration across boundaries revealed that concept ambiguity often leads to resistance to change and status quo satisfaction (Zuzul, 2017; Heidenreich et al., 2016). In other words, the economic actors (i.e. participants and experts) that engage in passive resistance saw open source methods as a fundamental challenge to their professional identities. Although it isn't entirely clear what role this form of passive resistance to open innovation played in the value co-creation process as the unconscious behavior only becomes visible when ingroup actors reject collaboration (i.e. sharing ideal) or outgroup exit the process. Evidence can be found in the actors' narratives, and in the summary table below (e.g. Sayer, 2003).

"I have not been able to figure out what open source is really, with most idea creation in this space reserved for a particular social group". (Respondent 9; Wytworknia Lab; project manager)

"So, if you don't want to share, that is fair enough. But you have to pay for the use of the lab. The lab is receiving funds in anticipation that people will share, create and grow the knowledge required to build innovation". (Respondent 4; FabLab Leuven; CEO)

Figure 7. Summary of findings table

Collaborative space	Category	Factors	Examples of Verbatim comments
Openfab Brussels (Belgium)	Passive resistance	Rigid culture Concept ambiguity	We tackle the most challenging problems ourselves because participants new to this lab/hub often fear making mistakes or are not prepared to pay more in case it takes longer to do-it-yourself.
FabLab Leuven (Belgium)	Passive resistance	Concept ambiguity Appropriability	Honestly, I don't know why we cannot mash up things; I just want to create designs and release them on an open source but this issue of access denied drives me nuts.
BioMedx (Germany)	Passive resistance	Lack of prior knowledge/search strategy	In our business, we identify the problem first, and once it has been established that there is currently no solution, then we put it on our crowdsourcing platform in search of a solution worldwide
FabLab Leuven (Belgium)	Passive resistance	Lack of trust	So, if you don't want to share, that is fair enough. But you have to pay for the use of the lab. The lab is receiving funds in anticipation that people will share, create and grow the knowledge required to build innovation
Wytwornia Krakow (Poland)	Passive resistance	Concept ambiguity	I have not been able to figure out what open source is really, with most idea creation in this space reserved for a particular social group
FabLab Leuven (Belgium)	Passive resistance	Lack of business model fit Loss of market exclusivity	Putting the fablab in an institution creates some degree of control as the finances become intertwined with the institution's finance. This control often limits the degree of openness.
BioMedx (Germany)	Passive resistance	Concept ambiguity Lack of prior knowledge	Innovation needs applicability, when the solution is created to look for a problem then it doesn't find one and this in my view is not innovation
FabLab Zagreb	Passive resistance	Rigid culture	It's a completely different mindset. It's completely different when you consider

			how we document things at the university and how this makerspace documents things.
TRAKK (Belgium)	Passive resistance	Lack of trust	I don't understand how or why this initiative was undertaken by the university given that we are the business experts
TRAKK (Belgium)	Passive resistance	RTC and SQS	Everyone on the project works for their own company first before coming together as a team to work on the TRAKK project.
Cardiff FabLab (Wales)	Passive resistance	RTC and SQS	I got told off once by a member of our community for suggesting that the hub be connected to a pub, he said this would exclude Muslims from taking part in events organized inside the pub
Poligon MakerLab (Slovenia)	Passive resistance	RTC and SQS Lack of prior knowledge	It would be great if this lab is self-sustaining in such a way that royalty is received from inventors that become successful in their startup venture as such funds can be used to employ other inventors on a proper salary.
Wytwornia Krakow (Poland)	Passive resistance	RTC and SQS Rigid culture	Recently at a maker/hackathon fair, I invited a group of ladies to participate in our bicycle repair workshop and they rejected the idea.
FabLab Zagreb	Passive resistance	RTC and SQS Lack of business model fit	Increasing membership fees as a result of demand will not work in Zagreb because the hub's clients are mostly students.
Zenith bank plc	Passive resistance	RTC and SQS Firms unwilling to partner for ownership of IP	Intelligent banking right, Octave will use text mining and location analytics to send targeted campaigns to banks' customers with geo-recommendation of ATM distribution around them

Source: **Author** Resistance to Change (RTC); Status Quo Satisfaction (SQS)

RQ. How do different cultural contexts influence corporate venturing implementation?

In this section, data from the various projects studied were pooled (e.g. Zuzul, 2017) to examine patterns for commonalities and differences in corporate venturing implementation (Bechky & O'Mahony, 2015). The collaborative projects are similar in most ways even though the number of actors/experts involved in each is different. TRAKK for instance at the time of this research was led

by three hierarchically equal partners, unlike most of the other firms which are relatively small in size and are often spearheaded by individuals (i.e. founder, CEO). These CEOs/founders however possess high decision-making authority and a great sense of ownership that increases their confidence to engage in experiments involving different strategies (Zuzul and Tripsas, 2019). The one organization within the sample size that may be closely related to TRAKK is Fablab Leuven.

They are both Belgian enterprises affiliated with a university either in Wallonia or the Flanders region. Another commonality worth mentioning in addition to the firm size would be the cognitive dynamics of the experts which in the case of both firms (TRAKK, and Fablab Leuven) had little or no effect on their project sustenance. This is however in contrast to the view from existing research suggesting that such conditions would result in project failure, especially failure to produce new working products (e.g. Lifshitz-Assaf et al., 2020; Lifshitz-Assaf 2017).

Fablab Leuven highlighted how it faces similar challenges to other creative hubs. For instance, the issue of GDPR, where members' data kept in their database including intellectual property had to be deleted due to non-compliance. To then ensure that the new database complies with GDPR, all economic actors at FabLab Leuven were obliged to willingly share knowledge in exchange for the free use of machines and other digital equipment. In other words, for Fablab Leuven to be compliant members had to agree to the writing of Instructables (i.e., creative common rules) visible on their website. The problem at FabLab Leuven, especially in relation to intellectual property is not unique to them, though it is made worse by its location, as it is sited inside a university campus. As the narrative below suggests;

"Honestly, I don't know why we cannot mashup things; I just want to create designs and release them in open source but this issue of GDPR and authorization drives me nuts".

This was the CEO of Fablab Leuven quoting one of the experts in their creative hub/research center. He further added that putting the Fablab in an institution may have created some degree of control as the finances become intertwined with the institution's finance. To suggest that such control often tends to limit the degree of openness. This is a hub that receives about 80% of its funding from the university through the services provided to students and staff, which means only about 20% of its funds come from the public. Since the business model is essentially sustained by the university, this gives significant leverage to the university in relation to the value co-creation process. The variation

in cognitive representations reflects the mental maps of the many stakeholders as well as the degree of autonomy in this open innovation project (Zuzul, 2017; Battistini et al., 2013).

Although the Fab Charter makes it clear what is expected of the professionals as well as the do-it-yourself (DIY) enthusiast, it is however interpreted **differently** among participants and stakeholders. For instance, the self-employed participants who frequently use this lab obtained an income from making and selling items, yet this is a not-for-profit organization funded for people to share, create and grow knowledge that may build innovation. The emerging resistance is indeed a result of the **difference** in interpretation or a collapse in the **dependency** structure.

The cultural challenges in inter-firm collaboration may also vary from country to country depending on which appropriability strategy is in use (Levin et al., (1987). Bearing in mind that, the efficacy of legal protection for intellectual assets of a firm situated in Belgium may not be the same for a similar firm situated in Nigeria. Take the non-compliance issue over GPPR at Fablab Leuven as a case in point, here the organization concerned had to clean up/delete the entire database to ensure compliance, perhaps if it was located in Nigeria the approach may have been different. The strategic approach also seems to be different when a comparison is made between a large and relatively smaller independent firm like Openfab Brussels.

“Generally, people help one another in our FabLab as they share and make things together, except for when we have the self-employed professionals who are here to make a profit. (Respondent 2; Openfab; Brussels)

The autonomous governance structures at Openfab, Brussels may allow the firm to be more efficient in managing potential misalignment of interests between stakeholders due to its independent nature. After all, it is possible that these professionals unconsciously (i.e. passively resist sharing) focus on a different critical aspect of the same task required for innovation development (Zuzul and Tripsas, 2019). Open collaborative labs are meant to be used by actors from different thought worlds with distinct knowledge domains to generate novelty (Zuzul, 2017). Although participants spoke about how they would ‘like to collaborate’ with others, this does not extend beyond the talk in many of these collaborative labs. In some instances, participants spoke openly, and more consciously, about their confusion with the idea of alterity and sharing. **Openfab Brussels** is a case in point as the founder narrates some of the challenges faced in getting members to share and collaborate freely. Respondent 2 said:

"There's a difficulty in getting our members to understand or learn this style of working as this is different from the traditional approach we were taught at school". (Respondent 2; Openfab; Brussels)

This suggests that open innovation is an alternate approach to that offered in formal education, as for decades the school system has taught people to work in specific ways (i.e. to protect intellectual property). The challenge for **Openfab Brussels** is that some of its members continue to struggle to reconcile this traditional approach with this new way of working (i.e. involvement, connection, and affinity).

He quoted a member saying: 'Don't copy what I have done, improve it. If it can be improved.'

Like other collaborative spaces, creative common rules (instructables) have become a boundary object that provides a concrete means of representing different functional interests and facilitating their negotiation and transformation in relation to innovation development involving intellectual property (Carlile 2004).

When I also revisited the raw data to ascertain why there are so few women and minorities in most collaborative projects, the analysis revealed the case of an age-old social inequality that is now made visible through passive resistance. According to the **Openfab Brussels** founder, it may take years for this paradigm to shift with outgroup and ingroup communities confused about how to manage change, rejecting the idea of sharing and involvement in open innovation as a result. This is supported by the following quote from Respondent 9:

"Recently, at a maker/hackathon fair, I invited a group of ladies to participate in our bicycle repair workshop and they rejected their idea". (Respondent 9; Wytownia Krakow, project manager)

In this particular example the ingroup was prepared to share knowledge by involving an outgroup, the idea was rejected because the ladies felt nervous sharing or accessing knowledge from a group of men to whom they had no previous connection or affinity. This is consistent with past studies suggesting that the perceived loss of control may prevent some individuals from engaging in extended information processing during moments of uncertainty (e.g. Heidenreich & Kraemer 2015; Heidenreich et al., 2016). The scenario also reveals that conformity to group-oriented behavior that often triggers resistance to change (RTC) and satisfaction with the status quo (SQS) affect both in- and outgroup communities (Johns and Hall, 2020; Lifshitz- Assaf et al., 2020). Certainly, cognitive representation reflects the unconscious impact, as it highlights the vulnerability of the individual and

how the changes at this stage reduce an individual's openness to share or participate in the process of innovation (Oreg, 2003; Heidenreich & Kraemer 2015).

"We tackle the most challenging problems ourselves because often participants new to this lab/hub are scared of making mistakes or are not prepared to pay more in case it takes longer to do-it-yourself". (Respondent 5; poligon Lab; project manager)

This participant's narrative suggests that inventors and hackers often work in their own isolated bubbles, even when the rules are enforced; an act of sharing only covers equipment and building space, leaving out the core values of involvement, sharing of ideas, and companionship (e.g. Johns and Hall, 2020). This is in contrast to the open innovation philosophy, which advocates the sharing of ideas, skills, and solutions from a broad diversity of individuals and organizations. Perhaps this notion in which knowledge or the idea of sharing is considered a public good varies from country to country, because in a capitalist economy, the idea of ownership remains a value, hence most economic actors in such society will struggle with the idea of sharing as a public good. This is reflected also in the quote below:

"It would be great if this lab is self-sustaining in such a way that royalty is received from start-ups that become successful as such funds can be used to employ other inventors on a proper salary" (Respondent 5; poligon Lab; project manager)

This verbatim from a manager at **Poligon MakerLab** in Slovenia suggests that while he talks about the FabLab ethos of collectivism, altruism, and sharing of ideas, deep within him there exist the prevailing norms of competition and individualism (e.g. Johns and Hall, 2020). This confusion could be a result of the lack of precedents to guide the actions and interaction of the actors in such a novel collaborative ethos. Culture certainly plays a prominent role in how social influence triggers passive resistance to open innovation, as hubs in capitalist countries regularly moderate their business model based on demand (e.g. Lifshitz- Assaf et al., 2020; Johns and Hall, 2020). In other words, they charge membership fees based on the demand in their location, whereas the culture in other locations may prohibit such an approach. According to a manager at **FabLab Zagreb**:

"Increasing membership fees as a result of demand will not work in Zagreb because the hub's clients are mostly students". (Respondent 7; Fablab Zagreb; project manager)

"It's a completely different mindset. It's completely different when you consider how we document things at the university and how this makerspace documents things". (Respondent 7; Fablab Zagreb; project manager)

FabLab Zagreb is the first of its kind in Zagreb; the project only works because it is situated inside the universities where there are student demands. Although the hub is open to the public without a significant paradigm shift, many of the citizens will continue to engage in passive resistance, either due to its location or other novelty-induced anxiety. As well as the odd professional who comes in only to overuse the facilities on offer, which ends up limiting the degree of openness to other citizens that is perfect for the open innovation model (Bughin et al. 2008). This is also reflected in the words of the **Cardiff FabLab** representative:

"I got told off once by a member of our community for suggesting that the hub be connected to a pub, he said this would exclude Muslims from taking part in events organized inside the pub". (Respondent 8; Cardiff Fablab; project manager)

The statement supports the assertion from prior literature suggesting that people often do not give equal access to the resources required to implement change and that such inequalities in social and cultural resources may lead those in the minority (i.e. Muslims) to engage in passive withdrawal i.e. resist innovation subconsciously (Davies 2017; Lifshitz-Assaf 2017). The statement is also consistent with Hall, (1976) study which likened the system that governs culture to an iceberg, where a certain aspect of it is external/conscious (e.g. behavior and beliefs) while the other is internal or subconscious (e.g. values and norms). These subconscious values or norms can potentially influence identity (individual and firm) leading some actors to passively resist the open innovation project. In the case of the narrative above, it is likely that the actors in the minority perceived a form of inequality in either their social or/and cultural resources which then leads them to engage in passive withdrawal (i.e., resistance or rejection of the open innovation project). Hofstede, (2001) also highlighted the interconnectivity between human behaviors and socio-cultural practice. Here I use the case of the financial sector as an example, where the findings reveal that both the top management and general employees are influenced by socio-cultural practices prevalent in Nigeria.

A common method of collaboration among businesses in the financial sector (i.e. fintech or traditional bank) of the Nigerian market involves the use of co-working spaces, conferences, and hackathons. However, the increased cost of business as well as the issue of trust has made collaborative projects

involving knowledge sharing and interpretation more challenging in Nigeria when compared to the other businesses in this study sample. This is consistent with George (2011), as the study once suggested that considerable sociocultural differences exist between Nigeria and Great Britain whilst highlighting the importance of sociocultural realities on the practices of financial institutions. In other words, this may make corporate venturing implementation difficult to transfer from one area to another given the trend in globalization, multi-nationalization, and internationalization of financial transactions. Though fintech with foreign owners has had some direct collaboration with the end beneficiaries in Nigeria, where they have enabled users of Piggyvest, Cowrywise and Wallets (Africa) to have direct deposit account numbers. This is however not a common practice.

"Intelligent banking right, Octave will use text mining and location analytics to send targeted campaigns to banks' customers with geo-recommendation of ATM distribution around them".
(Respondent 6; Zenith bank plc; zonal manager)

The open collaborative initiative implemented by Zenith Bank, for instance, tends to focus on the Zenith Tech Fair, which involves the gathering of start-ups who then compete against one another for prize money. Nigeria being a high-power distance culture will no doubt continue to give great deference to perceived authority and as such large organizations like Zenith Bank plc will be revered and considered as an authority in the business world, thereby creating an unequal relationship between them and any potential startup firm. Octave (startup firm) won the prize money at the last Zenith Tech Fair having successfully swayed the Zenith jury with their pitch that offers a solution that could drastically reduce ATM processing costs for commercial banks. Octave's relationship with a similar large firm in a low power distance culture would have been handled differently, partly because such culture put a value on the equal treatment of everyone.

Corporate venturing activities continue to grow as more and more firms become open to the idea of leveraging on external collaborative ethos (Battistini et al., 2013), but infrequently many collaborative labs or venturing units encounter passive resistance behavior in the form of the not-invented-here syndrome (NIH) or as a result of cultural values (Lifshitz- Assaf et al., 2020; Liu et al 2019). This withdrawal behavior occurs when in-group and out-group actors involved in the project become confused about how to manage the values espoused by open innovation, i.e. values of involvement, connection, and knowledge sharing (see Johns and Hall, 2020).

Conclusion

5.1 Theoretical Implications

Adoption of Innovation remains a critical task for firms (both small and large) involved in open collaborative projects (Johns and Hall, 2020; Heidenreich and Kraemer, 2015). Hence, having a better understanding of why innovation fails can contribute to the refinement of adoption theory, especially in the case of open innovation where complexity in both individual and organization-level issues continue to rise (Chaudhary et al., 2022; Heidenreich and Kraemer, 2015). There is no arguing that the pervasiveness of digital artifacts is providing firms with the opportunity to connect multiple innovators, but the efficiency of these processes still requires improvement. The multi-sided dimension of passive resistance makes it possible to precisely classify its inhibiting role when multiple innovators interact and determine the nature of the resources used to dismantle the knowledge boundaries (Adamides and Karacapilidis 2020; Zuzul and Tripsas, 2019; Nambisan et al. 2019). This study aims to highlight how passive resistance inhibits the adoption process in open innovation.

According to Laukkanen et al., (2008), the decision to resist innovation prior to evaluation depends on a more comprehensive resistance factor and this has been confirmed in Heidenreich et al. (2016) passive resistance typology. As the study concluded that the effect of passive resistance on an individual will often depend on personality or the individual's identity. This is the case with the resistance behavior in corporate venturing too where the community of actors has been known to reject new ideas (i.e., products or services) even if their functionalities are objectively superior to those of existing alternatives. Passive resistance refers to an unconscious action to resist innovations prior to the evaluation, often driven by the individual's resistance to change disposition, and satisfaction with the status quo (Heidenreich and Kraemer 2015; Kleijnen et al., 2009).

An overview of data analysis indicates that some experts are most comfortable with the traditional business model and so use it in open collaborative initiatives out of habit. Zuzul and Tripsas, (2019) also did a comparative analysis of both closed (traditional) and open innovation models with the conclusion that major differences exist between the two work processes. In the traditional model, idea creation is mostly in-house, this would include tackling challenging problems. While in the open model, individuals working outside the field can also be involved in solving a community's challenging problems. Furthermore, the boundary perspective in traditional knowledge work is often predefined and impermeable, with the exception of selective permeation through contracts and collaborations (Lifshitz-Assaf 2017). This is not the case in open innovation as boundaries are generally permeable

without any control over who attempts to solve a challenging problem. Given such an extreme contrast in the two work processes, tensions may degenerate into resistance as actors struggle to reconcile or readjust focus from the status quo.

These two opposing and active movements are evident in the participants' behavior across the ten projects in this study. Past studies have shown that perceived loss of control prevents some individuals or groups from engaging in extended information processing during moments of uncertainty (e.g. Heidenreich et al. 2016). Such an emotional reaction to change can also manifest through culture as participants from countries with a different underlying cultural value to that of involvement, connection, affinity, and knowledge sharing (e.g. capitalism vs individualism) may engage in passive resistance in a bid to maintain their psychological balance (Lifshitz- Assaf et al., 2020; Johns and Hall, 2020). The challenge for economic actors also extends to the struggle to reconcile a traditional business approach (e.g. patents on intellectual property) with the new way of working that embraces sharing and that understands knowledge as a public asset.

Through experience, some of these organizations have shifted their paradigm, while others struggle without the support of boundary objects and social influence. At BioMedx for example, eight out of their last ten projects have been successful, and this is because over time the organization has had to learn from their past experiences and made significant strides towards initiating changes in the co-creative processes. Extant literature has indicated that the diffusion and adoption of new technologies significantly impact firm performance via open innovation practices (Bertello et al., 2023). This behavioral pattern was also witnessed from the narratives in other collaborative spaces, where the participants (economic actors) who sought to adopt open innovation initiated dramatic changes to the knowledge-work process (Lifshitz-Assaf 2017). This is in contrast to the view from prior literature that actors in open innovation engage in boundary protection to legitimize their personality or their satisfaction with the status quo (e.g. Lifshitz-Assaf 2017).

Lifshitz-Assaf, (2017) did however add that over time, most professionals tend to dismantle knowledge-work boundaries in collaborative projects and, if anything, only a small number maintain the status quo. Boundary dismantling refers to an attempt to destroy knowledge-work boundaries that inhibit the inclusion of external knowledge found through open innovation, thus shifting the locus of innovation from inside the organization and its traditional boundaries to outside. In conclusion, there is still some ambiguity in the relationship between these two domains, and this is

due to the limited knowledge of how technology and humans constitutively intertwined and the impact that has on open innovation initiatives (Bertello et al., 2023; Leonardi 2013).

5.2 Managerial Implications and Recommendations

Extant literature has indicated that the diffusion and adoption of new technologies significantly impact firm performance via open innovation practices (Bertello et al., 2023). This conceptual change in how firms compete is making passive resistance to open innovation more frequent and more intense, invariably imposing unprecedented stress on management dynamics in most collaborative projects (Liu et al 2019). While many studies continue to show the significance of open innovation and how it has become a necessity in the development of strategies at most firms (see Chesbrough and Garman, 2009; Huang, 2011). The findings from this study, however, mirror other past studies on innovation resistance by highlighting the ambiguity in the concept of open innovation and how anxiety leads to resistance and later to project failure. (See Johns and Hall, 2020; Davies, 2017).

This study offers several implications for practitioners working on open innovation projects, particularly those organizations aiming to maintain their competitive position. With the opportunities in relation to knowledge boundary dismantling these firms can successfully overcome all forms of inertia (including passive resistance) by being vigilant and giving careful consideration to the complementarity of partners while scouting for innovation opportunities (Huang et al., 2013). Having similar values and cultural fit is very essential in building a trusting relationship between partners in collaborative ventures (Vanhaverbeke et al., 2023)

Knowledge boundary dismantling exists in two forms, i.e. "full boundary dismantling work," which refers to when actors attempt to completely destroy the boundaries raised to exclude external actors (i.e. those from other communities) involved in the process; and "perforating boundary work" which refers to an attempt by actors to dismantle selective parts of these boundaries (Lifshitz-Assaf 2017). Full boundary dismantling work may have been achieved at some firms (e.g., Poligon Makerlab in Slovenia, BioMedx, and Openfab Brussels) with significant autonomy. There is also an indication that size matters in collaborative consumption as two of the firms identified here are owned by individuals and they are also relatively small in comparison to the other organizations sampled. According to the result of this study, Openfab Brussels and Poligon Makerlab found it much easier to adopt a bottom-up approach in the "co-creation process" with far fewer professionals involved in their strategic management. Innovation and marketing managers have to take this into account as it is

important to note that open innovation scenarios are less complicated with fewer knowledge variations.

Another possible solution to this form of passive resistance behavior would be to complement the value co-creation process with marketing instruments, this would help reduce the perceived changes imposed by the innovation or reduce the status quo bias within organizations. This has been demonstrated in other studies, where the actors involved use advertisements that visualize the new usage situation while drawing attention to the fact that the usage is compatible with familiar practices to overcome cognitive passive resistance (e.g. Heidenreich et al. 2016). The commercialization of external knowledge thus however requires that firms invest in absorptive capacity if it were to prevent opportunistic behavior and the potential loss of intellectual property rights (see Greco et al., 2019).

Some past studies on open innovation have even proposed solutions involving the use of boundary objects, which serves as an important tactic for surfacing differences and encouraging integration (e.g. Zuzul 2017). I observed from the interviews as well as the survey how the perspective of economic actors (i.e. experts and participants) tends to lean towards the community in which they have affinity and how the boundary object allows actors to reveal their differences without destroying the shared ideas developed. Boundary objects such as drawings and prototypes are effective in providing a concrete means of representing different functional interests and facilitating their negotiation and transformation of innovation development (Carlile 2004).

In the cases observed, the degree of passive resistance to open innovation seems to depend on the size of the collaboration, and so the sustainability of the hubs not only depends on an effective business model but also on how well these co-creative hubs leverage the existing social dimension and redress fault lines in management dynamics (Bughin et al. 2008). It is important to disaggregate the hierarchy, by ensuring that for any given set of leadership responsibilities, only one person is accountable. With this, all the involved actors see the project as a unified task, reducing ambiguity and anxiety-induced behaviors and allowing actors in the minority to leverage the strength/capabilities of others (Gandia and Parmentier 2019). It may, perhaps, take a while to develop useful frameworks for success in open innovation as the effect of the model on actors remains a puzzle (Benner and Tushman, 2015; Zuzul 2016).

Limitations and Future Research Directions

While the number of cases within my samples constitutes robust data for qualitative research, the study's findings do however highlight several limitations that must be taken into consideration to help produce higher-quality work in the future. For example, the effect of passive resistance on collaborative projects was somehow restricted to Fabrication Labs, hackerspaces, and start-up incubators, yet there are several other forms of venturing units identified in the literature (Schön et al. 2018). Researchers need to investigate the effect of passive resistance in other forms of venturing units, (e.g., Living Lab, Biolab, etc.) to help managers allocate resources to those hubs/labs that are most effective in preventing innovation failure linked to passive resistance behavior. In other words, future research could extend these findings by analyzing the effect of passive resistance in other forms of mechanism or venturing units used by organizations that are not covered in this study.

Another drawback might be that the use of the snowball effect in the interview limits control over the sampling method and may also have led to sampling bias in the case where the first participant nominates people well-known to him/her. However, this might not constitute an overwhelming concern, as the chain referral process allows the study to reach populations that are often described as marginalized or difficult to sample (Sifaneck & Neaigus, 2001). The developed nations remain a common destination for collecting data on technological innovation, however with the relatively low average age (of approximately 37 years) and a high educational background of our sample size, this may to some extent restrict the generalizability of the results to a broader population. As some past studies have suggested that passive resistance to innovation might have a stronger effect on new product evaluations of older and less educated consumers than those of younger and highly educated consumers (e.g., Heidenreich and Kraemer 2015; Heidenreich and Spieth, 2013). Future research might apply the model differently by collecting a larger sample in less researched countries in Africa with much lower literacy and education than the developed nations.

Finally, I did not explicitly run comparisons between the in-group and out-group, nor did I consider other types of organizational inertia/resistance for example. Yet, past research has shown that the barriers' relative importance can vary between adopter and non-adopter groups (Lian & Yen, 2013). Future research could assess to what extent the relative importance of the passive resistance drivers (i.e., RTC and SQS factors) differs between such groups or the impact it has on other drivers of innovation failure.

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Appendix A: Survey Instrument

Question items	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Insight inertia - Godkin and Allcorn (2008)					
1. Overall, I consider the pace of innovation in my field of work as being too low.	1	2	3	4	5
2. Our company rarely observes changes in external environment	1	2	3	4	5
3. I am someone who likes to do the same old things rather than try new and different ones.	1	2	3	4	5
4. Our company has difficulty identifying how other firms solve problems	1	2	3	4	5
Action inertia - Godkin and Allcorn (2008)					
1. Our company has a deep-rooted organizational culture	1	2	3	4	5
2. I often change my mind or methods for solving problems due to external suggestions.	1	2	3	4	5
3. When someone pressures me to change something. I tend to resist it even if I think the change may ultimately benefit me	1	2	3	4	5
4. Past knowledge and experience can increase my work efficiency	1	2	3	4	5
5. When we change our behavior, it is hard to convince others to do the same	1	2	3	4	5
Psychological inertia - Godkin and Allcorn (2008)					
1. We feel threatened by any organizational changes	1	2	3	4	5
2. We feel defensive when there are any organizational changes	1	2	3	4	5
3. I feel anxious when I recall painful past experiences arising from change	1	2	3	4	5
4. When I go to a third place (i.e. FabLab, MakerLab or Hackerspace), I feel it is safer to collaborate with familiar actors.	1	2	3	4	5
Question items	Strongly disagree	Disagree	Neutral	Agree	Strongly agree

Inbound open innovation - Laursen and Salter (2006)					
1. Part of our services and sale of products are contributed from licensed technology of external profit organizations (including suppliers, customers, competitors, and consultants)	1	2	3	4	5
2. I want to own the intellectual property that originates from me when working in a third place.	1	2	3	4	5
3. Our company encourages innovative activities and will utilize external knowledge and information	1	2	3	4	5
4. Our company will cooperate externally to create new innovative processes or develop new products	1	2	3	4	5
Outbound open innovation - Lichtenthrler (2009)					
1. Part of our company profits are contributed from external licensed technology	1	2	3	4	5
2. Generally, our company will try to commercialize (license, sell) all of our technology	1	2	3	4	5
3. The sale or license of our company technology is limited to relatively mature technology	1	2	3	4	5
4. The sale or license of our company technology is limited to our non-core technology	1	2	3	4	5
5. Our company will promote innovative ideas or internal technology that cannot be self-developed to market through cooperating with other companies	1	2	3	4	5
6. Our company will provide some of our R&D projects to external firms to invest and develop	1	2	3	4	5
Business model innovation - Johnson et al. (2008)					
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Question items					
1. Our company can help customers redesign their value propositions	1	2	3	4	5

2. Our company can redesign the company profit formula	1	2	3	4	5
3. Our company can develop a new business development process without negative effects from core business	1	2	3	4	5
4. Our company can confirm their key resources and processes to provide products and services to customers	1	2	3	4	5
Firm performance - Duh et al. (2009)					
1. Our company's average ROI is higher than that of last year	1	2	3	4	5
2. Our company's average profit ratio is higher than that of last year	1	2	3	4	5
3. Our company's average ROS is higher than that of last year	1	2	3	4	5
4. Our company's average market share is higher than that of last year	1	2	3	4	5
5. Our company's average sales revenue is higher than that of last year	1	2	3	4	5

Appendix B: Semi-structured Interview (Interview guide)

- (1) Can you describe one of your successful innovative projects implemented recently that involved external partners this could be pre or post covid-19?
- (2) What are the main reasons that led you to implement this innovative project?
- (3) What were the categories of partners that were key to the success of the project?
- (4) How was the project funded?
- (5) Why do you consider it successful?
- (6) Were there any problems in carrying out the project?
- (7) How did the interaction with the other people involved in the project go?
- (8) Can you tell me instead about the innovative project that did not achieve the desired result, was abandoned or failed after being completed?
- (9) What are the main reasons that led you to implement this innovative project?

(10) Which were the categories of partners in the failed/abandoned project?

(11) What were the sources of funding?

(12) If the project was abandoned, at what stage did this happen?

(13) What do you think were the main causes (factors) of the failure/abandonment of the project?

(14) What are the risks you assess when an innovative project is undertaken

Source: Adapted from Greco et al., (2022)

Appendix C: Survey Result

892

Total Responses

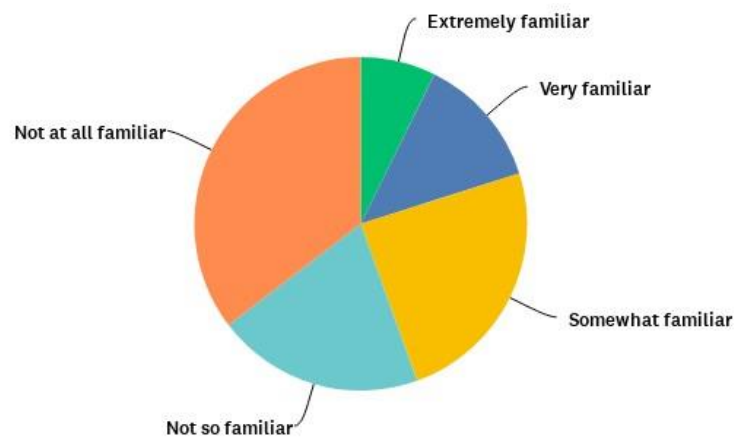
Date Created: Thursday, March 16, 2023

Complete Responses: 403

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Q1: How familiar are you with the concept of a third place ?

Answered: 890 Skipped: 2



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Q1: How familiar are you with the concept of a third place?

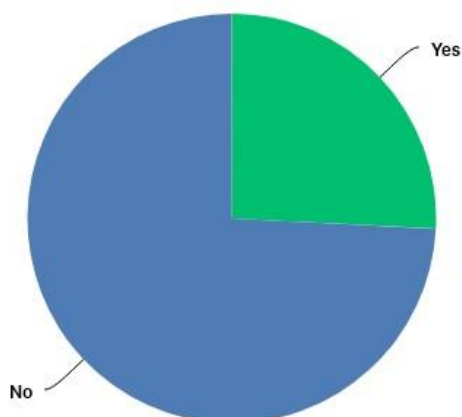
Answered: 890 Skipped: 2

ANSWER CHOICES	RESPONSES	
Extremely familiar	7.30%	65
Very familiar	12.81%	114
Somewhat familiar	24.38%	217
Not so familiar	20.11%	179
Not at all familiar	35.39%	315
TOTAL		890

Powered by  SurveyMonkey

Q2: In the last 5 years, did you co-create in a third place (e.g. hackerspace, start-up incubator, FabLab, etc.) or attended a related event as an exhibitor?

Answered: 887 Skipped: 5



Powered by  SurveyMonkey

Q2: In the last 5 years, did you co -create in a third place (e.g. hackerspace, start-up incubator, FabLab, etc.) or attended a related event as an exhibitor?

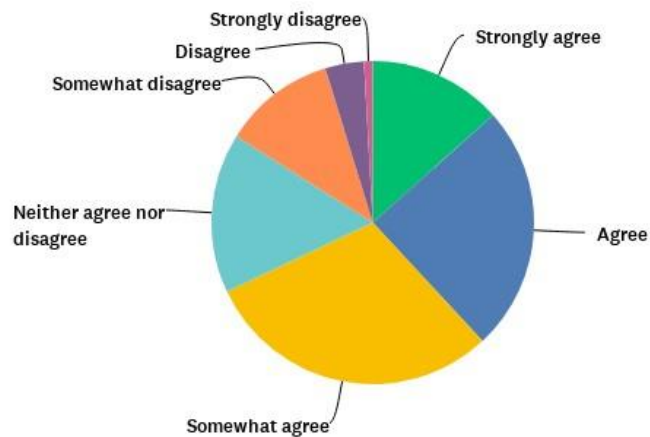
Answered: 887 Skipped: 5

ANSWER CHOICES	RESPONSES	
Yes	25.82%	229
No	74.18%	658
TOTAL		887

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Q3: Overall, I consider the pace of innovation in my field of work as being too low.

Answered: 231 Skipped: 661



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Q3: Overall, I consider the pace of innovation in my field of work as being too low.

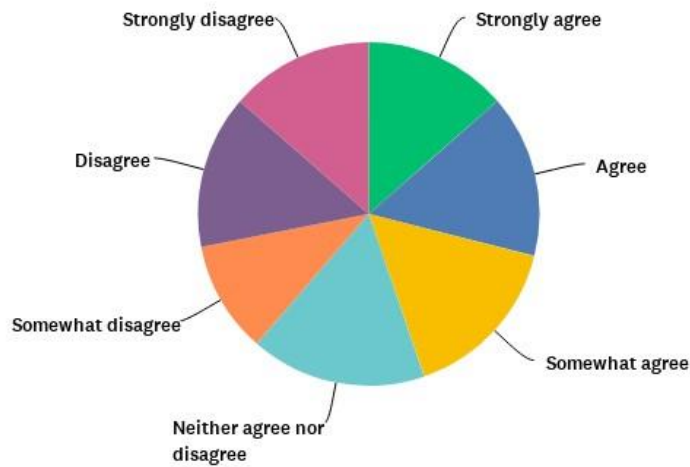
Answered: 231 Skipped: 661

ANSWER CHOICES	RESPONSES	
Strongly agree	13.42%	31
Agree	24.68%	57
Somewhat agree	29.87%	69
Neither agree nor disagree	16.02%	37
Somewhat disagree	11.26%	26
Disagree	3.90%	9
Strongly disagree	0.87%	2
TOTAL		231

Powered by  SurveyMonkey

Q8: Our company has difficulty identifying how other firms solve problems.

Answered: 228 Skipped: 664



Powered by  SurveyMonkey

Q8: Our company has difficulty identifying how other firms solve problems.

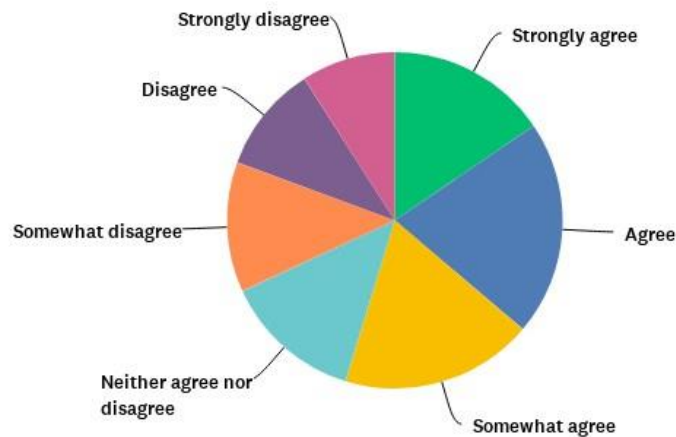
Answered: 228 Skipped: 664

ANSWER CHOICES	RESPONSES	
Strongly agree	13.60%	31
Agree	15.35%	35
Somewhat agree	15.79%	36
Neither agree nor disagree	16.67%	38
Somewhat disagree	10.53%	24
Disagree	14.47%	33
Strongly disagree	13.60%	31
TOTAL		228

Powered by  SurveyMonkey

Q7: I am someone who likes to do the same old things rather than try new and different ones

Answered: 232 Skipped: 660



Powered by  SurveyMonkey

Q7: I am someone who likes to do the same old things rather than try new and different ones

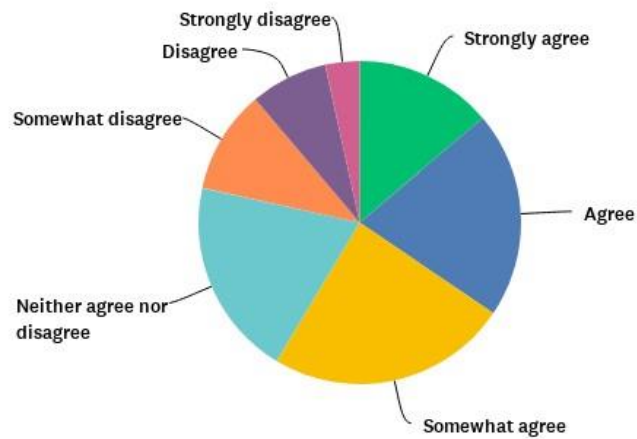
Answered: 232 Skipped: 660

ANSWER CHOICES	RESPONSES	
Strongly agree	15.52%	36
Agree	20.69%	48
Somewhat agree	18.53%	43
Neither agree nor disagree	13.36%	31
Somewhat disagree	12.50%	29
Disagree	10.34%	24
Strongly disagree	9.05%	21
TOTAL		232

Powered by 

Q9: Our company has a deep-rooted organizational culture

Answered: 232 Skipped: 660



Powered by 

Q9: Our company has a deep-rooted organizational culture

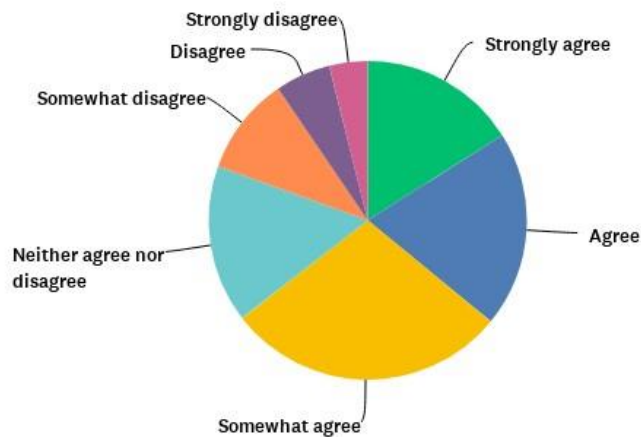
Answered: 232 Skipped: 660

ANSWER CHOICES	RESPONSES	
Strongly agree	13.79%	32
Agree	20.69%	48
Somewhat agree	24.14%	56
Neither agree nor disagree	19.83%	46
Somewhat disagree	10.34%	24
Disagree	7.76%	18
Strongly disagree	3.45%	8
TOTAL		232

Powered by 

Q10: Our company will utilize past information and knowledge to solve problems.

Answered: 231 Skipped: 661



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Q10: Our company will utilize past information and knowledge to solve problems.

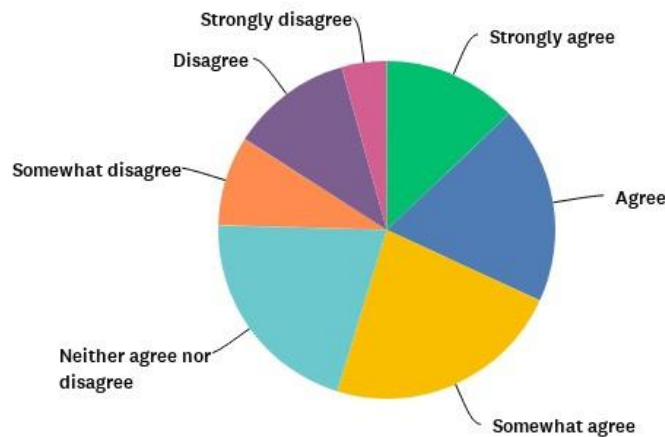
Answered: 231 Skipped: 661

ANSWER CHOICES	RESPONSES	
Strongly agree	16.02%	37
Agree	19.91%	46
Somewhat agree	28.57%	66
Neither agree nor disagree	16.02%	37
Somewhat disagree	9.96%	23
Disagree	5.63%	13
Strongly disagree	3.90%	9
TOTAL		231

Powered by  SurveyMonkey

Q11: When someone pressures me to change something. I tend to resist it even if I think the change may ultimately benefit me

Answered: 232 Skipped: 660



Powered by  SurveyMonkey

Q11: When someone pressures me to change something. I tend to resist it even if I think the change may ultimately benefit me

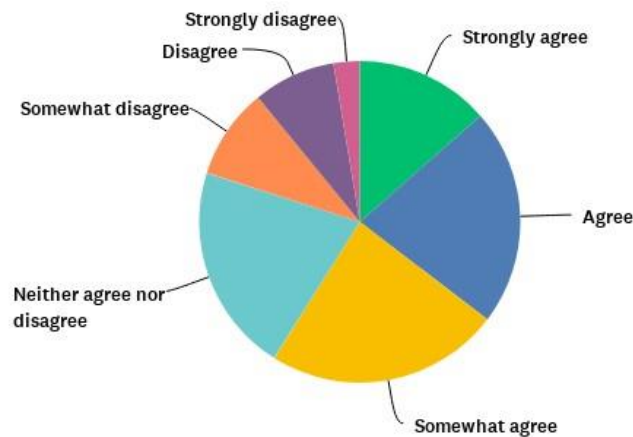
Answered: 232 Skipped: 660

ANSWER CHOICES	RESPONSES	
Strongly agree	12.93%	30
Agree	18.97%	44
Somewhat agree	22.84%	53
Neither agree nor disagree	20.69%	48
Somewhat disagree	8.62%	20
Disagree	11.64%	27
Strongly disagree	4.31%	10
TOTAL		232

Powered by 

Q13: I often change my mind or methods for solving problems due to external suggestions.

Answered: 229 Skipped: 663



Powered by 

Q13: I often change my mind or methods for solving problems due to external suggestions

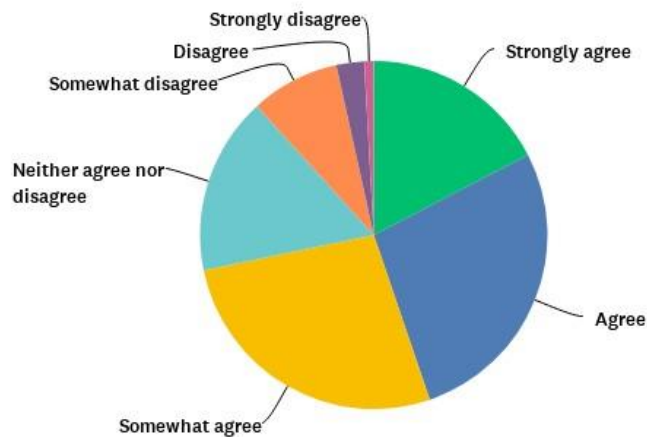
Answered: 229 Skipped: 663

ANSWER CHOICES	RESPONSES	
Strongly agree	13.54%	31
Agree	21.83%	50
Somewhat agree	23.58%	54
Neither agree nor disagree	20.96%	48
Somewhat disagree	9.17%	21
Disagree	8.30%	19
Strongly disagree	2.62%	6
TOTAL		229

Powered by 

Q14: Past knowledge and experience can increase my work efficiency .

Answered: 230 Skipped: 662



Powered by 

Q14: Past knowledge and experience can increase my work efficiency.

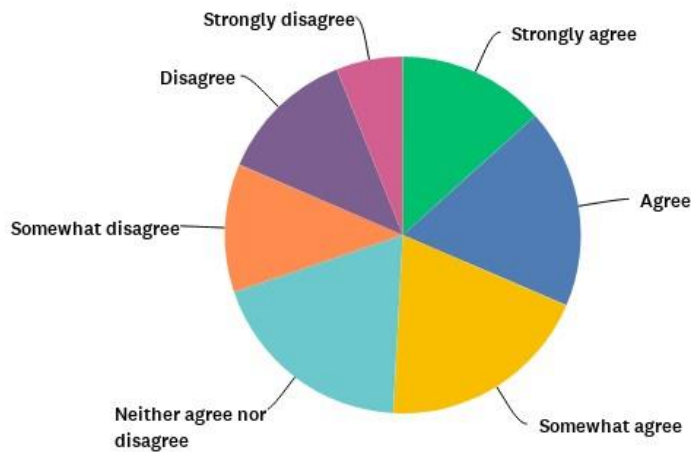
Answered: 230 Skipped: 662

ANSWER CHOICES	RESPONSES	
Strongly agree	17.39%	40
Agree	27.39%	63
Somewhat agree	26.96%	62
Neither agree nor disagree	16.52%	38
Somewhat disagree	8.26%	19
Disagree	2.61%	6
Strongly disagree	0.87%	2
TOTAL		230

Powered by  SurveyMonkey

Q12: When we change our behavior, it is hard to convince others to do the same

Answered: 232 Skipped: 660



Powered by  SurveyMonkey

Q12: When we change our behavior, it is hard to convince others to do the same

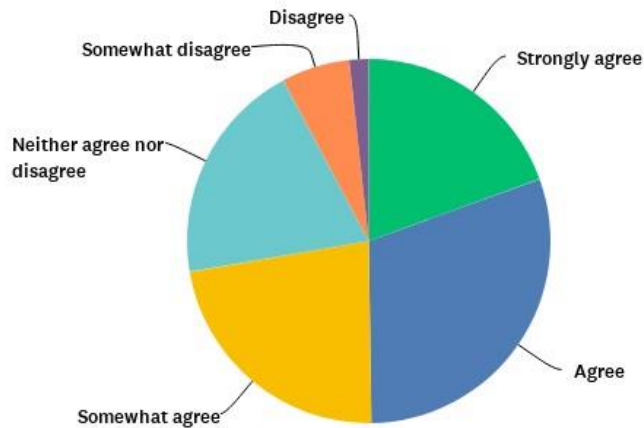
Answered: 232 Skipped: 660

ANSWER CHOICES	RESPONSES	
Strongly agree	13.36%	31
Agree	18.10%	42
Somewhat agree	19.40%	45
Neither agree nor disagree	18.97%	44
Somewhat disagree	11.64%	27
Disagree	12.50%	29
Strongly disagree	6.03%	14
TOTAL		232

Powered by  SurveyMonkey

Q17: We feel defensive when there are any organizational change.

Answered: 231 Skipped: 661



Powered by  SurveyMonkey

Q17: We feel defensive when there are any organizational change.

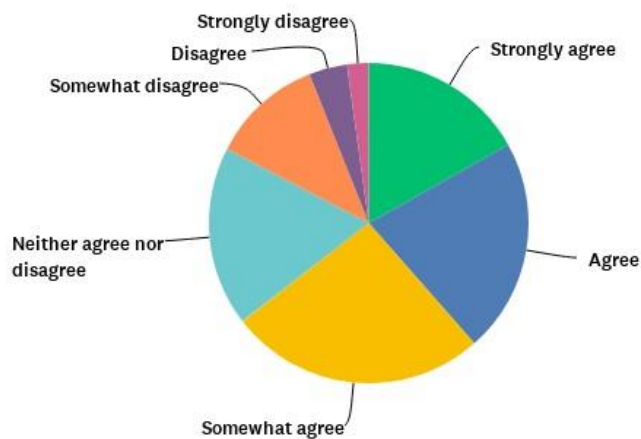
Answered: 231 Skipped: 661

ANSWER CHOICES	RESPONSES	
Strongly agree	19.48%	45
Agree	30.30%	70
Somewhat agree	22.51%	52
Neither agree nor disagree	19.91%	46
Somewhat disagree	6.06%	14
Disagree	1.73%	4
Strongly disagree	0.00%	0
TOTAL		231

Powered by 

Q15: I feel anxious when I recall painful past experiences arising from change.

Answered: 231 Skipped: 661



Powered by 

Q15: I feel anxious when I recall painful past experiences arising from change.

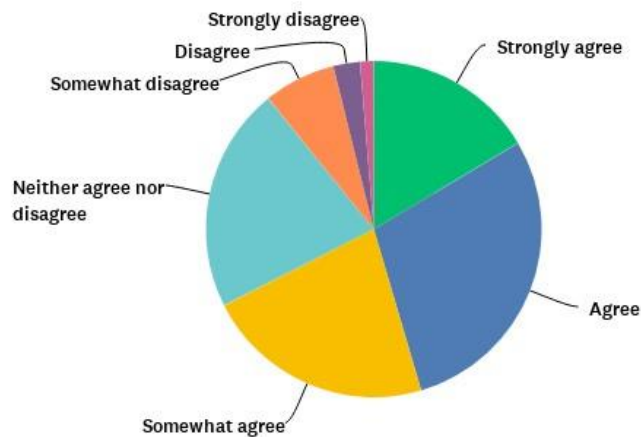
Answered: 231 Skipped: 661

ANSWER CHOICES	RESPONSES	
Strongly agree	16.88%	39
Agree	21.65%	50
Somewhat agree	25.97%	60
Neither agree nor disagree	18.18%	42
Somewhat disagree	11.26%	26
Disagree	3.90%	9
Strongly disagree	2.16%	5
TOTAL		231

Powered by 

Q16: When I go to a third place (i.e. FabLab, MakerLab or Hackerspace), I feel it is safer to collaborate with familiar actors

Answered: 231 Skipped: 661



Powered by 

Q16: When I go to a third place (i.e. FabLab, MakerLab or Hackerspace), I feel it is safer to collaborate with familiar actors

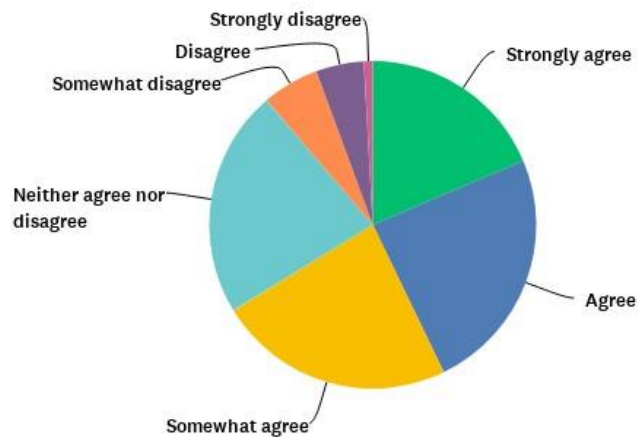
Answered: 231 Skipped: 661

ANSWER CHOICES	RESPONSES	
Strongly agree	16.45%	38
Agree	29.00%	67
Somewhat agree	22.08%	51
Neither agree nor disagree	21.65%	50
Somewhat disagree	6.93%	16
Disagree	2.60%	6
Strongly disagree	1.30%	3
TOTAL		231

Powered by  SurveyMonkey

Q18: Our company will cooperate externally to create new innovative processes or develop new products

Answered: 231 Skipped: 661



Powered by  SurveyMonkey

Q18: Our company will cooperate externally to create new innovative processes or develop new products

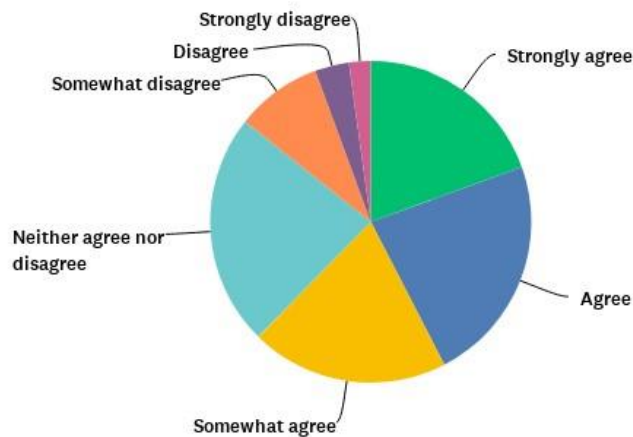
Answered: 231 Skipped: 661

ANSWER CHOICES	RESPONSES	
Strongly agree	18.61%	43
Agree	24.24%	56
Somewhat agree	23.38%	54
Neither agree nor disagree	22.51%	52
Somewhat disagree	5.63%	13
Disagree	4.76%	11
Strongly disagree	0.87%	2
TOTAL		231

Powered by  SurveyMonkey

Q19: I want to own the intellectual property that originates from me when working in a third place.

Answered: 231 Skipped: 661



Powered by  SurveyMonkey

Q19: I want to own the intellectual property that originates from me when working in a third place.

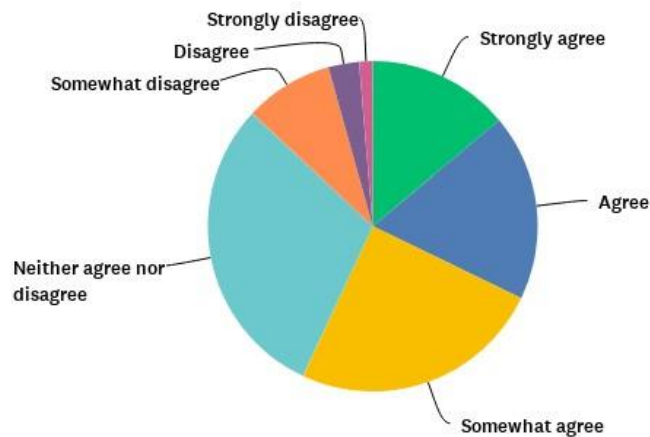
Answered: 231 Skipped: 661

ANSWER CHOICES	RESPONSES	
Strongly agree	19.48%	45
Agree	22.94%	53
Somewhat agree	19.91%	46
Neither agree nor disagree	23.38%	54
Somewhat disagree	8.66%	20
Disagree	3.46%	8
Strongly disagree	2.16%	5
TOTAL		231

Powered by  SurveyMonkey

Q20: Our company encourages innovative activities and will utilize external knowledge and information

Answered: 230 Skipped: 662



Powered by  SurveyMonkey

Q20: Our company encourages innovative activities and will utilize external knowledge and information

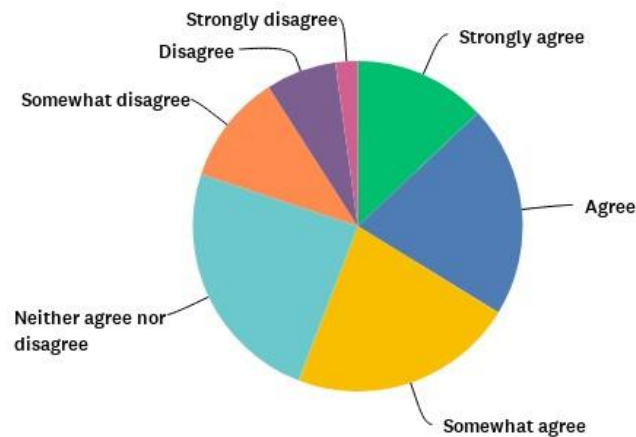
Answered: 230 Skipped: 662

ANSWER CHOICES	RESPONSES	
Strongly agree	13.91%	32
Agree	18.26%	42
Somewhat agree	24.78%	57
Neither agree nor disagree	30.00%	69
Somewhat disagree	8.70%	20
Disagree	3.04%	7
Strongly disagree	1.30%	3
TOTAL		230

Powered by  SurveyMonkey

Q21: Generally, our company will try to commercialize (license, sell) all of our technology.

Answered: 231 Skipped: 661



Powered by  SurveyMonkey

Q21: Generally, our company will try to commercialize (license, sell) all of our technology.

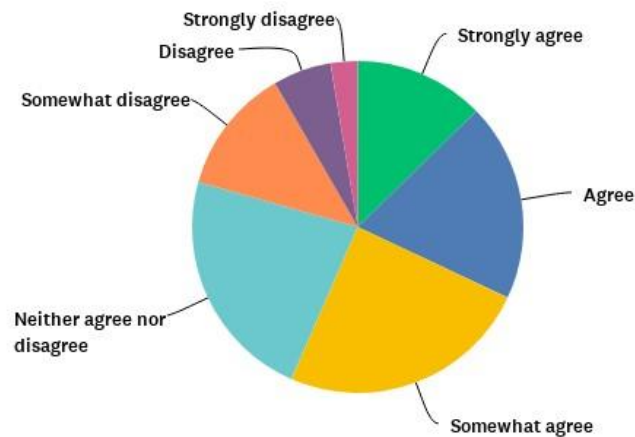
Answered: 231 Skipped: 661

ANSWER CHOICES	RESPONSES	
Strongly agree	12.99%	30
Agree	20.78%	48
Somewhat agree	22.08%	51
Neither agree nor disagree	24.24%	56
Somewhat disagree	10.82%	25
Disagree	6.93%	16
Strongly disagree	2.16%	5
TOTAL		231

Powered by  SurveyMonkey

Q22: Our company will promote innovative ideas or internal technology that cannot be self-developed to market through cooperating with other companies.

Answered: 228 Skipped: 664



Powered by  SurveyMonkey

Q22: Our company will promote innovative ideas or internal technology that cannot be self-developed to market through cooperating with other companies.

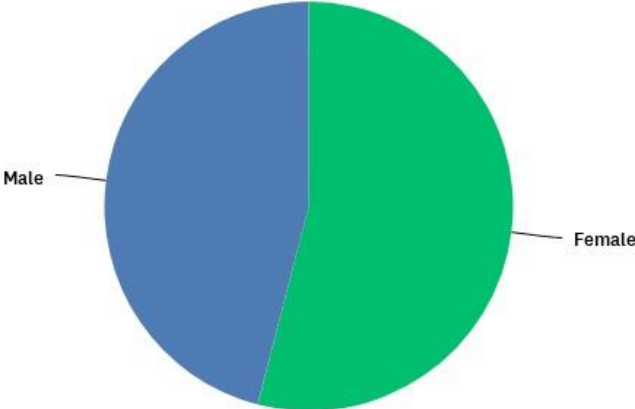
Answered: 228 Skipped: 664

ANSWER CHOICES	RESPONSES	
Strongly agree	12.72%	29
Agree	19.30%	44
Somewhat agree	24.56%	56
Neither agree nor disagree	22.81%	52
Somewhat disagree	12.28%	28
Disagree	5.70%	13
Strongly disagree	2.63%	6
TOTAL		228

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Q23: What is your gender?

Answered: 211 Skipped: 681



Powered by 

Q23: What is your gender?

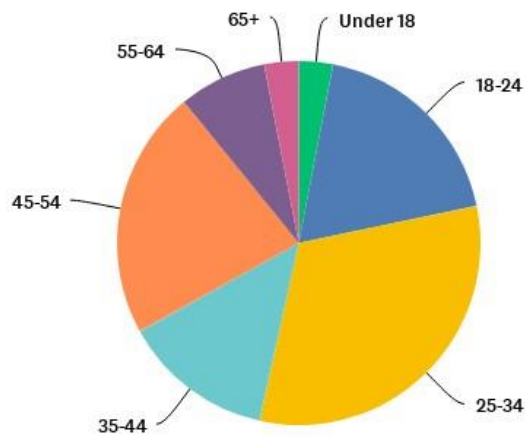
Answered: 211 Skipped: 681

ANSWER CHOICES	RESPONSES	
Female	54.03%	114
Male	45.97%	97
TOTAL		211

Powered by  SurveyMonkey

Q24: What is your age?

Answered: 230 Skipped: 662



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Q24: What is your age?

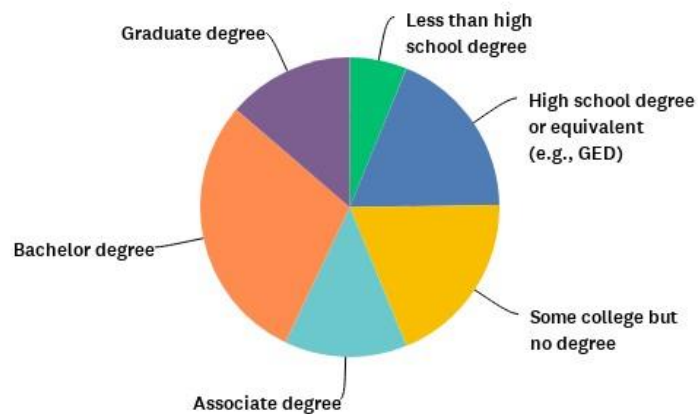
Answered: 230 Skipped: 662

ANSWER CHOICES	RESPONSES	
Under 18	3.04%	7
18-24	18.70%	43
25-34	31.74%	73
35-44	13.48%	31
45-54	22.17%	51
55-64	7.83%	18
65+	3.04%	7
TOTAL		230

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Q25: What is the highest level of school you have completed or the highest degree you have received?

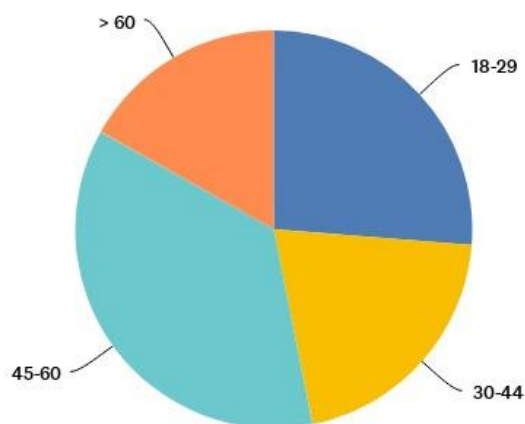
Answered: 226 Skipped: 666



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Q26: Age

Answered: 879 Skipped: 13



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Q25: What is the highest level of school you have completed or the highest degree you have received?

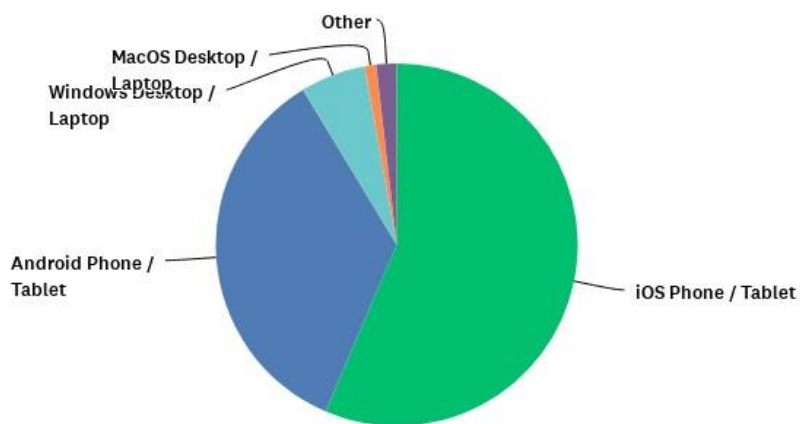
Answered: 226 Skipped: 666

ANSWER CHOICES	RESPONSES	
Less than high school degree	6.19%	14
High school degree or equivalent (e.g., GED)	18.58%	42
Some college but no degree	19.03%	43
Associate degree	13.27%	30
Bachelor degree	29.20%	66
Graduate degree	13.72%	31
TOTAL		226

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Q30: Device Type

Answered: 879 Skipped: 13



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Q30: Device Type

Answered: 879 Skipped: 13

ANSWER CHOICES	RESPONSES	
iOS Phone / Tablet	56.43%	496
Android Phone / Tablet	34.93%	307
Other Phone / Tablet	0.00%	0
Windows Desktop / Laptop	5.80%	51
MacOS Desktop / Laptop	1.02%	9
Other	1.82%	16
TOTAL		879

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