# KITCHEN CONFIDENTIAL?
# KNOWLEDGE TRANSFER AND SOCIAL NORMS IN GOURMET CUISINE

**Giada Di Stefano**
Bocconi University
Department of Management and Technology
Via Roentgen 1
20136 Milan, Italy
Phone: ++39 (02) 5836-5797
Fax: ++39 (02) 5836-2530
Email: giada.distefano@unibocconi.it

**Andrew A. King**
Dartmouth College
Tuck School of Business
114 Buchanan Hall
Hanover, NH 03755, USA
Phone: ++1 (603) 646-8985
Fax: ++1 (603) 646-8711
Email: andrew.a.king@tuck.dartmouth.edu

**Gianmario Verona**
Bocconi University
Department of Management and Technology
Via Roentgen 1
20136 Milan, Italy
Phone: ++39 (02) 5836-6522
Fax: ++39 (02) 5836-2530
Email: gianmario.verona@unibocconi.it

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## ABSTRACT

In this paper, we explore the conditions for knowhow transfer in gourmet cuisine, an industry characterized by rapid innovation and weak protection of intellectual property (IP). We investigate whether bilateral exchanges are facilitated either by the existence of norms that reduce the risk of misappropriation or by IP strategies that decrease the potential for loss. Moreover, we disentangle how these different mechanisms interact. Using evidence from a scenario-based field experiment, we demonstrate that norms play a role in governing the use of transferred information, but that IP strategies also play an important role. We show that norms substitute for some types of IP strategies but complement others.

## INTRODUCTION

Understanding how ideas flow within industries is critical to both theory and practice. Scholars have studied the flow of knowhow most extensively by tracing the transfer and use of protected intellectual property (e.g. use of patents or copyrights).[1] But intellectual property rights (IPRs) are not available or effective in many industries and for many innovations (Cohen, Nelson, and Walsh, 2000). Better understanding of how information flows when it cannot be legally protected could influence scholarly analysis of competition, firm strategy, and the formation of industry clusters (Gans, Hsu, and Stern, 2008). In this article, we explore the transfer of creative ideas in one industry with weak intellectual property rights: gourmet cuisine. To facilitate our exploration, we use an empirical design that combines the reach and relevance of a survey with the inference power of a randomized experiment.

Many studies have noted that competitors often trade knowhow, and that the flow of such information can represent a large fraction of the valuable information received (Allen, Hyman, and Pinckney, 1983). Such knowledge transfer is not surprising when strong legal intellectual property (IP) protection prevents misuse of such information (Gans and Stern, 2003). When legal property rights are weak, however, scholars predict that knowledge sharing will be rare (Appleyard, 1996). Yet surprisingly, some empirical studies show that even when valuable ideas cannot be protected through legal means, possessors of these ideas often disclose and transfer them to possible competitors (Fauchart and von Hippel, 2008; Raustiala and Sprigman, 2006).

What explains transfer of unprotected information? One recent suggestion is that informal institutional structures (e.g. norms) substitute for missing regulatory institutions (e.g. patent

[1] Von Hippel (1987: 291) defines knowhow as "the accumulated practical skill or expertise which allows one to do something smoothly and efficiently […] develop its products and develop and operate its processes. Often, a firm considers a significant portion of such knowhow proprietary and protects it as a trade secret." For expository simplicity, we use knowhow interchangeably with knowledge, information, and ideas.

laws) to prevent the misuse of another's ideas. Scholars suggest that industry players develop norms of behavior, which in turn help them to protect transferred information from misuse (c.f. Fauchart and von Hippel, 2008). Norms, they argue, are held in place by actors who observe and sanction misbehavior. While these proposals are intriguing, many questions about the role of norms remain. In particular, norm-based explanations have so-far ignored the possibility that firms could use classic intellectual property (IP) strategies to prevent misuse of information. For example, firms could choose to transfer information only to those unlikely to compete more directly. Or they could leverage isolating mechanisms to prevent others from using valuable knowhow (Rumelt, 1984), as in the case of complementary assets (c.f. Teece, 1986). Before strong inferences about the role of norms can be reached, their influence must be evaluated under varying degrees of competition and differing access to alternative protection mechanisms.

In this article, we investigate the extent to which norms or IP strategies explain the transfer of knowhow among restaurants. Gourmet cuisine is an excellent setting to conduct our research. It is an industry with rapid innovation (Durand, Rao, and Monin, 2007; Rao, Monin, and Durand, 2003, 2005). It is also an industry in which normative protection of knowledge transfer has been documented (Fauchart and von Hippel, 2008). In high-end cuisine, knowhow in the form of recipes or techniques usually cannot be protected by patents, copyrights, or even legally protected trade secrets. Chefs in the industry can share their knowledge in public through conferences or publications, or share it in private through one-to-one personal interactions. The latter type of information transfer is the one that interests us, since it allows us to explore the conditions under which firms will voluntarily release sensitive information to potential competitors. Our results show that norms may play a role in governing the use of transferred

information, but that IP strategies also play an important role. We show that norms substitute for some types of IP strategies but complement others.

Our research extends the existing literature on knowhow trading between competitors (Appleyard, 1996; Carter, 1989; Gans and Stern, 2003; von Hippel, 1987) and it provides more detail about the conditions that support knowledge spillovers (Almeida and Kogut, 1999; Klepper, 2010; Singh, 2005; Zucker, Darby, and Armstrong, 1998). It also provides a partial response to recent calls for more research on how informal connections among people affect the knowledge management process (Argote, McEvily, and Reagans, 2003).

The paper is organized as follows. The next section reviews the literature on knowhow transfer and then develops the hypotheses on which our study is based. The following section details the method and data we employ to test our theory. Finally, we present results and conclude with a brief discussion.

## THEORY AND HYPOTHESES

In 1983, Allen, Hyman, and Pinckney studied the source of significant innovation in 102 manufacturing companies. "The most surprising result", they reported "is that so many of the firms supplying [innovative ideas] are apparent competitors. Nearly 23 percent of the messages were from firms in the same industry." (Allen *et al.*, 1983: 202) This unexpected trade has since been documented in several contexts and industries.[2] With the rise of the knowledge economy and the increasing importance of proprietary information, understanding the causes of and conditions for such transfer has become more important.

[2] The importance of such trade has increased because innovation was once thought to occur predominantly inside of firms. More recently Chesbrough (2003) has argued that innovation is more commonly occurring in an "open" and "distributed" manner. As a result, scholars have become more interested in the decentralized mechanisms that support or impede such distributed innovation.

Previous research provides two broad streams of explanation for the transfer of information among competing firms (e.g., Davies and Kline, 2005; Fauchart and von Hippel, 2008; Teece, 1986). The first stream argues that norms substitute for missing legal property protection in preventing misuse of transferred information. The second argues that actors transfer information conditional on the competitive circumstances which make the damage from misuse greater or smaller.

*The first stream* of logic draws on principles from institutional theory to argue that social norms may play an important role in preventing competitors from misappropriating transferred information – even if it is in their economic interest to do so. Following this line of reasoning, scholars propose that social norms can protect ideas from misappropriation when they are not protected by legal rights (Fauchart and von Hippel, 2008). Such norms, the theory suggests, use distributed mechanisms of enforcement to punish anti-normative behavior. Some of these penalties operate within the group, but "the ultimate penalty for violating a norm is the cessation of a relationship, or in the extreme, ostracism from a group." (Ingram and Silverman, 2002: 14).

The idea that norms could protect innovation from misappropriation could help explain why some industries such as fashion, gourmet cuisine, and music have high levels of design effort and innovation investment while operating in relatively weak property right regimes. For theory, normative protection of intellectual property would also provide more evidence of the power of decentralized institutions and their ability to complement or even substitute for more centralized institutions, such as laws and rules (Feldman and Harel, 2008; Zasu, 2007). The potential power of decentralized institutions is a central topic in modern institutional research (Prakash and Potoski, 2006) and social sciences in general. This importance was recently

highlighted by the selection of Elinor Ostrom as the 2009 Nobel Prize Laureate in Economic Sciences for her research on decentralized governance of common-property problems.

*A second stream* of logic draws on theories of competitive strategy and suggests that firms transfer proprietary information when competitors will not gain a relative advantage from this information. There are two main currents of logic within this stream. The first current suggests that the transfer of innovative ideas is facilitated when competitors *cannot* benefit from their use. Potential competitors may be unable to copy transferred innovations because of the path dependency of competitive positioning. Alternatively, competitors may not be able to expropriate any return from the transferred information because isolating mechanisms prevent the use of the information. These barriers could arise from the information itself, its tacit or fragmented nature, or from complementary assets controlled by the firm which was the source of the information (Teece, 1986). A second current emphasizes the role of expectation of ongoing gains from trade in motivating information transfer. Even if competitors have the ability to use transferred information and the incentive to do so, the potential for ongoing gains from repeated exchange may encourage both parties to behave appropriately (Baker, Gibbons, and Murphy, 2002; Ingram and Inman, 1996; Ingram and Roberts, 2000).

*In summary*, one explanation for the transfer of unprotected information among competitors suggests that receivers of information have an incentive to misappropriate ideas, but do not do so because a community-level institution prevents their misuse. A second explanation suggests that firms will pass innovative ideas when receivers lack appropriate market positioning, sufficient information or complementary assets. To fully understand either theory, they must be evaluated together. Moreover, analysis of their interaction would clarify their functioning and relative importance.

**The Role of Social Norms in Knowhow Transfer**

Scholars have long been interested in the role that social norms play in governing interpersonal relationships. Sociologists, in particular, have noted the importance of these institutions in regulating human interaction, but scholars from other disciplines have actively explored the nature of norms as well. Political scientists like Elinor Ostrom have shown that norms can play an important role in preventing overuse of common resources (Ostrom, 1990). Economists like Douglass North have shown how such "informal" and "decentralized" institutions prevent socially destructive behavior (North, 1990).

Norms are decentralized institutions, acting at the level of the social group and relying on social relationships for their enforcement (Ingram and Silverman, 2002). They are defined as decentralized institutions since their creation and enforcement does not depend on third parties and is instead carried out by each member of the social group for which the norms apply (Ingram and Silverman, 2002). Norms act throughout civil society, and their application ranges from long-distance traders (Clay, 1997; Greif, 1993), to cattlemen (Ellickson, 1991), to diamond merchants (Richman, 2006). Norms rely on social relationships for their enforcement, with normative incentives being either negative (i.e. costs imposed on those who fail to conform) or positive (i.e. benefits conferred to those who meet or exceed the normative requirement) (Rai, 1999). Although norms rely on decentralized enforcement, norms may also interact and draw strength from more centralized institutional forms. For example, if social punishments (such as shaming, loss of prestige, and so on) fail, actors may seek recourse from more centralized institutions. In fact, it is the complex interaction between the two types of institutions that often governs human behavior (e.g., Feldman and Harel, 2008; Zasu, 2007).

Fauchart and von Hippel (2008) argue that norms allow the gourmet cuisine industry to retain high levels of creativity and innovation even though legal protection of property rights is lacking. Recipes cannot be protected by patents or copyrights, since, as one accomplished chef remarked during an interview, "how could you pay copyrights if you can just misplace a leaf on the plate and copyright would not be infringed anymore?" Because legal protection of trade secrets has proven ineffective, some scholars argue that chefs have turned to social norms as substitutes for formal intellectual property rights (Fauchart and von Hippel, 2008). They claim that in French cuisine a strong norm-based IP system protects recipe and processing innovations from copying. According to Fauchart and von Hippel (2008), the exchange of information in the culinary industry is regulated by three basic social norms, according to which when a chef receives recipe-related information from another chef, he: (1) must not copy the recipe exactly; (2) must credit the author of the recipe if he is going to significantly rely on it in the development of a dish; and (3) must not pass the recipe-related information to a third party without asking for permission of the author. These norms, Fauchart and von Hippel (2008) argue, are held in place by a system for punishing deviations. If a chef deviates from the norms, he will be sanctioned with negative gossiping within the community and decreased likelihood that his additional requests for information will be answered by community members.

Although Fauchart and von Hippel (2008) provide evidence that the chefs share a belief that such norms should be followed and deviations should be punished, they only demonstrate the efficacy of these norms by showing that chefs are more willing to transfer information if told that the receiving party will not misuse it. While this is intriguing evidence, it does not demonstrate that a sustainable norm system is actually in place. Indeed, Fauchart and von Hippel did not show that normative behavior was more expected or more likely when adherence to

norms could be observed or enforced. As a first step of our analysis, we provide a more complete test of their theory. We predict that knowhow transfer is more likely when normative behavior is expected. We also hypothesize that conditions for effective functioning of norms will lead to greater knowhow transfer.

*H1: The higher: (a) the expectation of adherence to social norms; (b) the visibility of non-adherence to social norms; (c) the possibility to directly sanction non-adherence to social norms, the higher the likelihood of knowhow transfer.*

**The Role of IP Strategy in Knowhow Transfer**

Fauchart and von Hippel's (2008) research on the role of norms in knowhow transfer represents a provocative challenge to an older literature on ways that valuable information may be protected without support from controlling institutions (Teece, 1986). This literature suggests that a firm's competitive position and its use of isolating mechanisms may prevent others from using its information to competitive advantage. A complete test of the role of norms, must demonstrate that it is normative control – and not these strategic mechanisms – that facilitate knowhow transfer. Institutions, including norms, only bind human behavior if they prevent actions that would otherwise occur. In the case of knowhow transfer, this means that norms prevent the receiving party from using the information in some way.

We first consider whether or not differing geographic and market positions could influence knowhow transfer. We then consider whether or not the nature of the information itself – its completeness or ephemeral nature – could influence which information managers choose to transfer. After that, we discuss whether complementary assets might influence the propensity for firms to share information. As a last step, we consider whether or not potential gains from trade could provide a barrier to inappropriate use of transferred knowhow.

***Competitive Positioning.*** For transferred knowhow to harm the firm from which it originates, it must help competitors to be more effective or allow them to move into more direct competition. For example, information might allow potential competitors to lower their production costs or to change their products so that they overlap more with those of the focal firm. Reductions in production costs will have a bigger effect when firms have similarly positioned products (Kreps, 1990). Similar product or geographic positioning will exacerbate the incentive to engage in price competition, and a production cost advantage will increase a potential competitor's ability (Kreps, 1990). Thus knowhow transfer that reduces production costs should have a bigger effect on competition when the receiving party is more similar.

More similar competitive positioning can also exacerbate the degree to which a potential competitor can use transferred information. Scholars have long noted that related experience increases the "absorptive capacity" of the firm, thereby making it easier for them to recognize, understand, and implement information related to existing activities (Cohen and Levinthal, 1990; Zahra and George, 2002). Thus, knowhow transferred to more similar competitors should be more easily absorbed and thus have a larger effect on their processes.

Finally, similarity of the potential competitor may also influence their *propensity* to compete more aggressively with another firm. Firms make investments in localized assets or in particular skills which may then constrain their ability to change their position in the future. For example, once a restaurant has invested in a physical location or internal equipment it cannot easily change to a new location or cuisine. For this reason, stores like Benihana which are designed around one type of cooking (hibachi table grilling) cannot easily adopt the techniques which do not use these resources. Similarly, a firm that has chosen a location from which to serve a particular set of clients cannot easily move to another location. Assets in name

recognition, referrals, and supply networks all have a strong geographic component (Buenstorf and Klepper, 2009; Klepper and Simons, 2000).

For our analysis, these arguments suggests that transferring knowhow to firms with more similar products and competing in similar geographical areas could more seriously harm the competitive position of the source of that knowhow. Based on this argument, firms that are acting strategically should be less willing to transfer knowledge to more similarly positioned competitors.

*H2: The more similar the competitive positioning of two firms, the lower the likelihood of knowhow transfer.*

***Information Characteristics.*** Not all information transfers equally well (Szulanski, 1996). Indeed, the nature of the information itself can provide a type of isolating mechanism that prevents its use by potential competitors. Knowledge that is tacit, complex, or incomplete is particularly hard to use (Barney, 1991; Dierickx and Cool, 1989; Lippman and Rumelt, 1982; Peteraf, 1993; Reed and DeFillippi, 1990). For this reason, von Hippel (1994) argues that certain types of information are "sticky" and hard to transfer.

Information characteristics can be used strategically as isolating mechanisms. For example, firms can decide to pass information in fragmented form. Zhao (2006) suggests that the ability to break important ideas into fragments enables multinational firms to conduct R&D in countries with weak intellectual property rights. Imitation of each fragment is prevented because each relies on another non-transferred fragment and only the complete puzzle provides value. Empirical evidence suggests that firms strategically use such a fragmentation strategy to protect critical information (Feinberg and Gupta, 2009; Zhao, 2006). In our case, firms exchanging

knowhow could choose to transfer only part of the information needed for a complete product or process recipe.

*H3a: The more incomplete the information, the higher the likelihood of knowhow transfer.*

The pace of information obsolescence can also provide a barrier to copying. For example, in semiconductor fabrication, IBM has chosen to share its intellectual property with competitors to support R&D on next generation semiconductor fabrication technology. IBM can do this because any piece of information has a very short useful life (Shih, Pisano and King, 2008). This natural obsolescence reduces the cost of information loss (Shih, Pisano and King, 2008). The barriers caused by such rapid change are related to the "time compression diseconomies" identified by Dierickx and Cool (1989). They argue that firms may not be able to catch up to a leading firm in an industry because the rate of adoption and implementation of new capabilities cannot be accelerated sufficiently. Thus the potential risk of competition from information transfer is lower when products or processes change rapidly. It is indeed reasonable to expect that when the pace of innovation is very high, the value of the transferred knowhow, as well as the cost in which the firm will incur in case of expropriation, will be lower.

*H3b: The more ephemeral the information, the higher the likelihood of knowhow transfer.*

***Complementary Assets.*** Another type of isolating mechanism that firms can use is constituted by the barriers to imitation created by complementary assets (Teece, 1986). The ability to profit from an innovation is dependent on the firm's other assets such as manufacturing, distribution, service and complementary technologies.

Complementary assets are most important in weak appropriability regimes, where imitation is relatively easy (Pisano, 2006). Gans and Stern (2003) also note that complementary assets are critical enablers of information transfer. Firms with complementary assets are more willing to exchange weakly protected knowhow, while those without them are more likely to fear misappropriation. As a consequence, firms possessing complementary assets should be more willing to transfer knowhow.

*H4: Ownership of complementary assets increases the likelihood of knowhow transfer.*

***Potential for Gains from Ongoing Trade in Knowhow.*** Studies of information transfer among competitors have previously noted that transfer is often reciprocal. A party asking for information at one point in time may be asked for information in the next. Ongoing reciprocity of exchange could help to create a kind of relational contract in which one transfer is expected to lead to the next and so on (Baker *et al.*, 2002). Such relational contracts are held in place by the "shadow of the future" – the value of ongoing exchanges. When parties cooperate they gain these benefits, when one defects they lose them. A system of tit-for-tat enforcement can then encourage beneficial exchange. Gibbons (2001; 2005) argues that such ongoing exchanges are important elements of many types of contracts. But not everyone partakes in such exchanges. Who is likely to participate?

Since a "relational contract" is held in place by both sides valuing the exchange and fearing to lose it, the sender and receiver must be able to benefit from each other's knowhow (Gibbons, 2001; 2005). Similar technological trajectories or similar production philosophies increase the chance that two parties can benefit from exchange of information. An extreme form of this occurs in the development of semiconductors. Companies pursuing one line of

development (e.g. "high k-metal gate insulators") can more easily share information than those pursuing other approaches.[3] For example, software based around similar platforms (such as Linux or BSD Unix) can more easily exchange knowhow (Lee and Cole, 2003). As a result, competing firms engaged in similar approaches sometimes form associations to facilitate the ongoing exchange of knowhow.[4] In summary, similarity of technological approach leads to the potential for gains from exchange, thereby encouraging knowhow transfer.[5]

*H5: The higher the potential for gains from trade, the higher the likelihood of knowhow transfer.*

**The Interaction between Theories of Information Transfer**

All of the above hypotheses try to tease out the explanatory power of two theories of information transfer, stressing the role that social norms as well as IP strategy have in favoring the likelihood of passing information to other firms in the industry. We turn now to how these mechanisms may interact with each other.

In most cases, logic would suggest that control of information use by normative constraint or by IP strategy should act as substitutes. Considering the extreme cases makes this clear: if, for instance, isolating mechanisms prevent the use of transferred information, norms are not needed. If normative control is perfect, isolating mechanisms are not useful. Gans and Stern (2003) make a similar argument in their analysis of the potential for inventors to reveal their ideas to potential buyers. When protection of the idea is provided by legal rights or by complementary assets, inventors can reveal their ideas, but when this is not the case inventors are only likely to reveal their ideas to those who have a "reputation" for fair dealing.

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[3] See http://www.nanowerk.com/news/newsid=5283.php. Last access: 30 July 2010.
[4] See http://www-03.ibm.com/press/us/en/pressrelease/27222.wss. Last access: 30 July 2010.
[5] Obviously, greater similarity in technology could also lead to greater competition. We discuss this issue in the next section.

Following this argument, we expect to observe that social norms will have less influence on behavior when other protection mechanisms are in place. For example, the lower the likelihood of competition, the less knowhow transfer will depend on protection from social norms. Norms should also substitute for the strategic revelation of information. If firms decide to pass information whose value is more ephemeral or whose misappropriation has a potential for damage, they should need less the protection from social norms. Finally, returning to the logic introduced by Gans and Stern (2003), social norms should also substitute for complementary assets. Since complementary assets act as barriers to imitation, firms possessing these assets should not need the protection from social norms. They can rely instead on the protection offered by their ability to appropriate the returns from innovation by mean of those assets required for the successful commercialization of an innovation.

*H6: Expectation of adherence to social norms has a smaller effect on knowhow transfer when: (a) firms are less similarly positioned; (b) information is more incomplete or ephemeral; (c) firms possess complementary assets.*

With respect to the expectation of gains from trade of knowhow, the logic of substitution no longer holds. This is because the conditions that allow gains from trade may also increase competition. Firms that can benefit from the information of another are more likely to have related products and processes. Unless these are separated geographically, transfer of knowhow could increase their competition. Thus, firms with similar approaches can gain if they cooperate or harm each other if they defect. What can get them started on the cooperative path? Research suggests that normative expectations and reputation can be a critical first step (Lai *et al.*, 2003). This can encourage the two parties to begin and sustain cooperation (Axelrod, 1984). Ostrom (2003) argues that norms can reinforce the potential for reciprocity to take hold and for

cooperation to be maintained. Indeed, consistent with the findings from evolutionary game theory and psychology, she argues that people tend to cooperate with those individuals who they expect to reciprocate. This expectation is based on visual and verbal cues used to determine who will follow norms. Given the tension between competition and cooperation that similarity creates, expectation of appropriate behavior is even more important in setting the stage for cooperation or defection.

*H7: Expectation of adherence to social norms has a larger effect on knowhow transfer when potential for gains from trade increases.*

## RESEARCH SETTING AND METHODOLOGY

In the above sections, we have developed a theory of knowhow transfer based on the insights of the existing literature, and in particular on two perspectives stressing the role that social norms and IP strategy may have in explaining how to prevent the loss of valuable knowhow and hence to facilitate its transfer.

In order to test our hypotheses, we conducted a scenario-based experiment (Florey and Harrison, 2000; Gomez, Kirkman, and Shapiro, 2000), that we administered through a survey targeting an extensive sample of Italian chefs. We chose to study knowhow transfer among chefs, because gourmet cuisine is an industry with rapid innovation (Durand *et al.*, 2007; Rao *et al.*, 2003, 2005), where normative protection of knowledge transfer has been documented (Fauchart and von Hippel, 2008), and legal protection of knowhow is not feasible.

In our scenarios, we describe a restaurant with which the surveyed chef might interact. The characteristics of this target restaurant constitute our experimental manipulations. After

evaluating the experimental scenario, we asked our participants several questions that measured our dependent variable. Figure 1 shows a sample scenario.

**-Insert Figure 1 about here-**

**Experimental Design**

We administered our experiment to the chefs of all the restaurants included in the 2009 Italian edition of the Michelin Guide. The Michelin Guide is the main reference point in high-end cuisine for both chefs and industry experts (Ferguson, 1998; Karpik, 2000). It has been used as a basis for many studies grounded in gourmet cuisine during the last years (e.g., Durand *et al.*, 2007; Fauchart and von Hippel, 2008; Rao *et al.*, 2003, 2005). Michelin evaluates restaurants on a 5-point scale, where each point of the scale corresponds to a "fork". Ratings may hence go from 1 fork (i.e. "quite comfortable décor, ambience and service") to 5 forks ("luxurious décor, ambience and service"). When the forks attributed to restaurants are colored in red, the restaurants are "particularly pleasant or restful establishments: the character of the building, its décor, the setting, the welcome and services offered may all contribute to this special appeal". On top of forks, restaurants offering a particularly good cuisine are also awarded stars, ranging from one star (i.e. "a very good restaurant in its category") to three stars (i.e. "exceptional cuisine, worth a special journey"). Obtaining a Michelin star is one of the top achievements that a chef can achieve, signaling quality and creativity. Limiting our analysis to establishments included in the Michelin Guide guarantees a heterogeneous sample of restaurants across the dimensions of food, décor, ambience, and price, while ensuring a minimum quality standard.

***Participants.*** The 2009 edition of the Michelin Guide for Italy included a total of 2,529 restaurants, 275 of which have received stars (respectively 236, 34, and 5 restaurants for each category from one to three stars). Of the surveys we distributed, 534 chefs responded (21.1%)

with 492 completed surveys (19.5%). Our respondents are mainly male (82%) and have an age ranging from 23 to 80 years (mean=46). Moreover, 92 respondents worked for starred restaurants (respectively 74, 16, and 2 respondents for each category from one to three stars). Characteristics of the population of interest and of the respondents are presented in Table 1.

**-Insert Table 1 about here-**

Compared to the average restaurant on the Michelin guide, restaurants in our sample are significantly more expensive (48.52 vs. 44.60 Euros; t(2,527)=-5.87, p=0.00, d=0.29), as well as better rated in terms of forks (1.95 vs. 1.81 forks; t(2,527)=-5.36, p=0.00, d=0.26) and stars (0.22 vs. 0.12 stars; t(2,527)=-6.95, p=0.00, d=0.38).[6] However, there is no significant difference in location between respondents and non-respondents. Overall, restaurants in our sample tend to be significantly better in terms of quality point (forks, stars, and average price), even if the size of the effect is quite small. This implies that the results of our analysis may be more representative of higher end restaurants, with the generality of our findings not being extendable to the lower end ones. This sample difference may increase our potential to see the effect of social norms, which often apply disproportionally to élite social groups. Indeed when looking for evidence of the role of norms, Fauchart and von Hippel (2008) limited their analysis to French restaurants that gained at least two Michelin forks. This is also consistent with findings contradicting knowledge transfer across chain restaurants (Darr, Argote and Epple, 1995).

***Study Design.*** Following methodological recommendations, we developed the scenarios through direct interaction with a selected set of informants. These informants comprised eight Michelin-starred chefs working in Milan. During the interviews, after a set of questions about their training and cuisine style, we asked these chefs about knowhow transfer, social norms and

[6] Given the large size of the sample, we also report effect sizes, measured with Cohen's d. The values are inferior to 0.5 in all the three cases, showing that the differences between respondents and non-respondents, despite significant, are relatively small.

relationships with colleagues and intermediaries. These interviews were fundamental to better understand the constructs of interest and their measurement within the industry. We interviewed four of our informants a second time for the purpose of providing face validity to the instrument that we used for testing our hypotheses. Finally, we pre-tested the instrument on a sample of 224 restaurants that were not part of the final sample.

In the scenario, we manipulated four variables. Our experimental design is a 2 (geographical proximity) x2 (product positioning) x2 (status) x2 (frequency of review). We rely on a mixed design (i.e., both within- and between-subject assignment), since each respondent was randomly assigned two different scenarios (out of the sixteen alternatives). Table 2 presents a detailed description of the manipulated variables and the manipulations.

**-Insert Table 2 about here-**

Geographical proximity was manipulated by describing the restaurant as "physically very close to your restaurant" vs. "physically very distant from your restaurant". On the advice of chefs in the industry, we avoided inserting reference points (such as 5 miles away or within the same block) to avoid differences caused by modes of transport. We did not perform a manipulation check for this variable, since our treatment is a concrete statement of fact (Perdue and Summers, 1986).

Product positioning was manipulated by describing the restaurant as "cuisine style and ambience similar to your restaurant" vs. "cuisine style and ambience very different from your restaurant". We checked the success of the manipulation of product positioning by asking the respondent to evaluate, on a 7-point likert scale, to what extent the restaurant described in the scenario was comparable in terms of positioning ($F(1,1063)=8.43$, $p=0.00$).

Status was manipulated by describing the restaurant as "Zagalin cuisine rating 28. Comments: creative, innovative, unique style. Chef has 20 years of experience in the industry" vs. "Zagalin cuisine rating 20. Comments: lacks imagination, unoriginal, ordinary style. Chef has 1 year of experience in the industry". Zagalin is a fantasy name, and we explained the rating as being equivalent to a Zagat™ rating, ranging from 0 to 30. We checked the success of the manipulation by asking to evaluate, on a 7-point likert scale, to what extent the chef described in the scenario was considered highly prestigious by colleagues ($F(1,1060)=9.07$, $p=0.00$).

Finally, frequency of review was manipulated by describing the restaurant as "frequently reviewed by local media and customers (among the restaurants with more reviews)" vs. "rarely reviewed by local media and customers (among the restaurants with fewer reviews)". We avoided inserting any reference point (such as among the 5% top reviewed restaurant) so to avoid any subjectivity in the interpretation of the manipulation. As above, we did not perform any manipulation check for this variable, since our treatment is a concrete statement of fact (Perdue and Summers, 1986).

***Procedure.*** We send each of the restaurants in our sample a survey, addressed to the restaurant's head chef. In the cover letter, we gave the respondents the option to either complete the survey using the enclosed hard-copy form, or online using a link specified in the letter. In the survey, the chef was asked to provide some information regarding herself and her restaurant and then to answer a series of questions regarding her likelihood of transferring information to the chef of the restaurant described in the scenario. Each respondent was randomly assigned two scenarios out of sixteen possible alternatives, and asked to answer a set of questions about knowledge transfer. The scenarios were used to manipulate our focal variables.[7]

[7] Note that 94% of respondents returned two scenarios, whereas the remaining 6% returned from one to six scenarios (having completed the survey both offline and online), for a total of 1,010 scenarios.

**Dependent, Independent and Control Variables**

Our dependent variable, *knowhow transfer*, is the likelihood that the respondent would provide information to the chef described in the scenario, measured with a 7-point likert scale. In particular, we measured three types of information that could be shared, i.e. recipes, recipes of signature dishes, and cooking techniques.[8]

Hypothesis 1 postulates the positive effect of social norms on knowhow transfer, distinguishing among expectation of adherence to social norms (H1a), visibility of non-adherence to social norms (H1b) and possibility to sanction directly non-adherence to social norms (H1c). We operationalized these three variables following Fauchart and von Hippel (2008). Expectation of adherence to social norms (*appropriate behavior*) is measured as the average of three items, namely the likelihood that, if the chef described in the scenario received recipe-related information from our respondent, (s)he: would have not copied the recipe exactly; would have credited the author of the recipe; and would have not passed the information to a third party without asking for permission. Results do not change if the three items are entered into our model separately. We operationalized visibility of non-adherence to social norms (*sanctionability*) as the average of two items, namely the likelihood that in case of deviations from expected behavior, the deviant behavior could be noticed by: other chefs; and third parties, such as media or customers. Results do not vary if the two items are entered in our model separately. Finally, possibility to sanction directly non-adherence to social norms (*punishment*) is measured as the average of three items, namely the likelihood that, in case of deviations from expected behavior, the chef who provided the information: would engage in negative gossiping

[8] A signature dish is a dish that uniquely identifies a chef, and is commonly associated to his cuisine. Despite the menu can be changed frequently, these dishes are always present, as they represent the artistry, style and approach to cuisine of their inventors.

within the community; would not return any future request for help; and would not return any future request for information. Results do not vary if the three items are entered separately.

Hypothesis 2 postulates the negative effect of similarity of competitive positioning on knowhow transfer. In order to test this hypothesis, we relied on insights from our interviews. Respondents were universal in stating that the two most important determinants of competition were physical proximity and similarity of cuisine and ambience. This is consistent with previous accounts from the hospitality industry (Baum and Mezias, 1992). As a consequence, we manipulated *geographical proximity* and *product positioning* in the scenario. Then, we created a single measure that we call *similarity of positioning*, that is the simple sum of the two variables. We present the (consistent) results for the case in which the two manipulations are not aggregated in Appendix A.

Hypothesis 3 postulates the positive effect of incomplete (H3a) and ephemeral information (H3b) on knowhow transfer. Managers exchanging knowhow could choose to transfer only part of the information needed for a complete product or process recipe. We capture this effect by looking at the difference between transfer of techniques and transfer of entire recipes. To this end, we marked the three different types of transfer with dummy variables and combined the three reports of willingness to transfer (recipes, signature dishes, techniques) into one database. By construction, this raises the number of observation approximately threefold. The dummy variable *techniques* equals 1 in case of transfer of techniques and 0 otherwise.

Information is ephemeral when the pace of its obsolescence is rapid. We measure the ephemeral nature of information by looking at the relevance that innovation has for our respondents. To this end, we asked them to rate how important menu changes are for their

customers (*importance of change*), on a 7-point likert scale ranging from "not important at all" to "extremely important".

Hypothesis 4 postulates the positive effect of complementary assets on knowhow transfer. We measure complementary assets in two ways. First, we look at upstream complementary assets, i.e. assets related to the production process. According to our informants, upstream complementary assets in gourmet cuisine are the unique inputs that chefs can rely on when preparing their recipes. In particular, our respondents testified to the importance of unique suppliers, describing them as one of the best-kept secrets in professional kitchens. In order to get the information about the presence of these assets, we hence asked our respondents about their reliance on unique suppliers (*unique suppliers*), measured with a dummy variable. Second, we look at downstream complementary assets, i.e. assets related to the commercialization of the product. We measured downstream complementary assets by using the color of the forks awarded by Michelin. Forks are colored in red when restaurants provide "particularly pleasant or restful establishments" as a result of "the character of the building, its décor, the setting, the welcome and services offered […]". These truly unique restaurants benefit from special locations (e.g., the ancient palace in the heart of Florence), peculiar settings (e.g. a mountain chalet on the Dolomites), or spectacular positions (e.g., the top of a sea cliff in Capri). Red coloring of forks should capture complementary assets only a few restaurants can count on. Our dummy *color* equals 1 for "red-forked" restaurants and 0 otherwise.

Hypothesis 5 postulates the positive effect of potential for gains from trade on knowhow transfer. According to our informants, we can observe a potential gain from trade in gourmet cuisine in the case of chefs sharing the same "approach to cuisine". Chefs in our interviews frequently discussed the issue of the approach to cuisine. In the words of one of our informants:

"The exchange depends on the fact that they have an approach to cuisine that is similar to mine. This also influences the exchange of opinions that we have". Analogously: "It is a matter of affinity: we all look for similar persons, and to me it is very important to dedicate a lot of time to this search, to this selection of friends or colleagues who allow me to grow and evolve." Based on the insights from our field research, we measured potential for gains from trade looking at the similarity in approaches to cuisine between our respondent and the chef described in the scenario, measured on a 7-point likert scale (*similarity of approach*).

Finally, we included a series of respondent-related controls in our analyses, namely: position of the respondent in the organization (*owner*); gender of the respondent (*male*); belongingness of the restaurant to a chain (*chain*); years of experience in the industry of the respondent (*experience*); and finally the fact that the respondent has been granted or not a Michelin star (*Michelin star*). *Status* and *frequency of review*, which we manipulated in the scenario, were used as controls. A comprehensive list of the variables, together with their measures and operationalization, is shown in Table 3. Descriptive statistics and correlations among all the variables described above and entered into our model are shown in Table 4.

**-Insert Tables 3 and 4 about here-**

**Analysis**

We use a combination of fixed-effect and random-effects regression analysis to test our hypotheses. Although our use of a randomized experimental design helps to eliminate the effect of subject unobservable attributes, we further controlled for these attributes by asking the responded for responses to two different scenarios. This allows us to use a fixed-effect analysis (Hausman, Hall, and Griliches, 1984). Unfortunately, fixed effects analyses also remove any variables that are fixed for the subject (e.g. their age). Where we wish to consider the potential

effect of these variables, we attempt to use random-effects models. For random-effects models to be consistent, the random error associated with each unit (respondent) must not be correlated with other regressors. We tested this assumption using Hausman's (1978) test: the results of the test are reported below each table. Even when the Hausman test is not passed, we still report results for random-effects in order to observe the behavior of variables at the individual level, however we are more circumspect in the inferences we make.

## RESULTS

Our first set of hypotheses states the positive effect of expectation of adherence to norms (H1a), visibility of non-adherence to norms (H1b), and possibility to directly sanction non-adherence to norms (H1c) on knowhow transfer. As reported in table 5, our analysis supports H1a, does not support H1b and disconfirms H1c. In both fixed-effects models (model 1 and model 5) and random-effects models (model 2 and model 6), the coefficient for *appropriate behavior* is positive and highly significant, indicating that the expectation of appropriate behavior increases the willingness to transfer knowhow. Thus, we find support for Fauchart and Von Hippel's (2008) claim that expectation of pro-normative behavior increases willingness to transfer knowhow. We find, however, no support for their contention that potential for or willingness to sanction non-compliance with norms would encourage transfer. The coefficient of *sanctionability* is not significant in any of the four models. Moreover, contrary to H1c, we find that, when respondents are thinking about their interaction with a restaurant they are more willing to punish, they are less likely to transfer the information. In other words, the coefficient for *punishment* is negative and significant in all four models.

**-Insert Table 5 about here-**

Our second set of hypotheses refers to the role that different IP strategies have in influencing the likelihood of knowhow transfer. In particular, we hypothesize a decreasing willingness to pass knowhow to similarly positioned industry players (H2). The hypothesis finds support in our data: the coefficients on *similarity of positioning* are negative and significant in both fixed-effects models (model 3 and model 5) and random-effects models (model 4 and model 6). Looking at characteristics of information, we expect to observe a positive effect of incomplete (H3a) and ephemeral (H3b) information on the likelihood of knowhow transfer. We find strong support for both hypotheses. The coefficients for *techniques* and *importance of change* are positive and significant in all specifications. According to H4, complementary assets should have a positive effect on knowhow transfer. However, we do not find support for this hypothesis when looking at upstream complementary assets (*unique suppliers*). For downstream complementary assets (*color*), the hypothesis is supported when we estimate a model which does not include any of our variable capturing normative control (model 4). In the overall model (model 6) the coefficient loses significance – suggesting that some relationship may exist between the norms and the effect of downstream complementary assets. We explore this in our next analysis. Finally, H5 postulates that similarity in approach to cuisine should increase the potential for gains from trade and this should increase knowhow transfer. Our data strongly support this hypothesis, as shown by the positive and significant coefficient for *similarity of approach* in all specifications.

It is noteworthy that among our control variables, status of both of the actual respondent (*Michelin star*) and the fictitious chef (*status*) has a significant and positive impact on the likelihood of information transfer. This suggests that accomplished chefs tend to be more generous with their knowledge. We find supporting evidence for this in our interviews to top

Italian chefs, during which we were told that "the more the level of dining increases, the more relevant this exchange becomes". Highly reputed chefs have indeed a reputation for creativity, innovativeness, stylistic uniqueness. In the words of a two-starred chef: "secrecy belongs to an old approach. It used to happen that [high-end] chefs did not want to cook their own recipes in front of other chefs, that they kept them secret. In fact the chef had only those recipes, and, if someone copied them, he would have had no more ideas, nothing new to serve. Today this is not true anymore, since this is a context in which there is evolution, there is research."

Table 6 displays seven fixed-effects models: the first six of them include one interaction term at the time, with the last one including all interactions and displaying results that are consistent with those from the previous six models.

**-Insert Table 6 about here-**

The first set of hypotheses postulates a substitution effect between the expectation of adherence to social norms and competitive positioning (H6a), characteristics of the information (H6b) and complementary assets (H6c). In other words, we expect that when interacted with *appropriate behavior* these three variables will have an effect on knowhow transfer that is opposite in sign compared to their main effect. We do not find support for H6a, as the effect is not significant. On the contrary, we do find support for H6b, as shown by the negative interactions between *appropriate behavior* and both *techniques* and *importance of change*. Finally, according to H6c, we expect the interaction between *appropriate behavior* and complementary assets have a negative effect on information transfer. The hypothesis is not supported for upstream complementary assets (*unique suppliers*). Counter to our predictions, however, we find a significant positive interaction with downstream complementary assets (*color*). In other words, these assets complement social norms, rather than substituting them.

In H7 we hypothesize a complementary effect between the expectation of adherence to social norms and the potential for gains from trade. We find support for this hypothesis, as there is a positive interaction between the *appropriate behavio*r and *similarity of approach*. In other words, social norms matter less when the possibility to gain from trades is low. This clearly emerges if we look at the graphical representation of the effect of the interaction between *appropriate behavior* and *similarity of approach* on knowhow transfer, as displayed in figure 2 (based on coefficients of main and interaction effects from model 6). When the potential for gains from trade is low, the expectation of appropriate behavior has a lower positive effect on the transfer of information. To the extreme, when *similarity of approach* approximates the lower bound, the effect of norms on information transfer is negligible and almost null.

**-Insert Figure 2 about here-**

Our analysis also allows us to begin to measure the explanatory power of the different theories of information transfer that we try to tease out in this contribution. Looking at the (within) $R^2$ of our models, we estimate that normative explanations by themselves explain 4.1% of the variance (table 5, model 1). In contrast, when considering strategic explanations by themselves, we explain 25% of the variance (table 5, model 3). If we include both explanations, we experience an increase in explanatory power, which amounts to 26.8% with an increment of 1.8% (table 5, model 5). While even 1.8% represents an important improvement for a topic as important as knowhow transfer, we believe that it also may underestimate the full value because the interaction may help initiate exchange that then is held in place by one of the main effects. When introducing all the interactions between normative and strategic explanations, we observe an additional 1% increment in the explained variance, amounting to 27.8% (table 6, model 7).

## DISCUSSION AND CONCLUSION

In this paper, we explore the conditions for knowhow transfer in an industry, gourmet cuisine, which is characterized by rapid innovation and weak protection of intellectual property. We investigate whether bilateral exchanges are facilitated by the existence of norms that reduce the risk of misappropriation or by IP strategies that decrease the potential for loss. Moreover, we disentangle how these different mechanisms interact. Using evidence from a scenario-based experiment, we demonstrate that norms may play a role in governing the use of transferred knowhow, but that IP strategies also play an important role. Finally, we show that norms substitute for some types of IP strategies but complement others.

We believe our analysis makes several contributions. From a theoretical point of view, to the best of our knowledge, our study is the first to test rival explanations for knowhow trading in the context of weak appropriability regimes. Not only do we test both normative and strategic explanations of knowhow transfer between competitors, but also we explore the interactions between these different mechanisms and their relative explanatory power. From a methodological point of view, the scenario-based experiment allows us to blend the rigor of experimental method with the richness and generalizability of field studies. In fact, by targeting real industry players, despite losing some of the cleanliness of laboratory experiments, we are able to improve the realism of our findings.

As with many exploratory studies, our research both clarifies issues and reveals new questions. We find some of the pieces needed to fill in the jigsaw puzzle of knowhow trading, and identify some new regions of the puzzle where pieces are missing or do not yet fit properly.

Some of the interesting pieces we uncover concern the role of norms in protecting intellectual property. We provide a more complete validation of the social norms argument by

showing that the expectation of normative behavior eases the transfer of valuable and legally unprotected information. Firms are more willing to trade knowhow if they expect their counterparts to use it properly. This holds even if firms have access to mechanisms for protecting their IP. Indeed, the positive effect of norms on knowhow transfer persists when we take into consideration the substitution effect with barriers to imitation. In other words, even when IP strategies help secure knowhow transfer, firms prefer to pass knowledge to counterparts they trust more. Based on this evidence we can claim that the reputation-based idea trading described by Gans and Stern (2003) does not occur only in cases of weak intellectual property and weak complementary assets. Our results suggest that firms should invest in building a reputation for fairness even when operating under strong appropriability regimes.

Norms also appear to set the stage for relational contracts (Baker *et al.*, 2002). Indeed, they seem to influence whether or not a person expects an exchange with another to result in a mutual benefit. Thus norms may provide the starting point for relational contracting – determining when ongoing relationships are attempted.

We also show that the perception of norms is influenced by the dyadic characteristics of exchange partners. Results of our fixed-effects analyses show that the same subject changes his expectations of normative behavior depending on the characteristics of the counterpart with whom he is interacting. This evidence poses the intriguing question of what precise cues and heuristics chefs use to form their expectations of appropriate behavior. This issue goes beyond the scope of this study, but we hope to investigate it further in future research.

Our study also reveals some areas where there are missing pieces of the puzzle. First and foremost, our research presents a serious challenge to existing predictions of the relationship between sanctions, normative expectations, and outcomes. We find no evidence that either the

visibility of normative behavior or the propensity to sanction misdeeds is associated with either the expectation of adherence to norms or the transfer of knowhow. Indeed, the propensity to sanction reneging on normative rules is associated with lower expectations of normative behavior and lower willingness to exchange information. Thus, our research provides a provocative puzzle. What maintains these expectations of pro-normative behavior? How can norms operate without enforcement? While we plan to explore these questions in future research, our interviews provide us with some clues for exploration.

Time and again, our informants confirmed the existence of norms in the industry, yet, punishment rarely surfaced in our discussions. When it did, the large majority of chefs would reveal that they would not punish those who violated the norm. Only one of our informants declared his willingness to punish, whereas all the others said they would not. As anecdotic evidence, one of our informants told us about the case of a young emerging chef who has become famous for one of the dishes that he learned from his master. According to our informant, despite this behavior being viewed as highly inappropriate, the chef has not been punished. In the informant's words: "[punishment] is subjective. It depends on the way you are. I would tend to let it go, but there are others who get mad… In my opinion, it depends also a lot on how "mature" you are." In other words there seems to be a stigma attached to punishment, based on which, paradoxically, those who punish end up being perceived in a bad way.

The interviews revealed that a different type of punishment may exist for those that renege: they lose the respect of their peers. This loss of respect seems disconnected from the economic value of the restaurant they own or run, but it may deprive the chef of some intrinsic value created by having the respect of colleagues. As an example, consider the case of one of the most expensive and successful restaurants in the city of Boston, Massachusetts. This restaurant is

owned by a well-known pirate of others' ideas (Murray, 2008). According to reported accounts, the owner obtained the ideas for the concept and menu for his restaurant by visiting well-regarded restaurants under the guise of an "out of work musician". He sat in the restaurant, asked many questions of the chefs, took notes, and then used these ideas to start his own business. Despite an exposé in a local paper, the chef remains unsanctioned: *New York Magazine* named his restaurant as the best emerging restaurant outside the city of New York (Bruni, 2008), while *Boston Magazine* elected it as the best restaurant in Boston for three years in a row (Boston Magazine, 2010). He also remains unsanctioned by customers, who give the restaurant a score of 28/30 on *Zagat* and 4.5/5 on *Yelp*. Analogously, a recent survey of reviews by prestigious specialized press elected this restaurant as the top restaurant in Boston (Traverso and Helterman, 2008). The only drawback that this chef seems to experience is the loss of the respect of his peers (Murray, 2008). Could this disregard be sufficient to hold in place normative behavior?

A second puzzling finding concerns downstream complementary assets. Counter to our predictions, they complement norms. This contradicts the notion of reputation-based idea trading (Gans and Stern, 2003) according to which firms rely on reputation when complementary assets are weak. In a reversed fashion, we observe that in this industry strong complementary assets reinforce reliance on reputation. We intend to pursue this question in future research.

We believe our study sheds light on a number of avenues for future investigation. Scholars might explicitly examine the conditions that lead to expectation of pro-normative behavior. Indeed, the fact that expectation of appropriate behavior can be manipulated experimentally creates room for contributions trying to address what ultimately drives this expectation among competing firms. Consistent with the puzzling finding about the apparent absence of enforcement for social norms, researchers could also explore what holds norms in

place. Another important avenue for future research would be the exploration of the interaction between ongoing exchange and norms. We suspect that constant exchanges of both information and material favors may influence familiarity and trust, ultimately affecting the expectation of compliance to social norms. In this respect, it may be interesting to study the role of geographic clusters. It is reasonable to imagine they give rise to social groups whose members expect others to conform to norms because of their engagement in a long term relationship of mutual benefit.

In conclusion, in an attempt to understand what pushes firms to engage in knowhow trading, our study teases out the contribution of two alternative mechanisms - social norms and IP strategies - and the contingencies under which they act as either complements or substitutes. We show that norms influence information transfer above and beyond the protection provided by common IP protection strategies and mechanisms. We show that adherence to social norms continues to matter even when other mechanisms for protecting IP are strong. Norms may even set the stage for some of these other mechanisms, for instance by influencing whether or not a person sees the outcome of an exchange moving toward conciliation or defection. Norms are indeed a powerful mechanism regulating the exchange of valuable, and apparently unprotected, information. Better understanding of the conditions under which normative controls of knowhow arise and are maintained could provide new insight into how innovation can be maintained in different competitive and institutional settings.

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**TABLE 1**
**Descriptive Statistics of Population and Sample**

| | Population (n=2,529) | | | | Respondents (n=534) | | Non-respondents (n=1,995) | | T-test | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Mean | S.D. | Min | Max | Mean | S.D. | Mean | S.D. | T | Sig |
| Forks | 1.81 | 0.70 | 1 | 5 | 1.95 | 0.76 | 1.77 | 0.68 | -5.3576 | 0.00 |
| Average Price[a] | 44.60 | 17.53 | 17.5 | 260 | 48.52 | 21.90 | 43.54 | 16.00 | -5.8695 | 0.00 |
| Stars | 0.12 | 0.38 | 0 | 3 | 0.22 | 0.38 | 0.09 | 0.33 | -6.9511 | 0.00 |
| Geographical Area[b] | 1.77 | 0.83 | 1 | 3 | 1.70 | 0.84 | 1.78 | 0.83 | 2.0912 | 0.04 |

[a] Expressed in Euros
[b] Depending on the region in which they are located, restaurants were classified into three areas (1=north, 2=center and 3=south), following the guidelines provided by the Italian Ministry for Economic Development (see: http://www.sviluppoeconomico.gov.it/. Last access: 30 July 2010.)

**TABLE 2**
**Manipulated Variables and Corresponding Treatments**

| | High | Low |
|---|---|---|
| Geographical Proximity | Physically very close to your restaurant | Physically very distant from your restaurant |
| Product Positioning | Cuisine Style and Ambience similar to your restaurant | Cuisine Style and Ambience different from your restaurant |
| Status | Zagalin: cuisine rating 28*. Comments: "creative", "innovative", "unique style". Chef has 20 years of experience in the industry | Zagalin: cuisine rating 28*. Comments: "lack imagination", "unoriginal", "ordinary style". Chef has 1 year of experience in the industry |
| Frequency of Review | Frequently reviewed by local media and customers (among the restaurants with more reviews) | Rarely reviewed by local media and customers (among the restaurants with fewer reviews) |

* This rating is equivalent to a rating from Zagat™. It ranges from 0 to 30.

# TABLE 3
## Variables and Measures

| Variable | Measure | **Operationalization** |
|---|---|---|
| | **Dependent Variable** | |
| Knowhow Transfer | Likelihood that the respondent would provide information to the chef described in the scenario | **If asked, how likely is it that you would provide** (7-point likert scale)**:**<br>*- Information about a cooking technique.*<br>*- The recipe of a dish.*<br>*- The recipe of one of your signature dishes.* |
| | **Independent Variables** | |
| Appropriate Behavior | Average of the chef described in the scenario is expected: (1) not to copy exactly; (2) to credit the author; (3) not to pass the information to others without permission | **If you provided the recipe of a dish(/the recipe of one of your signature dishes/information about a cooking technique), how likely is it that this chef would** (7-point likert scale)**:**<br>*- Modify the recipe rather than copying it exactly.*<br>*- Credit you as the creator of the recipe.*<br>*- Ask permission before passing the information to others.* |
| Sanctionability | Average of: in case of deviations from expected behavior it would be noticed by (1) other chefs (7-point likert scale); (2) media or customers | **How likely is it that this chef's misbehavior would be noted by** (7-point likert scale)**:**<br>*- Other chefs.*<br>*- Third parties (media, customers).* |
| Punishment | Average of in case of deviations from expected behavior, the chef who provided the information: (1) engages in negative gossiping; (2) returns future request for help; (3) returns future request for information | **If this chef copied the dish exactly (/copied the signature dish exactly/applied the technique to similar dishes or ingredients), how likely is that you would** (7-point likert scale)**:**<br>*- Provide NO more information.*<br>*- Provide NO more help (e.g., missing ingredients, emergency labor).*<br>*- Tell other chefs about the attempt.* |
| Similarity of Positioning | Sum of: (1) Geographical Proximity; and (2) Product positioning | Manipulated |
| Techniques (Incomplete Information) | Likelihood of transferring a cooking technique compared to the recipe of a dish | Dummy |
| Importance of Change (Ephemeral Information) | Importance of menu changes for customers | **Other information:** *How important menu changes are to your customers?* (7-point likert scale) |
| Unique Suppliers and Color (Complementary Assets) | Unique suppliers: Reliance on unique suppliers<br><br>Color: Awarded red forks | **Other information**: *Do you rely on unique suppliers? (yes/no)*<br><br>source: Michelin |
| Similarity of Approach | Likelihood of similarity of approach to cuisine between respondent and chef described in the scenario | **How likely is that this chef has an approach to cuisine similar to yours?** (7-point likert scale) |
| | **Control Variables** | |
| Status | Status | Manipulated |
| Frequency of review | Frequency of Review | Manipulated |
| Owner | Position in the organization, coded as 1 if chef owner, 0 otherwise | **Other information:** *Current position (Chef owner/Executive chef/Chef de cuisine/Sous-chef/Pastry-chef/Chef de Partie/Other)* |
| Male | Gender | **Other information:** *Gender?(Male/female)* |
| Chain | Affiliation to a chain | **Other information:** *Does your restaurant belong to a chain? (yes/no)* |
| Experience | Years of experience in the industry | **Other information:** *Years of experience in the industry? (open)* |
| Michelin Star | Awarded Michelin star(s) | source: Michelin |

**TABLE 4**
**Descriptive Statistics and Correlations**

| Variable | Mean | S.d. | Min | Max | 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. | 9. | 10. | 11. | 12. | 13. | 14. | 15. | 16. | 17. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Knowhow Transfer | 4.52 | 2.07 | 1 | 7 | 1.00 | | | | | | | | | | | | | | | | |
| 2. Appropriate Behavior | 3.76 | 1.21 | 1 | 7 | 0.24 | 1.00 | | | | | | | | | | | | | | | |
| 3. Sanctionability | 4.21 | 1.61 | 1 | 7 | 0.01 | 0.21 | 1.00 | | | | | | | | | | | | | | |
| 4. Punishment | 3.24 | 1.66 | 1 | 7 | -0.27 | 0.00 | 0.12 | 1.00 | | | | | | | | | | | | | |
| 5. Similarity of Positioning | 0.03 | 1.41 | -2 | 2 | -0.04 | -0.07 | 0.06 | 0.04 | 1.00 | | | | | | | | | | | | |
| 6. Techniques | 0.33 | 0.47 | 0 | 1 | 0.29 | 0.00 | 0.00 | 0.01 | 0.00 | 1.00 | | | | | | | | | | | |
| 7. Importance of Change | 5.66 | 1.54 | 1 | 7 | 0.10 | 0.00 | -0.01 | -0.09 | 0.01 | 0.00 | 1.00 | | | | | | | | | | |
| 8. Unique Suppliers | 0.27 | 0.96 | -1 | 1 | 0.00 | 0.00 | 0.05 | -0.06 | 0.03 | 0.00 | 0.15 | 1.00 | | | | | | | | | |
| 9. Color | 0.08 | 0.28 | 0 | 1 | 0.08 | 0.09 | 0.01 | -0.06 | -0.02 | 0.00 | 0.00 | 0.08 | 1.00 | | | | | | | | |
| 10. Similarity of Approach | 3.26 | 1.76 | 1 | 7 | 0.19 | 0.27 | 0.11 | -0.12 | 0.02 | -0.01 | 0.04 | -0.03 | -0.02 | 1.00 | | | | | | | |
| 11. Status | 0.00 | 0.71 | -1 | 1 | 0.05 | 0.07 | 0.00 | 0.01 | -0.04 | -0.01 | 0.04 | 0.06 | 0.01 | 0.18 | 1.00 | | | | | | |
| 12. Frequency of Review | 0.03 | 1.00 | -1 | 1 | 0.01 | -0.01 | -0.03 | 0.01 | 0.00 | 0.01 | 0.01 | 0.02 | -0.04 | 0.05 | 0.00 | 1.00 | | | | | |
| 13. Respondent: Owner | 0.59 | 0.81 | -1 | 1 | -0.03 | -0.06 | -0.13 | 0.03 | -0.03 | 0.00 | 0.05 | 0.03 | -0.17 | -0.05 | 0.02 | -0.01 | 1.00 | | | | |
| 14. Respondent: Male | 0.63 | 0.77 | -1 | 1 | 0.03 | -0.02 | 0.00 | -0.02 | 0.05 | 0.00 | 0.06 | 0.00 | 0.05 | 0.08 | -0.04 | -0.03 | -0.18 | 1.00 | | | |
| 15. Respondent: Chain | -0.89 | 0.47 | -1 | 1 | 0.02 | -0.02 | 0.06 | -0.03 | 0.04 | 0.00 | 0.07 | 0.00 | 0.12 | -0.02 | 0.04 | 0.08 | -0.09 | 0.09 | 1.00 | | |
| 16. Respondent: Experience | 26.78 | 9.92 | 4 | 60 | -0.02 | -0.09 | 0.02 | 0.00 | 0.02 | 0.00 | -0.06 | 0.02 | -0.10 | -0.04 | -0.04 | 0.02 | 0.18 | 0.01 | -0.04 | 1.00 | |
| 17. Respondent: Michelin Star | -0.62 | 0.78 | -1 | 1 | 0.08 | 0.10 | 0.05 | 0.02 | 0.00 | 0.00 | 0.09 | 0.10 | 0.21 | -0.05 | 0.04 | 0.06 | 0.08 | 0.00 | 0.15 | -0.07 | 1.00 |

**TABLE 5**
**Likelihood of Knowhow Transfer across Italian Restaurants and Chefs[a]**

| | Model 1 | | Model 2 | | Model 3 | | Model 4 | | Model 5 | | Model 6 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Coefficients | se | Coefficients | se | Coefficients | se | Coefficients | se | Coefficients | se | Coefficients | se |
| ***Social Norms*** | | | | | | | | | | | | |
| Appropriate Behavior | 0.225*** | 0.045 | 0.299*** | 0.037 | | | | | 0.156*** | 0.041 | 0.225*** | 0.035 |
| Sanctionability | -0.008 | 0.040 | -0.003 | 0.030 | | | | | -0.015 | 0.035 | -0.007 | 0.028 |
| Punishment | -0.252*** | 0.043 | -0.306*** | 0.030 | | | | | -0.240*** | 0.038 | -0.282*** | 0.028 |
| ***IP Strategies*** | | | | | | | | | | | | |
| Similarity of Positioning | | | | | -0.181*** | 0.024 | -0.158*** | 0.023 | -0.159*** | 0.024 | -0.125*** | 0.023 |
| Techniques | | | | | 1.301*** | 0.050 | 1.300*** | 0.050 | 1.303*** | 0.049 | 1.301*** | 0.049 |
| Importance of Change | | | | | | | 0.123*** | 0.046 | | | 0.101** | 0.043 |
| Unique Suppliers | | | | | | | -0.044 | 0.074 | | | -0.065 | 0.068 |
| Color | | | | | | | 0.520** | 0.262 | | | 0.326 | 0.240 |
| Similarity of Approach | | | | | 0.133*** | 0.023 | 0.158*** | 0.021 | 0.090*** | 0.024 | 0.099*** | 0.021 |
| ***Controls*** | | | | | | | | | | | | |
| Status | 0.233*** | 0.054 | 0.181*** | 0.049 | 0.226*** | 0.049 | 0.180*** | 0.046 | 0.192*** | 0.049 | 0.144*** | 0.045 |
| Frequency of Review | 0.031 | 0.037 | 0.029 | 0.035 | 0.036 | 0.033 | 0.031 | 0.031 | 0.028 | 0.032 | 0.023 | 0.031 |
| Respondent: Owner | | | -0.041 | 0.083 | | | -0.068 | 0.091 | | | -0.044 | 0.084 |
| Respondent: Male | | | 0.077 | 0.085 | | | 0.044 | 0.092 | | | 0.051 | 0.084 |
| Respondent: Chain | | | -0.006 | 0.142 | | | -0.021 | 0.154 | | | -0.018 | 0.141 |
| Respondent: Experience | | | 0.000 | 0.007 | | | 0.002 | 0.007 | | | 0.003 | 0.007 |
| Respondent: Michelin Star | | | 0.172** | 0.084 | | | 0.171* | 0.094 | | | 0.163* | 0.086 |
| _cons | 4.517*** | 0.275 | 4.472*** | 0.309 | 3.658*** | 0.080 | 2.906*** | 0.384 | 4.052*** | 0.244 | 3.296*** | 0.401 |
| N | 2,927 | | 2,927 | | 2,927 | | 2,927 | | 2,927 | | 2,927 | |
| F | 21.003*** | | | | 162.264*** | | | | 111.338*** | | | |
| $R^2$ | 0.041 | | 0.040 | | 0.250 | | 0.249 | | 0.268 | | 0.266 | |
| $Chi^2$ | | | 224.244*** | | | | 833.915*** | | | | 1005.304*** | |
| Hausman Test | | | Passed | | | | Not Passed | | | | Not Passed | |

[a] Within-$R^2$ ($\omega$) reported for fixed- and random-effects
*** p<0.01, ** p<0.05, * p<0.1

**TABLE 6**
**Substitution and Complementarity Effects in Knowhow Transfer across Italian Restaurants and Chefs[a]**

| | Model 1 | | Model 2 | | Model 3 | | Model 4 | | Model 5 | | Model 6 | | Model 7 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Coefficients | se | Coefficients | se | Coefficients | Se | Coefficients | se | Coefficients | se | Coefficients | se | Coefficients | se |
| ***Social Norms*** | | | | | | | | | | | | | | |
| Appropriate Behavior (AB) | 0.156*** | 0.041 | 0.187*** | 0.043 | 0.488*** | 0.151 | 0.158*** | 0.044 | 0.111*** | 0.042 | 0.026 | 0.070 | 0.382** | 0.156 |
| Sanctionability | -0.014 | 0.035 | -0.017 | 0.035 | -0.018 | 0.035 | -0.015 | 0.035 | -0.019 | 0.035 | -0.018 | 0.035 | -0.026 | 0.035 |
| Punishment | -0.238*** | 0.038 | -0.242*** | 0.038 | -0.243*** | 0.038 | -0.239*** | 0.038 | -0.230*** | 0.038 | -0.238*** | 0.038 | -0.233*** | 0.038 |
| ***IP Strategies*** | | | | | | | | | | | | | | |
| Similarity of Positioning | -0.158*** | 0.024 | -0.159*** | 0.024 | -0.154*** | 0.024 | -0.158*** | 0.024 | -0.161*** | 0.024 | -0.157*** | 0.024 | -0.154*** | 0.024 |
| Similarity of Positioning*AB | 0.019 | 0.021 | | | | | | | | | | | 0.010 | 0.021 |
| Techniques | 1.303*** | 0.049 | 1.303*** | 0.049 | 1.302*** | 0.049 | 1.303*** | 0.049 | 1.303*** | 0.049 | 1.302*** | 0.049 | 1.301*** | 0.049 |
| Techniques*AB | | | -0.100** | 0.042 | | | | | | | | | -0.096** | 0.042 |
| Importance of Change | *(dropped)* | | *(dropped)* | | *(dropped)* | | *(dropped)* | | *(dropped)* | | *(dropped)* | | *(dropped)* | |
| Importance of Change*AB | | | | | -0.058** | 0.025 | | | | | | | -0.068*** | 0.026 |
| Unique Suppliers | *(dropped)* | | *(dropped)* | | *(dropped)* | | *(dropped)* | | *(dropped)* | | *(dropped)* | | *(dropped)* | |
| Unique Suppliers*AB | | | | | | | -0.007 | 0.042 | | | | | 0.002 | 0.044 |
| Color | *(dropped)* | | *(dropped)* | | *(dropped)* | | *(dropped)* | | *(dropped)* | | *(dropped)* | | *(dropped)* | |
| Color*AB | | | | | | | | | 0.504*** | 0.139 | | | 0.505*** | 0.140 |
| Similarity of Approach | 0.090*** | 0.024 | 0.091*** | 0.024 | 0.089*** | 0.024 | 0.090*** | 0.024 | 0.096*** | 0.024 | 0.087*** | 0.024 | 0.091*** | 0.024 |
| Similarity of Approach * AB | | | | | | | | | | | 0.038** | 0.017 | 0.045*** | 0.017 |
| *Controls* | | | | | | | | | | | | | | |
| Status | 0.197*** | 0.049 | 0.192*** | 0.049 | 0.193*** | 0.049 | 0.192*** | 0.049 | 0.197*** | 0.048 | 0.195*** | 0.049 | 0.204*** | 0.049 |
| Frequency of Review | 0.029 | 0.033 | 0.027 | 0.032 | 0.033 | 0.033 | 0.028 | 0.033 | 0.023 | 0.032 | 0.029 | 0.032 | 0.032 | 0.033 |
| _cons | 4.041*** | 0.244 | 3.948*** | 0.247 | 2.828*** | 0.587 | 4.041*** | 0.255 | 4.171*** | 0.245 | 4.530*** | 0.322 | 3.185*** | 0.605 |
| N | 2,927 | | 2,927 | | 2,927 | | 2,927 | | 2,927 | | 2,927 | | 2,927 | |
| F | 99.058*** | | 99.787*** | | 99.724*** | | 98.930*** | | 100.938*** | | 99.705*** | | 66.543*** | |
| $R^2$ | 0.269 | | 0.270 | | 0.270 | | 0.268 | | 0.272 | | 0.270 | | 0.278 | |

[a] Only fixed-effects reported (results are consistent with random effects). Within-$R^2$ ($\omega$) reported. Appropriate Behavior is demeaned when interacted with the other independent variables to reduce collinearity. Controls at the respondent level, dropped by fixed-effects, are not reported.

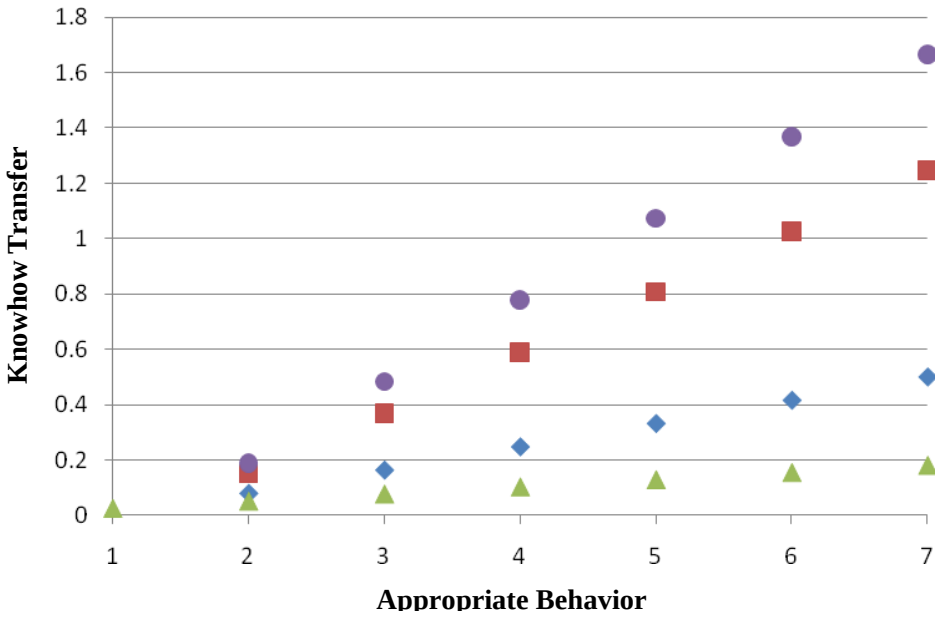
*** p<0.01, ** p<0.05, * p<0.1

**FIGURE 1**
**Sample Scenario**

| | |
|---|---|
| **Characteristics of restaurant:** | - Zagalin: cuisine rating 28*. Comments: "creative", "innovative", "unique style"<br>- Physically very close to your restaurant<br>- Cuisine Style and Ambience similar to your restaurant<br>- Frequently reviewed by local media and customers (among the restaurants with more reviews) |
| **Chef:** | - Chef has 20 years of experience in the industry |

** This rating is equivalent to a rating from Zagat™. It ranges from 0 to 30.*

**FIGURE 2**
**The Effect of Potential for Gains from Trade[a]**




[a] As we move from the bottom to the top of the graph, the different symbols (triangles, rhombi, squares and circles) show the pattern of relationship between appropriate behavior and knowhow transfer, when similarity of approach is respectively two standard deviations below the mean, one standard deviation below the mean, one standard deviation above the mean and two standard deviations above the mean.

# APPENDIX A

## TABLE A1
## Likelihood of Knowhow Transfer across Italian Restaurants and Chefs (The effect of Closeness and Similarity)[a]

| | Model 1 | | Model 2 | | Model 3 | | Model 4 | | Model 5 | | Model 6 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Coefficients | se | Coefficients | se | Coefficients | se | Coefficients | se | Coefficients | se | Coefficients | se |
| ***Social Norms*** | | | | | | | | | | | | |
| Appropriate Behavior | 0.225*** | 0.045 | 0.299*** | 0.037 | | | | | 0.155*** | 0.041 | 0.225*** | 0.034 |
| Sanctionability | -0.008 | 0.040 | -0.003 | 0.030 | | | | | -0.015 | 0.035 | -0.008 | 0.028 |
| Punishment | -0.252*** | 0.043 | -0.306*** | 0.030 | | | | | -0.240*** | 0.038 | -0.282*** | 0.028 |
| ***IP Strategies*** | | | | | | | | | | | | |
| Geographical Proximity | | | | | -0.220*** | 0.033 | -0.203*** | 0.032 | -0.197*** | 0.033 | -0.169*** | 0.031 |
| Product Positioning | | | | | -0.140*** | 0.034 | -0.111*** | 0.032 | -0.118*** | 0.034 | -0.080** | 0.032 |
| Techniques | | | | | 1.302*** | 0.050 | 1.302*** | 0.050 | 1.305*** | 0.049 | 1.303*** | 0.049 |
| Importance of Change | | | | | | | 0.121*** | 0.046 | | | 0.100** | 0.042 |
| Unique Suppliers | | | | | | | -0.045 | 0.074 | | | -0.066 | 0.067 |
| Color | | | | | | | 0.512* | 0.261 | | | 0.318 | 0.239 |
| Similarity of Approach | | | | | 0.124*** | 0.023 | 0.150*** | 0.021 | 0.082*** | 0.024 | 0.091*** | 0.022 |
| ***Controls*** | | | | | | | | | | | | |
| Status | 0.233*** | 0.054 | 0.181*** | 0.049 | 0.231*** | 0.049 | 0.184*** | 0.046 | 0.197*** | 0.049 | 0.148*** | 0.045 |
| Frequency of Review | 0.031 | 0.037 | 0.029 | 0.035 | 0.035 | 0.033 | 0.030 | 0.031 | 0.026 | 0.032 | 0.022 | 0.031 |
| Respondent: Owner | | | -0.041 | 0.083 | | | -0.067 | 0.091 | | | -0.044 | 0.083 |
| Respondent: Male | | | 0.077 | 0.085 | | | 0.044 | 0.092 | | | 0.051 | 0.084 |
| Respondent: Chain | | | -0.006 | 0.142 | | | -0.035 | 0.154 | | | -0.032 | 0.141 |
| Respondent: Experience | | | 0.000 | 0.007 | | | 0.002 | 0.007 | | | 0.003 | 0.007 |
| Respondent: Michelin Star | | | 0.172** | 0.084 | | | 0.170* | 0.093 | | | 0.162* | 0.086 |
| _cons | 4.517*** | 0.275 | 4.472*** | 0.309 | 3.685*** | 0.081 | 2.930*** | 0.383 | 4.082*** | 0.244 | 3.315*** | 0.401 |
| N | 2,927 | | 2,927 | | 2,927 | | 2,927 | | 2,927 | | 2,927 | |
| F | 21.003*** | | | | 135.801*** | | | | 99.352*** | | | |
| $R^2$ | 0.041 | | 0.040 | | 0.251 | | 0.250 | | 0.269 | | 0.267 | |
| $Chi^2$ | | | 224.244*** | | | | 838.579*** | | | | 1010.347*** | |
| Hausman Test | | | Passed | | | | Not Passed | | | | Not Passed | |

[a] Within-$R^2$ (ω) reported

*** p<0.01, ** p<0.05, * p<0.1

**TABLE A2**
**Substitution and Complementarity Effects in Knowhow Transfer (The effect of Closeness and Similarity)[a]**

| | Model 1 | | Model 2 | | Model 3 | | Model 4 | | Model 5 | | Model 6 | | Model 7 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Coefficients | Se | Coefficients | se | Coefficients | Se | Coefficients | se | Coefficients | se | Coefficients | se | Coefficients | se |
| ***Social Norms*** | | | | | | | | | | | | | | |
| Appropriate Behavior (AB) | 0.155*** | 0.041 | 0.186*** | 0.043 | 0.472*** | 0.151 | 0.156*** | 0.044 | 0.110*** | 0.042 | 0.027 | 0.070 | 0.361** | 0.158 |
| Sanctionability | -0.014 | 0.035 | -0.017 | 0.035 | -0.018 | 0.035 | -0.015 | 0.035 | -0.019 | 0.035 | -0.017 | 0.035 | -0.026 | 0.035 |
| Punishment | -0.238*** | 0.038 | -0.242*** | 0.038 | -0.243*** | 0.038 | -0.240*** | 0.038 | -0.231*** | 0.038 | -0.238*** | 0.038 | -0.234*** | 0.038 |
| ***IP Strategies*** | | | | | | | | | | | | | | |
| Geographical Proximity | -0.264** | 0.109 | -0.196*** | 0.033 | -0.189*** | 0.033 | -0.196*** | 0.033 | -0.200*** | 0.033 | -0.194*** | 0.033 | -0.241** | 0.110 |
| Product Positioning | -0.185 | 0.115 | -0.120*** | 0.034 | -0.118*** | 0.034 | -0.118*** | 0.034 | -0.119*** | 0.034 | -0.117*** | 0.034 | -0.128 | 0.115 |
| Geographical Proximity*AB | 0.018 | 0.028 | | | | | | | | | | | 0.015 | 0.029 |
| Product Positioning*AB | 0.018 | 0.029 | | | | | | | | | | | 0.003 | 0.029 |
| Techniques | 1.305*** | 0.049 | 1.305*** | 0.049 | 1.304*** | 0.049 | 1.305*** | 0.049 | 1.305*** | 0.049 | 1.304*** | 0.049 | 1.303*** | 0.049 |
| Techniques*AB | | | -0.099** | 0.042 | | | | | | | | | -0.095** | 0.042 |
| Importance of Change | *(dropped)* | | *(dropped)* | | *(dropped)* | | *(dropped)* | | *(dropped)* | | *(dropped)* | | *(dropped)* | |
| Importance of Change*AB | | | | | -0.055** | 0.025 | | | | | | | -0.065** | 0.026 |
| Unique Suppliers | *(dropped)* | | *(dropped)* | | *(dropped)* | | *(dropped)* | | *(dropped)* | | *(dropped)* | | *(dropped)* | |
| Unique Suppliers*AB | | | | | | | -0.003 | 0.042 | | | | | 0.005 | 0.044 |
| Color | *(dropped)* | | *(dropped)* | | *(dropped)* | | *(dropped)* | | *(dropped)* | | *(dropped)* | | *(dropped)* | |
| Color*AB | | | | | | | | | 0.508*** | 0.139 | | | 0.508*** | 0.140 |
| Similarity of Approach | 0.082*** | 0.024 | 0.083*** | 0.024 | 0.081*** | 0.024 | 0.082*** | 0.024 | 0.088*** | 0.024 | 0.079*** | 0.024 | 0.084*** | 0.024 |
| Similarity of Approach * AB | | | | | | | | | | | 0.038** | 0.017 | 0.045*** | 0.017 |
| *Controls* | | | | | | | | | | | | | | |
| Status | 0.201*** | 0.049 | 0.197*** | 0.049 | 0.198*** | 0.049 | 0.197*** | 0.049 | 0.202*** | 0.049 | 0.200*** | 0.049 | 0.208*** | 0.049 |
| Frequency of Review | 0.027 | 0.033 | 0.026 | 0.032 | 0.032 | 0.033 | 0.027 | 0.033 | 0.022 | 0.032 | 0.028 | 0.032 | 0.029 | 0.033 |
| _cons | 4.071*** | 0.245 | 3.978*** | 0.248 | 2.912*** | 0.589 | 4.076*** | 0.256 | 4.202*** | 0.246 | 4.554*** | 0.323 | 3.287*** | 0.612 |
| N | 2,927 | | 2,927 | | 2,927 | | 2,927 | | 2,927 | | 2,927 | | 2,927 | |
| F | 81.317 | | 90.137 | | 90.030 | | 89.381 | | 91.222 | | 90.067 | | 58.370 | |
| $R^2$ | 0.270 | | 0.271 | | 0.271 | | 0.269 | | 0.273 | | 0.271 | | 0.279 | |

[a] Only fixed-effects reported (results are consistent with random effects). Within-$R^2$ ($\omega$) reported. Appropriate Behavior is demeaned when interacted with the other independent variables to reduce collinearity. Controls at the respondent level, dropped by fixed-effects, are not reported.

*** p<0.01, ** p<0.05, * p<0.1