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**UNDERLYING MOTIVES OF DOCTORS  
TO CO-CREATE  
IN THE PHARMACEUTICAL INDUSTRY**

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**PHUONG LAM**

S1007635

*Supervisor: Prof. Dr. Bas Hillebrand*

*Second Examiner: Prof. Dr. José Bloemer*

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## ABSTRACT

**Purpose** – While the relationship and co-creation activities with doctors are extremely crucial not only to pharmaceutical firms but also to doctors and patients, there is still no study that specifically investigates the motives of doctors to co-create value. This master thesis shifts the emphasis from co-creation between consumers and firms to co-creation between doctors and pharmaceutical firms. The purpose of this study is to investigate the underlying motives of doctors to co-create with pharmaceutical firms.

**Design/methodology/approach** – 7 qualitative interviews and a survey of 105 doctors were conducted. The study, then, used PLS to analyze the model.

**Findings** – The results show that Relating, Ethical and Developmental motives have significant positive effects on Willingness to co-create (W2C). Besides, Experience as a control variable, negatively influences on W2C. In turn, W2C is a strong determinant of intended co-creation behaviors.

**Research limitations/implications** – This study sheds light on what are the motives that triggers doctors co-create in a conference, therefore, leads to managerial implications for managers in pharmaceutical industry to best facilitate and enhance value co-creation.

**Originality/value** – This is the first paper to investigate motives of doctors to co-create in pharmaceutical industry

**Keywords:** Motivation, Value, Co-creation, Motives of doctors, Pharmaceutical industry

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# 1. Introduction

## 1.1. Co-creation

In recent decades, there has been increasing attention in the use of co-creation as a way to create value for both consumers and firms (Vargo and Lusch, 2008). This construct has quickly become an important theme in understanding market systems (Neghina et al., 2014) and is central to the emerging service-dominant logic (Vargo & Lusch, 2008). It is not true anymore that value is generated by the service provider and then delivered to consumers: value co-creation implies that value is generated by and for both the service provider and consumers (Grönroos and Voima, 2013), and that both service providers and customers are always co-creators of value (Vargo and Lusch, 2004).

However, consumers are the ones who can decide whether or not to engage in interactions and co-create value with the service provider (Neghina et al., 2016). Therefore, consumers' underlying motives to co-create value are essential determinants in shaping consumers' willingness to engage in co-creation behaviors. Willingness to co-create (W2C) is “an attitudinal construct that represents the extent to which consumers are willing to engage in value co-creation activities and integrate their own resources with those of service providers” (Neghina et al., 2017, p. 157). Willingness to co-create includes both the intention of co-creation and the degree of co-creation (Jouny-Rivier and Ngobo, 2016). Subsequently, strong W2C would result in strong intended co-creation behavior (Neghina et al., 2017), which is conceptualized as a behavioral phenomenon that represents the voluntary, active and interactive customer actions in the relationship with service providers (France et al., 2018).

Many previous theoretical and empirical studies have emphasized and highlighted the contextual nature of value co-creation (Chandler and Vargo, 2011; Edvardsson et al., 2011; Auh et al., 2007; Chan et al., 2010; Grissemann and Stokburger-Sauer, 2012; McColl-Kennedy et al., 2012). Different service types fulfill the different needs and wants of consumers, and consumer perception also varies across different service types, thus influencing their motives to co-create. Therefore, in order to develop successful value co-creation, it is tantamount to have a proper understanding of how service characteristics influence consumer motives to co-create in different service contexts (Neghina et al., 2017). The latter article states that based on differences in knowledge intensity and

workforce professionalism, professional and generic services differently influence consumers' motives to co-create value with service providers.

This thesis is a replication study of Neghina et al. (2017) in a pharmaceutical context with the purpose of investigating co-creation activities between doctors and the pharmaceutical industry. Specifically, it aims to examine whether the motives that have been distinguished in the previous research (Neghina et al., 2017) also apply in this context and whether additional motives also account for doctors' willingness to co-create with pharmaceutical firms.

### **1.2.Co-creation in the pharmaceutical industry**

The pharmaceutical industry has some specific characteristics which make it different to other industries. Products that the industry provides to the market are generally highly complex and knowledge-intensive and as a result, they require prescriptions or instructions from Health Care Professionals. According to the European Medicine Agency (2001), medicine is classified into over-the-counter (OTC) drugs or prescription drugs based on whether they require a medicinal prescription or not. Advertising to the general public, even non-prescription products (OTC drugs), could affect public health; hence, it is required that the information given is accurate and not misleading. Therefore, strict regulation is applied for advertising medicinal products to the general public. Furthermore, "the information must be presented objectively, not exaggerate an item's properties and not be misleading" (U.S. Food & Drug Administration, 2015). Regulation for prescription drugs is even stricter. "A drug is prescription-only when medical professionals must supervise its use because patients are not able to use the drug safely on their own and companies are not allowed to advertise prescription drugs to the public" (U.S. Food & Drug Administration, 2015). Consequently, although end-users of pharmaceutical companies are patients, doctors are their real customers and pharmaceutical companies target their communication and promotion of prescription products mainly at doctors rather than patients.

This thesis concentrates on the interaction between pharmaceutical firms and doctors, specifically the underlying motives of doctors to co-create with these firms. Pharmaceutical firms usually offer a wide range of activities to doctors, hospitals, medical institutes and associations, such as symposia, congresses, continuous medicine education, disease scanning, consultant programs for patients and clinical trials. The most common activities in the industry are conferences in the form of symposia, congresses or continuous medicine education. These conferences can be standalone

events which are solely organized by firms or can be co-organized amongst firms and medical associations, medical institutes or hospitals. When holding conferences, firms act as service providers who organize and provide facilities, advanced and updated information to doctors or as sponsors who provide financial resources. However, this is not a one-way process but a dual interaction that requires proactive participation from doctors. In fact, doctors possess profound medical knowledge, clinical experiences, specific valuable information and connections; thus, in many cases, they serve as professionals who give pharmaceutical firms valuable ideas and consultancies. More concretely, doctors who are key opinion leaders (KOLs) play an important role at these conferences as speakers, chairpersons or facilitators. KOLs can lead and influence other doctors in terms of clinical practices and usually are the first people pharmaceutical firms need to work with for the conferences. Other doctors are also important because they are the target audiences of these conferences; therefore, their attendance, opinion and feedback are essential for the firms. Noticeably, doctors are an extremely important medium between firms and patients - the end users. From this aspect, engaging doctors to firms' activities, such as conferences, represents a crucial step to familiarize them with firms' product information such as safety and efficacy. In turn, there is a higher chance that a medicine or treatment offered by a firm would be prescribed for suitable patients. This is especially essential when a firm introduces a new product and aims to get product adoption and diffusion as quickly as possible.

On the flipside of co-creation, some pharmaceutical firms might use conferences as a tactic to bribe doctors to prescribe their products. In 2014, the industry reported a shocking bribery scandal involving British pharmaceutical giant GlaxoSmithKline (GSK) in China. In order to corrupt and bribe doctors, government officials and hospitals in China, GSK illegally cooperated with local travel agencies to make up information about many small scientific meetings that might not even have taken place as part of a scheme to obtain money in order to bribe doctors (South China Morning Post, 2014). In the US, GSK was fined 3 billion USD after bribing doctors to increase drug sales. The company admitted to misconduct over their antidepressants and asthma drugs by inviting doctors to their conferences, which were actually all-expenses-paid trips to five-star resorts with entertainment activities (The Guardian, 2012).

In sum, apart from some cases of illegal co-creation activities between the pharmaceutical industry and doctors, co-creation benefits the pharmaceutical industry with ideas, consultancies, clinical experiences and other valuable information that doctors can give. In addition, co-creation can lead



to better operational and organizational performance for the industry. At the same time, hospitals and medical institutes can get benefits from these activities offered by the industry such as advanced and updated medical information or sponsorship for their scientific projects. In the end, co-creation leads to the industry's development and improvement in medical treatments which, in turn, is beneficial for patients. Therefore, engaging doctors and motivating them to co-create value is critical for both parties – the pharmaceutical industry and doctors which, in the end, benefits patients. Put simply, the industry needs to understand the underlying motives of doctors to co-create and the causal relation between willingness to co-create and co-creation behaviors. This study investigates whether the underlying motives to co-create which have been distinguished in service-dominant logic from previous studies (Karpen et al., 2012; Neghina et al., 2017) are applicable in the pharmaceutical context as well.

### **1.3. Research problems**

Recently, there is a tendency to research value co-creation in specific industries, including healthcare (Frow et al., 2016; McColl-Kennedy et al., 2012; Sweeney et al., 2015). However, these previous studies focus on value co-creation between consumers and firms. Other studies are generally in organizational contexts, for instance Karpen et al. (2012). While the relationship and co-creation activities with doctors are extremely crucial not only to pharmaceutical firms but also to doctors and patients, there is still no study that specifically investigates the motives of doctors to co-create value.

This master thesis shifts the emphasis from co-creation between consumers and firms to co-creation between doctors and pharmaceutical firms. The study therefore addresses the following research questions: (1) What are doctors' motives for willingness to co-create value with pharmaceutical firms? (2) What is the relationship between willingness to co-create and intended co-creation behaviors?

### **1.4. Theoretical relevance**

This study will contribute to the literature of co-creation. The previous study of Karpen et al. (2012) proposes six types of value co-creation interaction, namely individualizing, relating, ethical, empowering, developmental and concerted interaction. Neghina et al. (2017) use this typology as consumers' underlying motives to co-create in service contexts. As a replication of these previous studies, this thesis will add to the literature of co-creation in pharmaceutical contexts, by

investigating for the first time doctors' (rather than consumers') motives to co-create. Therefore, the results of this study can tell whether or not the motives that have been distinguished in previous studies also apply in this context and which additional motives might also account for the willingness to co-create.

### **1.5. Practical relevance**

As noted before, co-creation between the pharmaceutical industry and doctors benefits both parties and in the end, benefits patients. This co-creation is extremely important especially for pharmaceutical firms. A successful co-creation activity can help improve the firms' operational and organizational performance; in other words, the relationship and the quality of the co-creation activity with doctors is a prerequisite for the sustainable growth and survival of the firms. This study leads to managerial implications for managers in the pharmaceutical industry to enhance value co-creation with doctors, specifically in hosting conferences. Considering conferences are the most common marketing activity in the pharmaceutical industry, this study represents an important step because it provides managers empirical evidence and an understanding about what motives trigger doctors to co-create in conferences, which can benefit doctors and firms in the long term.

### **1.6. Structure of the thesis**

The next section explores value co-creation in general and specifically in the pharmaceutical context such as the underlying motives of doctors to co-create and how the willingness to co-create impacts their intended co-creation behaviors. The hypotheses will be developed in chapter 2 and then tested in an empirical study. The study's design and methodology will be introduced in chapter 3. The study's results are discussed in chapter 4. Chapter 5 includes a conclusion, discussion and overview of the study's implications for theory and practice, while also suggesting directions for future research.

## 2. Literature review

### 2.1. Value co-creation

Grönroos (2012, p. 1523) conceptualizes value co-creation as “joint collaborative activities by parties involved in direct interactions,” with the purpose of increasing value for the relevant parties. Therefore, value co-creation occurs when the providers and users interact to create value with and for one another (Prahalad & Ramaswamy, 2002; 2004).

There has been a shift in the notion and scope of value creation from goods-dominant logic to service-dominant logic. The value co-creation is not just about simple exchange (goods-dominant logic), but also the use and the context of usage, which means value is seen beyond the consumption of units of output and includes the process of interacting with the aim of producing a holistic experience (Payne et al., 2008; Vargo et al., 2008). These individual consumers’ experiences include their past and future service experiences as well as their broader life contexts (Helkkula et al., 2012).

In service-dominant logic, the roles of service providers and users have also been shifted and it is highlighted that value is co-created amongst actors who connect and integrate their resources (Vargo et al., 2008). According to Karpen et al. (2012, p. 21), the service-dominant logic depicts value creating as the symbiotic collaboration of service providers with customers, in order to achieve mutual and long-term benefits. In the S-D logic, all value co-creation is co-creational and, in the end, both service providers and users are value co-creators (Vargo & Lusch, 2008). Customers generate value for themselves when interacting and using the resources offered by firms. Meanwhile, firms also aim at developing opportunities to co-create value with customers by creating possibilities for their interaction during the use of the service (Grönroos, 2008). According to Marcos-Cuevas et al. (2011, p. 98), “value creation can occur within at least three spheres: the provider, the customer, and the joint sphere created in their interaction.” “When the two spheres—the providers and the customers intersect in the direct interactions, they integrate their operand and operant resources in order to create value together” (Neghina et al., 2016, p. 15).

Value co-creation is subjective in nature, depending on the relevant perspective, as studies have shown (Vargo & Lusch, 2004; 2008). Several previous studies have been interested in the service provider perspective of value co-creation (e.g. Bettencourt, 1997; Gustafsson, Kristensson & Witell, 2012) and focus on the benefits firms would gain from value co-creation (Auh et al., 2007;

Prahalad & Ramaswamy, 2000; Magnusson, Matthing & Kristensson, 2003). However, it is agreed that input from consumers is critical for the success of value co-creation activities. Therefore, recently, there have also been some studies that pay attention to the consumer perspective, particularly focusing on what motivates consumers to co-create (Etgar, 2008; Neghina et al., 2015; 2017).

Finally, service-dominant logic highlights the difference between value co-creation and co-production (Marcos-Cuevas et al., 2011) and other related concepts. Some articles consider co-creation to be equivalent to co-production (Vargo & Lusch, 2008), co-creation and co-design (Plé & Cáceres, 2010) or co-creation and co-innovation (Schau, Muniz & Arnould, 2009). However, co-production illustrates the customers' "participation in the development of the core offering itself" (Lusch & Vargo, 2006, p. 284). Co-creation is a more encompassing and higher-order concept, which includes different types of resource-integrating activities amongst multiple actors in the ecosystem (Vargo & Lusch, 2008). Therefore, value co-creation also covers the co-production of the offering (Marcos-Cuevas et al., 2011). Alexander (2012) argues that value co-creation can be used to describe a wide range of activities and interactions, including but not limited to co-design, co-innovation or co-production. This master thesis will focus on value co-creation within its larger scope instead of other related constructs.

## **2.2. Consumers' motives to co-create**

Several previous articles considered co-creation value as a multidimensional concept (Gustafsson et al., 2012; Randall et al., 2011; Yi & Gong, 2013). However, these studies showed very few similarities, mostly due to the lack of a consistent conceptualization of value co-creation (Neghina et al., 2016). From the perspective of S-D logic, Karpen et al. (2012) address value co-creation in six dimensions: individuating, relating, empowering, ethical, developmental and concerted interactions. Neghina et al. (2015) adapt these co-creation dimensions to the micro-level of the customer-employee service interactions and discuss them as joint collaborative actions. Neghina et al. (2017) continue to adapt this typology to examine the motives of consumers when they engage in value co-creation. They argue that from the customers' perspective, these dimensions translate into motives to engage in value co-creation and the motives symbolize different types of value consumers may expect to receive from their interactions with service providers.

Co-creation is contextual in nature and motives to co-create vary across service contexts due to the previous expectations of consumers (Iglesias, 2004). Recently, there is a tendency to research value co-creation in specific industries and highlight the contextual nature of value co-creation. Different service types fulfill the different needs and wants of consumers. As a result, consumer perception of the benefits they can derive from co-creation also varies across different service types, thus influencing their motives to co-create. Expectancy theory supports this interpretation by explaining why “consumers hold different beliefs about different service contexts, which are reflected in their motives to engage in co-creation activities within these contexts” (Neghina et al., 2017, p.169-170). This is why, in their view, developing successful value co-creation involves knowledge of how service characteristics impact consumers’ motives to co-create in a variety of service contexts. Different service contexts play an important role in shaping consumer motives to co-create. Due to the differences in knowledge intensity and workforce professionalism, professional and generic services differently influence consumers’ motives to co-create value with service providers (Neghina et al., 2017).

Based on the expected value consumers seek to achieve, they engage in co-creation activities in order to satisfy their own needs and wants, which can be understood as the motives for their behavior (Etgar, 2008; Neghina et al., 2014). Therefore, consumers’ underlying motives to co-create value are essential determinants in shaping consumers’ willingness to engage in co-creation behaviors.

### **2.3.Motives of doctors to co-create and W2C in pharmaceutical industry**

This thesis applies the underlying motives to co-create which have been distinguished in previous studies (Karpen et al., 2012; Neghina et al., 2017) as well as includes new ones to examine the motives of doctors to co-create with pharmaceutical firms.

#### **2.3.1. Individualizing motives**

Individualizing motives refer to the desire to establish “a mutual understanding of the customer’s resource integration processes, roles and desired outcomes” (Neghina et al., 2017, p.160). From the pharmaceutical industry’s perspective, *individualizing motives are defined as the degree to which doctors need an individualized experience and the service interaction to take into consideration the doctors’ background, their desired goals, and their preferred means of working.* These motives imply the doctors’ wish to express their own interest and preference and to ensure

that the products or services derived from the co-creation activities fit their needs and backgrounds. “This motivator is similar to the need for customized services identified by Etgar (2018) who states that customization is a key purpose of value co-creation” (Neghina et al., 2016, p. 60).

Doctors’ characteristics are generally different across specializations, hospitals, medical institutes, regional cultures or experiences in their career, which leads to different needs, expectations for the integration process and desired outcomes when doctors co-create in a project with pharmaceutical firms. On the other hand, within the interaction between firms and doctors, doctors play an important role as professionals who are not only able to give firms valuable ideas and consultancies but are also the critical medium between firms and patients. During the co-creation, doctors rely on the firms’ resources and their employees, but at the same time they also possess essential resources which firms benefit from. This characteristic of the relation empowers doctors and provides them with opportunities to personalize their co-creation experience and express their own individual needs, wants and preferences, promoting the individualizing motives of co-creation (Karpen et al., 2012; Neghina et al., 2014). Therefore, individualizing might possibly be one of the underlying motives influencing their willingness to co-create. From the above considerations, we come up with the following hypothesis.

### ***H1- Individualizing motives positively lead to doctors’ W2C***

#### **2.3.2. Relating motives**

In the pharmaceutical industry, *relating motives are defined as the degree to which doctors need to connect and extend their professional network, wanting to be part of an influential group and wanting to strengthen their social status within their professional networks.* The notion of relating as a co-creation motive is considered a critical means of generating value co-creation and is also central to S-L principles (Ballantyne and Varey, 2006). For consumers, relating is one of the major motivational forces that influence consumption and establish loyalty. Generally, customers do not always interact with the same employee, and therefore cannot always generate a long-term personal relationship. However, based on their prior interactions with service providers, brand image or personal history, they can have certain expectations about the employee (Guttek et al., 1999). Therefore, relating joint actions instrumentally leads to value co-creation (Berthon & John, 2006). People want to relate to one another since relating is a fundamental human need or desire. Relating concerns the need to associate with people who have similar interests (Fiske, 2009). Similarly,

when doctors interact with pharmaceutical firm employees, they also expect to have the feeling of rapport, friendliness or self-disclosure (Bradley et al., 2010). It is expected that the relating feeling doctors have when they interact with firms' employees would lead to higher levels of trust and loyalty which very likely result in a higher level of willingness to co-create (Sirdeshmukh et al., 2002).

Furthermore, the notion of relating motives also refers to the need to connect with peers and seniors, or in other words, it refers to the sense of community. Generally, people engage in co-creation activities not only because of the content but also because of the sense of community during co-creation. Interacting with like-minded others and establishing social relations is important in motivating people to co-create in an activity (Fuller et al., 2011). Fuller et al. (2011) show that a sense of community is an important motive that enhances participants' co-creation experience. Doctors are professionals with a particular expertise; consequently, the need to connect within the medical community and to maintain or expand the network is crucial. In fact, there are many professional societies, which gather doctors from the same specializations or fields and these societies are considered important channels for doctors to communicate, share and discuss clinical experiences, new medical innovation, drugs and treatments with their colleagues. A project that helps satisfy this need is expected to enhance the levels of willingness to co-create value. From the above arguments, we come up with the following hypothesis.

## ***H2- Relating motives positively lead to doctors' W2C***

### **2.3.3. Empowering motives**

Empowering motives refer to "the desire to negotiate the power to influence the outcome of the interaction among customers and service employees" (Neghina et al., 2017, p. 160). During co-creation, consumers want to have a say about the content and determine how much they would like to be involved (Karpen et al., 2012). Empowerment means that the actors take responsibility for an interaction's outcome and intervene whenever they feel that the overall goal would improve as a result (Neghina et al., 2017). This potentially results in creating value for the co-creation (Neghina et al. 2014).

In the pharmaceutical context, *empowering motives are defined as the degree to which doctors desire to negotiate the power to influence the outcome of co-creation projects with pharmaceutical firms*. Empowering motives to co-create in professional services are in consonance with the

democratization of power between consumers and professionals (Fisher and Smith, 2011), in which consumers are allowed to have a high degree of control and decision-making over the process and the outcome. Expectancy theory proposes that consumers would look for more power within professional services since they are contributing resources to the interaction and are directly involved in controlling the process as well as decision-making in order to get desired outcomes (Neghina et al., 2017). During the interactions with pharmaceutical firms, doctors have more to offer than normal customers in other contexts. They have, for instance, ideas, professional knowledge and experiences, specific valuable information and connections, which enable them to provide value to the co-creation process. The resources that doctors possess and offer to the industry allow them to have more power in interactions with the industry. Furthermore, humans want to feel that they can influence, manage and control their environment and its outcomes (Bradley et al., 2010). Consumer empowerment derives from consumers' need for autonomy and self-esteem (Gecas and Schwalbe, 1983; Usta and Häubl, 2011). Autonomy relates to the enjoyment derived from the freedom to control or manage the process (Dahl and Moreau, 2007). According to Fuller et al. (2011), perceived autonomous experience enables people to free their potential and to come up with superior solutions, thus enhancing their co-creation experience, which is very important in order to increase the degree of willingness to co-create. Furthermore, doctors are highly respected in society. In some cultures, being a doctor is one of the most respected jobs; as a result, their expectation to be empowered during a given instance of co-creation is potentially higher than “consumers”.

The above argumentation suggests that empowering motives could have a positive effect on doctors' W2C. Neghina et al. (2017) shows that, in professional service contexts, empowering motives have a negative impact on consumer W2C, which means consumers are less willing to co-create if they seek empowerment. However, in that context, firms' employees are considered experts and therefore more knowledgeable and capable than consumers. The knowledge gap between consumers and experts could limit consumers' desire to seek empowerment. In contrast, the present study is conducted in the pharmaceutical industry where doctors are experts, knowledgeable and capable. In some cases, doctors play a role as advisors or consultants. The valuable resources that doctors can offer the industry would enable them to seek empowerment in co-creation. Therefore, this study still supports the hypothesis that empowering motives have a positive impact on W2C.



### ***H3- Empowering motives positively lead to doctors' W2C***

#### **2.3.4. Ethical motives**

Neghina et al. (2017, p. 160) define ethical motives as the wish to have “fair, honest and moral guidelines for the service interaction.” In a pharmaceutical context, *ethical motives are defined as the degree to which doctors wish to have fair, honest and moral guidelines for interactions with pharmaceutical firms*. Ethical behavior is a principal factor for a successful collaboration which requires all the participants to work towards a shared goal (Neghina et al., 2015). According to Keaveney (1995), customers can switch to other service providers because of the service provider’s unethical or dishonest behavior such as communicating false information, inflating product claims or trying to cheat customers. Williams & Aitken (2011) indicate that customers expect to be treated equally and fairly by service employees, unless, they become hostile and engage in retaliation (Groth & Grandey, 2012).

Noticeably, ethics is one of the most crucial points in the pharmaceutical industry and in the relationships between firms and other stakeholders in the ecosystem. Similar to consumers, doctors also expect to be treated equally, honestly and transparently during the co-creation process. Besides, pharmaceutical and medical practice get a plenty of attention from society and the media since this professional area involves people’s health and survival. Therefore, following moral guidelines in practice and in co-creation projects with pharmaceutical firms is essential to every doctor. These moral guidelines should follow not only the rules of conduct which are socially accepted but should also be in line with the Hippocratic Oath that every doctor swears when they graduate from medical school. Consequently, moral aspects are supposed to be taken into account when doctors agree to co-create and potentially impacts their willingness to co-create with the industry. Furthermore, a certain amount of trust between interacting actors is essential in value co-creation (Neghina et al., 2016). Doctors are expected to highly esteem firms and projects that respect moral guidelines, for instance proper and ethical business, marketing strategy, messages and product information. This positive evaluation will result in more trust for the firms and projects, which in turn leads to higher degree of W2C. Therefore, ethical motives potentially have a positive effect on doctors’ W2C.

### ***H4- Ethical motives positively lead to doctors' W2C***

### 2.3.5. Developmental motives

Neghina et al. (2017) define developmental motives as “the development of the customer’s operand and operant resources” (p.160). Operand resources involve products being exchanged and are tangible in nature (Vargo & Lusch, 2004), while operant resources are intangible and involve knowledge, skills and networks (Madhavaram & Hunt, 2008; Vargo & Lusch, 2008). Knowledge and skills development is a principal aspect of S-L (Karpen et al., 2012). In pharmaceutical contexts, operant resources are relevant for the interactions between doctors and pharmaceutical firms. Therefore, this thesis defines *developmental motives as the degree to which doctors desire to develop new knowledge and skills as well as learn from the experiences of their peers and seniors during co-creation*. Learning is one of the essential skills that humans need to survive and develop themselves and their society. It is the means for humans to achieve self-actualization and self-fulfillment (Dweck and Leggett, 1988). People are inherently curious and actively strive for cognitive stimulation, aiming to get enjoyment from learning activities (Hibbert et al., 2012). This characteristic closely connects with the developmental motive of consumers to enhance their operant and operand resources during co-creation (Neghina et al., 2015). Since this is an essential characteristic related to professional firms, according to Neghina et al. (2017), these motives are especially important in professional contexts in which consumers would be particularly motivated by expectations of knowledge improvement and skill development. Knowledge and competencies play an important role in firms’ making value propositions and trigger customers’ value fulfillment (Karpen et al., 2012).

Noticeably, medicine is a highly knowledge-intensive professional field that requires doctors to study continuously. As a special profession which directly involves people’s health and survival, it is crucial for doctors to stay up-to-date with new knowledge and innovations in the industry as well as new guidelines and treatments from leading medical associations. As a result, a hunger for knowledge and updated information is especially important for doctors, aiming at improving their treatments’ effectiveness for their patients. Besides, the improvement and development in knowledge and skills generally leads to a better reputation and higher positions in their careers. Therefore, developmental motives might be one of the strongest motives that trigger the willingness of doctors to co-create.

***H5- Developmental motives positively lead to doctors’ W2C***

### 2.3.6. **Concerted motives**

Neghina et al. (2017) refer to concerted motives as synchronizing efforts between customer and service providers aiming to engage in pleasant, relevant and timely interactions. Synchronizing efforts in service interactions involve adapting participants' behaviors while interacting, engaging in coordination and establishing agreements (Neghina et al., 2016), which would result in a smooth flow of working with good organization and easy collaboration. Generally, people expect to work with a well-organized flow and easy collaboration, aiming at achieving the most efficient and effective results with minimal effort.

In a pharmaceutical context, *concerted motives are defined as the degree to which doctors wish to have a feeling of working with a well-organized flow and easy collaboration*. Similar to other people, doctors might have the same expectations when they engage in co-creation. A project which is designed and synchronized in such a way that doctors can easily interact and engage their resources with minimal effort would result in higher degree of W2C. Therefore, concerted motives might have a positive impact on doctors' W2C.

***H6- Concerted motives positively lead to doctors' W2C***

#### **Exploratory qualitative interviews**

In order to explore whether there are more motives that stimulate doctors' W2C, seven exploratory qualitative interviews were conducted with seven different doctors in different hospitals in Viet Nam. Each interview was thirty minutes long, aiming at exploring doctors' motives when they co-create with pharmaceutical firms, and, at the same time, checking whether the existing motives and scales are applicable in the context. The fruitful results from the interviews give researchers more new insights about doctors' motives that stimulate their W2C. Besides the six motives that were used by Neghina et al. (2017), there are two more motives that should be taken into account when it comes to what motivates doctors to co-create: financial motives and altruistic motives. The next sections (2.3.7 and 2.3.8) will provide a more in-depth discussion about these two motives.

### 2.3.7. **Financial motives**

Living in modern society requires an ability to make money. Good finance ensures people an easier and more comfortable life. Besides, it's an important means to achieve other goals and sometimes a measurement for human success, and a standard which determine one's social status. Therefore, people spend time and effort to have a better income. Financial motives have been studied in

previous research from individual to organizational levels (Dickey et al., 2011; Sauermann & Cohen, 2010; Cachon et al., 2013). Cachon et al., (2013) examined intrinsic and extrinsic entrepreneurial motives versus performance in North America. Extrinsic motives (income motives) come to light as the most important behind the perceptions of success among Mexican businesspeople. Besides, compensation and financial incentives are important motives to increase employees' job satisfaction and work motivation within government sectors (Bullock & Stritch, 2015). They propose that leaders and managers should invest in incentive systems which would lead to higher employee motivation. Dickey et al. (2011) show that financial motives are one of the most important reasons why people have multiple jobs. It is noted that co-creation between doctors and the pharmaceutical industry are, in most cases, additional projects besides doctors' daily work, something which amounts to the equivalent of having multiple jobs. Furthermore, the relationship between financial motives and innovative performance is also investigated (Sauermann & Cohen, 2010). They find that innovative performance in firms is heavily influenced by the pecuniary and nonpecuniary motives of the employees who work in research and development, and that money has a strong positive relationship with innovative output.

As human beings, doctors are also expected to be driven by financial motives in some aspects of co-creation. *Financial motives are defined as the degree to which doctors desire to gain financial benefits from the resources spent.* Financial benefits in this sense are not necessarily short-term, they can be in form of long-term financial benefits. When doctors engage in co-creation with the industry, they generally gain more experience, have a better chance to update their knowledge, develop skills or expand their professional networks. Their own development allows them more opportunities to reach higher positions in their career which, in turn, would lead to long-term financial benefits. In the interviews, doctors mentioned financial benefits as a motive to co-create. As one doctor stated:

“Besides some other motives, when I cooperate with pharmaceutical firms, I also care about whether I can get financial rewards. This can be a bit sensitive, but I think it's true for many other doctors. For example, a clinical trial can contribute to humans' understanding about the efficacy and safety of a drug or treatment, which benefits us in our profession as well as benefits patients. Besides, allowances from these clinical researches also improves our income. All of these benefits at the same time trigger us to join a project with them.”

“In the case of my seniors, who participate in conferences as speakers or chairpersons, I think honoraria are important to attract them.”

Financial motives might positively impact doctors' W2C.

### ***H7- Financial motives positively lead to doctors' W2C***

#### **2.3.8. Altruistic motives**

In this study, *altruistic motives are defined as the degree to which doctors wish to bring benefits for their patients*. As one might expect, medicine as a profession has the precious mission of taking care of people's health. Doctors can offer their patients not only treatments, but also consultancy and education. Even though doctors may have many motives when they co-create with the pharmaceutical industry, the expected final outcomes of co-creation involve benefits for patients, for instance clinical trials help confirm the efficacy or safety of certain drugs or treatments and, therefore, patients would benefit in the end; scanning or educational programs help raise awareness about a disease or increase patient compliance with a treatment; symposia and congresses help doctors update information and develop their knowledge and skills, which, in turn, improves treatment effectiveness for patients. Thus, in line with the Hippocratic Oath, patients are a priority that doctors keep in mind in every co-creation activity. In the interviews, benefits for patients are mentioned as one of the reasons that urge doctors to join in a project with pharmaceutical firms. A doctor stated:

“I am really concerned with patient compliance since it's essential for an effective treatment; but patients' awareness is still low in our country. My department is operating a patient club for those using anticoagulants, which is sponsored by a pharmaceutical firm. I joined this project because I think it's useful and benefits patients.”

Therefore, altruistic motives might impact doctors' W2C.

### ***H8- Altruistic motives positively lead to doctors' W2C***

#### **2.4. Willingness to co-create and intended co-creation behavior**

Intended co-creation behavior is identified into two types: participation behavior and citizenship behavior. Customer participation behavior which concerns the required (in-role) behavior, is a prerequisite for successful value co-creation. It means co-creation cannot be successfully completed without this type of co-creation behavior. Customer participation behavior has four sub-dimensions: information seeking, information sharing, responsible behavior and personal interaction. Meanwhile, customer citizenship behavior refers to voluntary extra-role behavior. Although this type of co-creation behaviors would benefit the co-creation project, it is not a prerequisite for successful value co-creation. Customer citizenship behavior also has four sub-dimensions: feedback, advocacy, helping and tolerance. (Yi and Gong, 2013)

In a pharmaceutical context, the co-creation behavior of doctors also includes both in-role and extra-role behaviors. However, the relationship between doctors and pharmaceutical firms is generally a sensitive topic in society and the media, where co-creation can be easily considered a kind of bribing activity. To some extent, this fact limits doctors from involving themselves in all eight dimensions of co-creation behavior. They are not likely, for example, to partake in advocacy behaviors such as conducting promotional activities or showing their favor for a specific project involving pharmaceutical firms. In the interviews, a doctor stated:

“If that’s a project involving pharmaceutical firms, I won’t show my favor or promote it to the public as I don’t want others to think I receive something from firms and am biased towards them.”

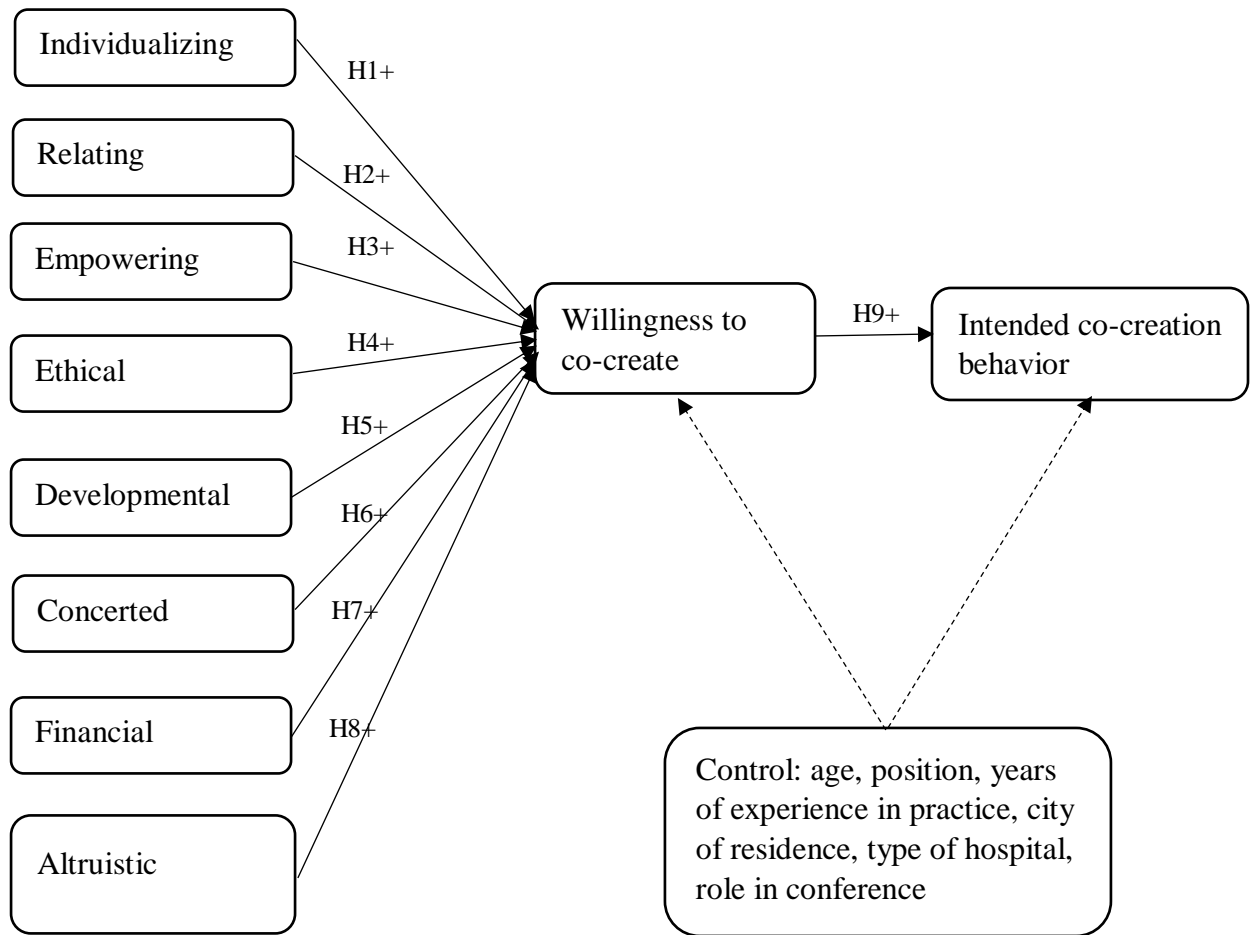
Instead, doctors might partake in value co-creation behaviors such as volunteering time and energy to co-create in a project, attending, giving advice and feedback, communicating problems with the organizer and filling out evaluation forms.

The connection between W2C and value co-creation behavior has been investigated and shown as strong (Hawkins et al., 2013). Neghina et al. (2017) show that the relationship between these two constructs is stable and independent of service contexts, and that “consumers who are willing to invest time, energy, and effort to co-create value with service providers will show higher intention to engage in co-creation behaviors” (Neghina et al., 2017, p. 171). Therefore, in this master thesis, it is also expected that doctors’ willingness to co-create leads to value co-creation behaviors.

***H9- Willingness to co-create is a strong positive determinant of value co-creation behaviors***

## 2.5. Conceptual model

These nine hypotheses are illustrated in the following conceptual model



## **3. Research methodology**

### **3.1. Research design**

There are many types of co-creation activities in the pharmaceutical industry. These activities have different characteristics; hence, they may trigger different motives to co-create. The most common marketing activities in the industry, however, are conferences in the form of symposia, congresses or continuous medical education. These conferences can be standalone events which are solely organized by the firms or they can be co-organized between firms and medical associations, medical institutes or hospitals. Besides, amongst other co-creation activities, conferences engage the largest number of doctors, since, normally, each doctor comes to these conferences several times per year. Therefore, conferences are considered one of the most important activities in the industry. The study focuses on conferences and investigates doctors' motives when they engage in this co-creation activity. It also means that the study focuses on big pharmaceutical firms, mostly multinational ones, because in the industry only these firms usually engage with doctors through conferences.

In order to test the hypotheses as well as to investigate the strength of each relationship between the constructs, after exploratory qualitative research, a quantitative research which includes a survey and analysis is conducted.

### **3.2. Construct measurement**

#### **3.2.1. Scales**

The study uses multi-items, seven-point Likert measures to measure all of the concepts that have been developed. The model proposed in chapter two will also be tested in the pharmaceutical industry with doctors in Viet Nam.

The study adapts the scales for the existing motives that were successfully used in the study of Neghina et al. (2017). For *individualizing motives*, there are three items that were originally derived from the personalization dimension of Berthon and John (2006) and the customization concept of Coelho and Henseler (2012). As a whole, the scale aims to reflect corresponding doctors' motivations, more concretely, the doctor's wishes to express their own desires and preferences, to ensure that a conference fits their specialization and the content fits their needs. For *relating motives*, the three items come from Nambisan and Baron (2009) and aim at reflecting doctors'



wishes to extend their professional networks, to be part of an influential group and to strengthen their social status within their professional networks. For *empowering motives*, the three items, which are developed and mentioned by Neghina et al. (2017) and Ranjan and Read (2016), mean to reflect doctors' desire to exercise control when they participate in a conference, their desire to determine the level of their involvement and their desire to influence the final outcome. For *developmental motives*, the three items are based on the work of Füller (2006) and Nambisan and Baron (2009) that reflect doctors' motives to develop new knowledge and skills, to gain knowledge about things that are related to a conference and to learn from the experiences of their peers and seniors. The three items under *ethical motives* are based on Maxham and Netemeyer (2002) and Yi and Gong (2008) with the aim of reflecting doctors' wants to be treated honestly and fairly, to ensure that ethical guidelines are being applied and to ensure transparency during a conference. For *concerted motives*, the items are derived from Karpen et al. (2012), and they reflect the wishes of doctors to be able to easily collaborate and communicate during a conference and to feel their input is appreciated. The scales measuring *financial motives* and *altruistic motives* are derived from an in-depth discussion within a focus group with two doctors. For *financial motives*, the three items aim to reflect doctors' desire to gain financial reward for their participation, that their income is not impacted by spending time at a conference and that they potentially receive a better income in the long run with the knowledge, skills and relationships they gain from a conference. For *altruistic motives*, the three items reflect the wish that a conference helps increase treatment efficacy and brings benefits for patients as well as the enthusiasm doctors have for a conference that brings benefits for patients.

The dependent variables in the conceptual model are *W2C* and *intended co-creation behaviors*. The items of *W2C* are derived from Etgar (2008), aiming to measure the extent to which doctors are willing to co-create in a conference in the near future and to invest time and energy into a conference. For *intended co-creation behaviors*, the six items are based on Neghina et al. (2017) and reflect doctors' intended behaviors to attend a conference in the near future, volunteer time and energy to co-create in a conference, give advice and feedback, communicate problems with the organizer and fill out evaluation forms.

In total, 35 items of dependent and independent variables are derived (see appendix 1)

### 3.2.2. Control variables

This study takes into account doctors' age, position, years of experience, city of residence and type of hospital as control variables. It is expected that doctors with different years of experience, different ages and different positions may have different motives to co-create which leads to different levels of W2C and intended co-creation behavior. Additionally, doctors from big cities and smaller cities generally have different perspectives and insights about the industry as well as co-creation activities with the industry. Therefore, city of residence can be a factor which influences doctors' motives to co-create.

Year of experience is measured by a ratio scale with two levels: below five years and equal or above five years. Age is measured by ratio scales with three levels: below 30 years old, from 30 to 40 years old and above 40 years old. City of residence is measured by a nominal scale with two levels: Ho Chi Minh city and other cities. Position is measured by a nominal scale with two levels: normal doctors and chiefs of departments or hospital directors. Type of hospital is measured by a nominal scale with three levels: public hospital, private hospital and academic hospital.

### 3.3. Data collection and samples

In order to test the hypotheses, doctors from different departments and hospitals in Ho Chi Minh city and some provinces in the South of Viet Nam were invited to fill out the survey. Approaching doctors and asking them to complete the questionnaires is challenging since they are generally very busy with their daily work. Therefore, the questionnaires were available in both online and offline versions aiming to increase the response rate. The questionnaires were sent to doctors by email, social networks or in person within the researcher's network in the industry. The researchers pretested the survey to ensure that respondents would be able to fill it out easily. The measures that were developed and adapted were translated into Vietnamese by native speakers and were then checked by two doctors who are native Vietnamese speakers with English as a foreign language. They were asked to comment on the translation, the ease of understanding and at the end gave their comments on how to improve the survey. Next, the translation of the questionnaire was pretested with ten doctors, aiming to check the scales and record any difficulty when the respondents filled out the questionnaire.

In order to avoid misunderstanding about the topic of the questionnaire, the survey included a short description mentioning conferences as co-creation activities in the industry and asked them to recall

their co-creation experiences when they engaged in conferences (See appendix 1). The questionnaire inquired the respondents about their W2C first to minimize response bias. Subsequently, respondents were asked about their motives to co-create, their intended co-creation behaviors, as well as their demographics, position, city of residence and years of experience.

For the official survey, 140 doctors were asked to fill out the questionnaires; after 10 days, the researchers received 126 responses. After removing partially filled-out offline surveys, 105 responses remained, hence, the response rate is 75%. This response rate is high thanks to the strong connections of the researcher within the industry; in addition, some doctors also helped forward the link or hard copies to their peers and asked them to fill out the questionnaires. Sample characteristics are presented in the table below.

Table 3.1. Sample characteristics

		Frequency	Percentage %
Age	Below 30 years	37	35.2
	30-40 years	51	48.6
	Above 40 years	17	33.3
	Total	105	100
Experience	Below 5 years	39	37.1
	From 5 years	66	62.9
	Total	105	100
Role in conference	Attendance	87	82.9
	Speaker/Chairperson	18	17.1
	Total	105	100
Position in hospital	Normal doctor	78	74.3
	Chief of department/ director of hospital	27	25.7
	Total	105	100
Hospital	Public hospital	68	64.8
	Private hospital	37	35.2
	Total	105	100
City of residence	Ho Chi Minh city	100	95.2
	Other cities	5	4.8

	Total	105	100
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### 3.4. Analytical approach

PLS path modelling is used to analyze the model because this program is preferred in cases of highly complex models and non-normally distributed data (Hair et al., 2012). Besides, PLS doesn't require larger sample sizes which makes it apt for studies involving doctors as respondents. PLS is also more robust in the use of single-item measures (control variables such as experience). The sample in this study satisfies the minimum sample size which is not less than ten times the maximum number of paths in the outer and inner model (Barclay et al., 1995). In this case, the minimum sample size is at least 90. In this study, the Adanco program is used to analyze the data.

### 3.5. Research ethics

The researchers of this thesis strived to benefit those with whom they worked and took care to do no harm to them. In this study, doctors were interviewed and/or asked to fill out the survey. There was no harmful intention or actions towards them. Their participation was voluntary, they had the freedom to refuse or withdraw from the research at any time. People who participated in this research were informed that their answers for the questionnaires would only be used for academic purposes. In addition, the researchers aimed to protect respondents' privacy, confidentiality and respected all the differences among the respondents in terms of culture, role differences, age, gender, race, ethnicity, religion, individuals, sexual orientation, disability, language, and socioeconomic status. The respondents had a choice to receive the results of the study by checking an option that was given in the questionnaire. The results were sent by email to the respondents who would like to have the results. The researchers commit to only use the respondents' emails for this purpose. Finally, the thesis seeks to promote accuracy, honesty, and trustfulness in the research. It will not steal, cheat or engage in fraud, subterfuge, or intentional misrepresentation of fact.

## 4. Results

### 4.1. Descriptive analysis

The sample includes 105 respondents who are doctors in Viet Nam. Table 4.1 illustrates inter-construct correlation matrix, mean and standard deviation values of the constructs.

Table 4.1. Correlation matrix, Mean and Standard deviation of latent construct

Construct	W2C	BE	ALT	FIN	CON	DEV	ETC	EMP	RE	IND	EXP
<b>W2C</b>	1.0000										
<b>BE</b>	0.4846	1.0000									
<b>ALT</b>	0.2378	0.2543	1.0000								
<b>FIN</b>	0.1564	0.2012	0.3159	1.0000							
<b>CON</b>	0.1055	0.0440	0.1492	-0.0026	1.0000						
<b>DEV</b>	0.3208	0.3013	0.0568	0.0333	0.1754	1.0000					
<b>ETC</b>	0.3054	0.2211	0.3634	0.0818	0.2150	0.1908	1.0000				
<b>EMP</b>	-0.0727	-0.0858	-0.0517	-0.0463	0.3631	0.1656	0.1162	1.0000			
<b>RE</b>	0.4324	0.3959	0.2332	0.2969	0.1788	0.2820	0.1509	-0.1117	1.0000		
<b>IND</b>	0.1539	0.1133	0.2464	0.3447	-0.0947	0.1240	-0.1128	-0.0159	0.2616	1.0000	
<b>EXP</b>	-0.4624	-0.2195	-0.1500	0.0057	-0.0123	-0.1436	-0.1208	0.0487	-0.2652	-0.1088	1.0000
<b>Mean</b>	4.5937	4.4937	4.3968	3.5492	4.4317	5.0825	4.7270	3.6286	4.9111	4.6603	1.6286
<b>Std deviation</b>	1.17577	1.11778	1.40367	1.45809	1.05503	1.30890	1.16555	1.60149	1.11446	1.04389	.48555

Notes: W2C (Willingness to co-create); BE (Co-creation behavior); ALT (Altruistic motives); FIN (Financial motives); CON (Concerted motives); DEV (Developmental motives); ETC (Ethical motives); EMP (Empowering motives); RE (Relating motives); IND (Individual motives); EXP (Experience).

### 4.2. Measurement model evaluation

#### *Goodness of fit of the model*

As the first step to validate the measurement model, the goodness of fit is checked to assess the similarity of estimated covariance matrix to observed covariance matrix. The results of the saturated model from the Adanco program (table 4.2) shows that more than 5% of the bootstrap sample yield discrepancy values are above the actual model's values of root mean square residual (SRMR), the unweighted least squares discrepancy ( $d_{ULS}$ ) and the geodesic discrepancy ( $d_G$ ), which means the difference between the estimated and empirical correlation is so small that it can be purely attributed to sampling error. Besides, the value of SRMR is below 0.08, which suggests that the correlation matrix implied by the proposed model is sufficiently similar to the empirical correlation matrix.

**Table 4.2. Goodness of model fit (saturated model)**

	Value	HI95	HI99
SRMR	<b>0.0707</b>	0.0958	0.1083
d <sub>ULS</sub>	<b>2.9760</b>	5.4654	6.9748
d <sub>G</sub>	<b>1.8284</b>	2.6820	3.2329

**Construct measures**

Looking at the measurement model, all of the indicators load strongly on the intended factors and there are no unusual or high cross-loadings. All of the indicator reliability values are above 0.5 with the minimum value at 0.5375 for one of the Intended co-creation behavior items. The values of Cronbach alpha ( $\alpha$ ), Dijkstra-Henseler's rho ( $\rho_A$ ) and Jöreskog's rho ( $\rho_c$ ) are above 0.7 for all constructs (see appendix 2), which indicates good construct reliability. The average variance extracted (AVE) is above 0.5 for all constructs with the lowest value at 0.6287, which means all the constructs are unidimensional (Fornell and Larcker, 1981). These values are presented in table 4.3.

In order to check discriminant validity, the heterotrait-monotrait ratio of correlations (HTMT), which is an estimate of construct correlation, is assessed. The results illustrate that the values meet the requirements as all of the HTMT values are below 0.85 (see appendix 2)

In sum, all of these fit characteristics meet the requirements and, therefore, the measurement model cannot be rejected.

**Table 4.3. Constructs measures and factor analysis results**

Construct and scale items	Indicator reliability	Factor loading	AVE	$\alpha$
Individualizing motives (IND)			0.8125	0.8926
IND1	0.7099	0.8425		
IND2	0.8736	0.9347		
IND3	0.8540	0.9241		
Relating motives (RE)			0.7652	0.8474
RE1	0.7886	0.8880		
RE2	0.7808	0.8837		
RE3	0.7260	0.8521		
Empowering motives (EMP)			0.8973	0.9431
EMP1	0.9212	0.9598		
EMP2	0.8903	0.9436		
EMP3	0.8803	0.9382		
Ethical motives (ETC)			0.7251	0.8176

ETC1	0.7433	0.8622		
ETC2	0.7968	0.8926		
ETC3	0.6351	0.7969		
Developmental motives (DEV)			0.7656	0.8476
DEV1	0.8183	0.9046		
DEV2	0.7185	0.8476		
DEV3	0.7601	0.8719		
Concerted motives (CON)			0.6514	0.7609
CON1	0.5371	0.7328		
CON2	0.8451	0.9193		
CON3	0.5719	0.7562		
Financial motives (FIN)			0.7930	0.8840
FIN1	0.8225	0.9069		
FIN2	0.6809	0.8252		
FIN3	0.8755	0.9357		
Altruistic motives (ALT)			0.7393	0.8267
ALT1	0.7498	0.8659		
ALT2	0.7779	0.8820		
ALT3	0.6903	0.8309		
Willingness to co-create (W2C)			0.6940	0.7797
W2C1	0.7021	0.8379		
W2C2	0.6241	0.7900		
W2C3	0.7558	0.8694		
Intended co-creation behavior (BE)			0.6287	0.8821
BE1	0.5375	0.7331		
BE2	0.5897	0.7679		
BE3	0.5058	0.7112		
BE4	0.7267	0.8525		
BE5	0.7108	0.8431		
BE6	0.7019	0.8378		

### 4.3. Structural model evaluation

#### *Goodness of fit of the model*

As the next step of model assessment, the overall goodness of model fit is tested by using the bootstrap to determine the discrepancy between the empirical and the model implied correlation matrix (Henseler, Hubona and Ray, 2016). The results (table 4.4) show that the test of model fit for the estimated model meets the requirements. More than 5% of the bootstrap sample yield discrepancy values are above the actual model's values of root mean square residual (SRMR), the unweighted least squares discrepancy ( $d_{ULS}$ ) and the geodesic discrepancy ( $d_G$ ). The values

imply that the sample data fits with the hypothesized model and, thus, the model cannot be rejected. Besides, SRMR is below 0.08 which indicates an acceptable fit.

**Table 4.4. Goodness of model fit (estimated model)**

	Value	HI95	HI99
SRMR	<b>0.0787</b>	0.1020	0.1142
d <sub>ULS</sub>	<b>3.6883</b>	6.1860	7.7561
d <sub>G</sub>	<b>1.8574</b>	2.6463	3.3844

***Hypotheses testing***

Adanco provides PLS algorithm and bootstrapping procedure with 5000 subsamples to get coefficient determination  $R^2$ , adjusted  $R^2$ , path coefficients and their significant levels, the strength of these paths-Cohen’s  $f^2$ . The model explained 33.97% of the variance in W2C and 22.74% of the variance in intended co-creation behaviors (Adjusted  $R^2$ ).

*Individualizing motives* have no effect on W2C since it is not significant with path coefficient at 0.038 and  $p > 0.05$ . Thus, H1 is not supported. In contrast, relating motives have a positive effect with significant path coefficient ( $\beta = 0.220$ ;  $p < 0.05$ ), which support H2. The relationship between *Empowering motives* and W2C is not significant ( $\beta = -0.09$ ;  $p > 0.05$ ). H3, therefore, is not supported. *Ethical motives* and *Developmental motives* have significant positive effects ( $\beta = 0.195$ ;  $p < 0.05$  and  $\beta = 0.175$ ;  $p < 0.05$ , respectively). Thus, H4 and H5 are supported. *Concerted motives*, *Financial motives* and *Altruistic motives* do not have effects on W2C since their path coefficients are very small ( $\beta = 0.02$ ; 0.05 and 0.02, respectively) with  $p > 0.05$ , which indicate that H6, H7 and H8 are not supported. In terms of the relationship between W2C and Intended co-creation behavior, the result shows this is a significant positive effect ( $\beta = 0.483$ ;  $p < 0.001$ ). This effect is quite strong with Cohen’s  $f^2 = 0.307$  and, therefore, H9 is supported. Finally, Experience as a control variable has a significant negative effect on W2C ( $\beta = -0.344$ ;  $p < 0.001$ ), but has no effect on Intended co-creation behavior, which means Experience only has an indirect effect on Intended co-creation behavior through the mediator W2C. The structural model is illustrated in figure 4.1 and table 4.5.

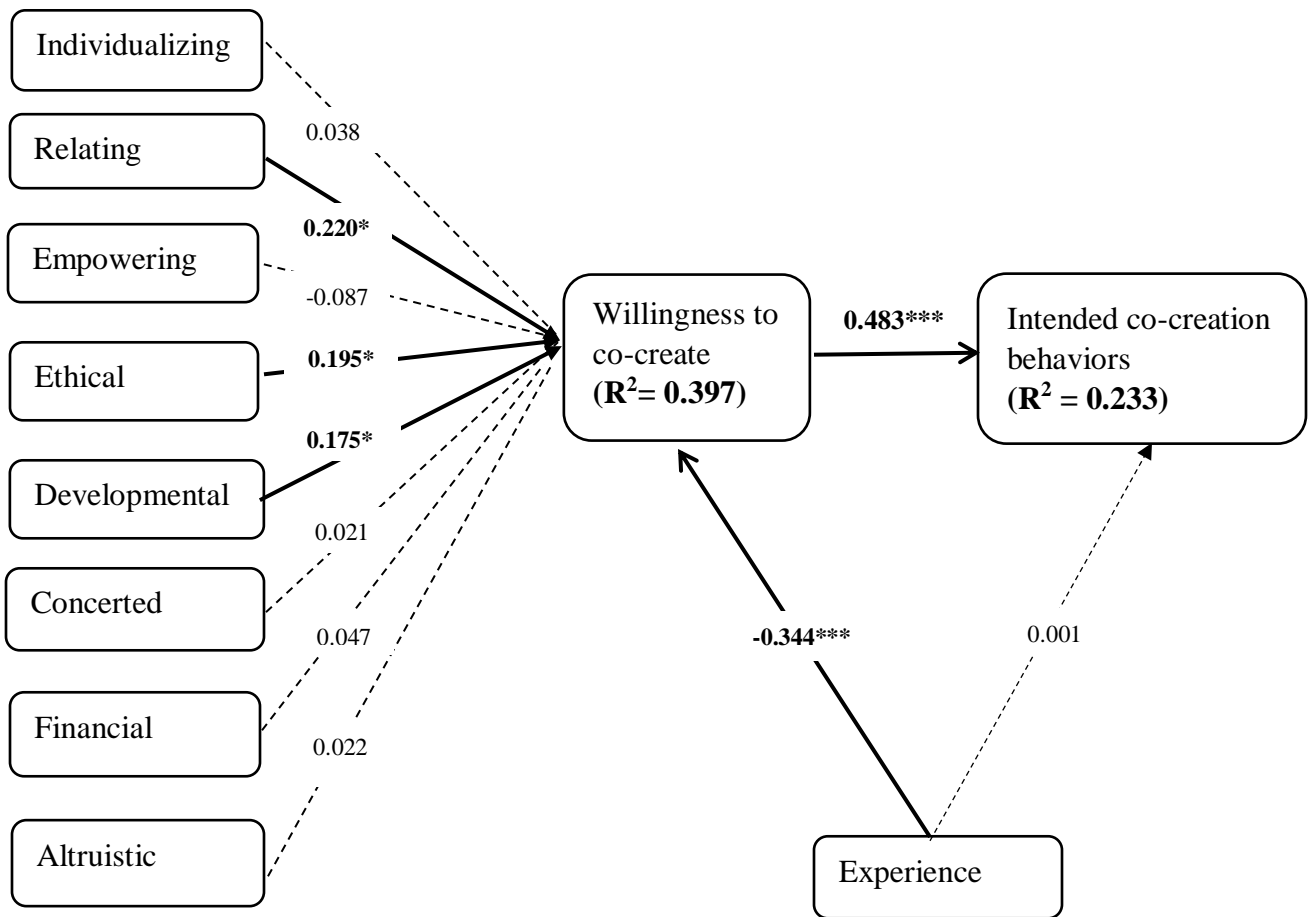
Other control variables such as *Role in conference*, *Position in hospital*, *Type of hospital* and *City of residence* are included in the model one by one, but no significant effects are found between these control variables and both W2C and *Intended co-creation behavior*; therefore,



they are excluded from the model. Another control variable- *Age*- is also assessed. Similar to *Experience*, *Age* has a significant negative effect on *W2C* and no effect on *Intended co-creation behavior*. However, *Age* and *Experience* somehow correlate with each other. The study chooses to include *Experience* and excludes *Age* from the model because *Experience* ( $\beta=-0.344$ ; Cohen's  $f^2 = 0.175$ ) has a stronger effect on *W2C* than *Age* ( $\beta= -0.198$ ; Cohen's  $f^2 = 0.050$ ). Besides, *Experience* better represents the levels of a doctor's professional career.

**Table 4.5. Hypotheses testing**

Construct	Coefficient of determination ( $R^2$ )		Adjusted $R^2$	
W2C	0.3969		0.3397	
Co-creation behavior (BE)	0.2349		0.2274	
Effects	Standard bootstrap results			
	Direct effect ( $\beta$ )	Cohen's $f^2$	t- value	P- value (2 sides)
W2C -> BE	0.4846	0.3070	6.5264	0.0000
Individualizing -> W2C	0.0382	0.0018	0.3810	0.7032
Relating -> W2C	0.2197	0.0566	2.5604	0.0106
Empowering -> W2C	-0.0869	0.0099	0.9138	0.3610
Ethical -> W2C	0.1952	0.0482	2.1920	0.0286
Developmental -> W2C	0.1754	0.0431	2.4099	0.0161
Concerted -> W2C	0.0213	0.0006	0.1796	0.8575
Financial -> W2C	0.0472	0.0029	0.4387	0.6609
Altruistic -> W2C	0.0221	0.0006	0.2467	0.8052
Experience -> W2C	-0.3437	0.1751	3.6625	0.0003



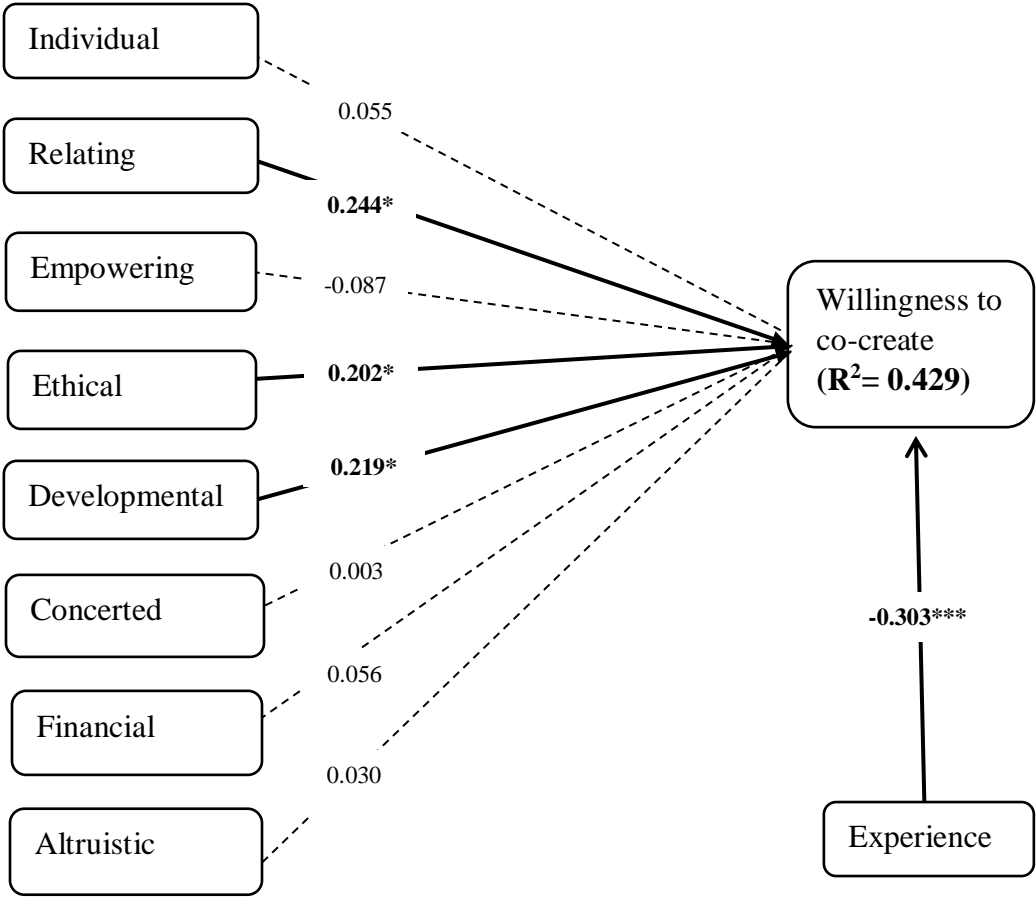
Notes: Significant paths are depicted in bold; \*  $p \leq 0.05$ ; \*\*\*  $p \leq 0.001$  (two-tailed test)

### Figure 4.1. Hypotheses testing

#### 4.4. Sub-analysis

A sub-analysis is conducted with a sample of 87 respondents, which exclusively consists of conference attendants. Because the sample size is quite small and the relationship between W2C and Intended co-creation behavior is proved as strong and significant above, in this sub-analysis, the researchers exclude Intended co-creation behavior in order to simplify the model. The measurement model, structural model and model fit satisfy all of the criteria and meet the requirements. The model explained 36.27% of the variance, which is higher compared to the original analysis (33.97%). Similar to the original analysis, the sub-analysis reveals that Relating, Ethical and Developmental motives have significant positive effects on W2C;

however, their path coefficients slightly improve ( $\beta=0.224$ ;  $\beta=0.203$  and  $\beta=0.220$ , respectively;  $p<0.05$ ). Experience as a control variable also has a significant negative effect on W2C ( $\beta= -0.303$ ;  $p<0.05$ ). The sub-analysis' results are presented in appendix 3.



Notes: Significant paths are depicted in bold; \*  $p \leq 0.05$ ; \*\*\*  $p \leq 0.001$  (two-tailed test)

Figure 4.2. Sub analysis \_ Attendants-only sample

## 5. Conclusion

### 5.1. Conclusion

This study is a replication of Neghina et al. (2017) in a pharmaceutical context with the purpose of investigating co-creation activities between doctors and the industry. Specifically, it aims to examine whether the motives that have been distinguished in previous research (Neghina et al., 2017) also apply in this context. This study therefore addresses the following research questions: (1) What are doctors' motives for W2C value with pharmaceutical firms? (2) What is the relationship between the W2C and intended co-creation behaviors? After conducting the analysis with SEM-PLS, the results from the Adanco program show that amongst eight proposed motives to co-create in the pharmaceutical industry, Relating motives, Ethical motives and Developmental motives indicate significant positive effects on doctors' W2C. Meanwhile, the other motives such as Individualizing, Empowering, Concerted, Financial and Altruistic have no effects on W2C. Besides, Experience, as a control variable, influences negatively and significantly on W2C but has no impact on Intended co-creation behaviors. In terms of the causal relationship between W2C and Intended co-creation behaviors, the results indicate that this is a strong positive and significant effect. The hypotheses and their results are summarized in table 5.1

**Table 5.1. Hypotheses and results**

<b>Hypotheses</b>	<b>Results</b>
H1- Individualizing motives positively lead to doctors' W2C	Rejected
H2- Relating motives positively lead to doctors' W2C	<b>Supported</b>
H3- Empowering motives positively lead to doctors' W2C	Rejected
H4- Ethical motives positively lead to doctors' W2C	<b>Supported</b>
H5- Developmental motives positively lead to doctors' W2C	<b>Supported</b>
H6- Concerted motives positively lead to doctors' W2C	Rejected
H7- Financial motives positively lead to doctors' W2C	Rejected
H8- Altruistic motives positively lead to doctors' W2C	Rejected
H9- Willingness to co-create is a strong positive determinant of intended co-creation behaviors	<b>Supported</b>

Control Variable- Experience has a significant positive effect on W2C but has no effect on Intended co-creation behaviors
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## 5.2. Discussion

This study once again confirms the contextual nature of co-creation, which has been highlighted by many previous theoretical and empirical studies. Furthermore, the study shifts the emphasis from co-creation between consumers and firms to co-creation between doctors and pharmaceutical firms and investigates doctors' motives to co-create in the pharmaceutical industry.

In the pharmaceutical industry, doctors are more willing to co-create in conferences due to Relating, Ethical and Developmental motives and less willing to co-create due to experience in their medical practices. This shows that doctors want to connect with their peers and seniors, aiming to expand their professional network, strengthen their social status within their professional networks and be part of an influential group. Besides, one of the most important motives that trigger doctors to co-create in conferences is to develop their medical knowledge and skills and to learn from the experiences of their peers and seniors during the conferences. Ethical guidelines and transparency in how a conference is executed are also important when doctors agree to co-create in a conference. However, doctors are less motivated to engage in conferences the longer they have been practicing. The more experienced they are, the less willing they are to co-create in conferences.

The positive effect of Relating motives points to the relevance of a sense of community and the need to connect with likeminded others in society as a driver of W2C. This relationship is confirmed earlier by Neghina et al. (2017) in generic services, which refer to consumers' relating motives as the desire to improve their social network and to develop close relationships with service employees as well as other consumers. The notion of relating in this study, however, goes beyond general social networks and also considers relating in professional networks. This empirical evidence shows that doctors need to relate with their peers and seniors in their medical networks. Considering that doctors are professionals in a knowledge-intensive field, the need to connect within the medical community to maintain or expand their networks is crucial. This result also explains why, in reality, there are many professional societies, which

gather doctors from the same specializations or fields. Conferences are one of the most effective methods which allow doctors to communicate, share and discuss clinical experiences, new medical innovations, drugs and treatments with their colleagues within professional networks. Conferences that satisfy doctors' relating needs would trigger their W2C.

As expected, W2C is also positively influenced by developmental motives. This relationship is supported earlier by Hibbert et al. (2011) and Neghina et al. (2017) in professional services, both of which highlight the relevance of learning as an important driver of W2C. As noted before, medicine is a professional area with very high knowledge-intensity that requires doctors to continuously study. As a special profession which directly involves people's health and survival, it is extremely crucial for doctors to stay up-to-date with new knowledges and innovations in the industry, new guidelines and treatments from leading medical associations. Developmental, therefore, is one of the major motives that trigger doctors' W2C in a conference, aiming to learn and improve the efficacy of treatments.

Ethical motives are especially relevant in a pharmaceutical context, the pharmaceutical and medical practices get plenty of attention from society and the media since this professional area involves people's health and survival. Therefore, following moral guidelines in practices and in co-creation projects with pharmaceutical firms is essential to every doctor. This is not only a motive but also a condition that every doctor is supposed to consider when they co-create with the industry.

In contrast, the number of years in medical practice negatively influences doctors' W2C in conferences. The more experienced doctors are, the less willing they are to co-create in a conference. Given that doctors aim to expand their professional networks and to improve their knowledge and skill, and doctors who have longer time in medical practice can be considered to have wider networks, more experience and skills compared to their juniors, they may also have a certain position in their career which may reduce the wish to learn or extend their networks.

In terms of the relationship between W2C and Intended co-creation behavior, the effect is positive and strong, which is in line with Neghina et al. (2017). The higher degree of willingness to co-create, the more likely doctors are to spend time, effort and energy in a conference.

This study, however, finds no significant effects for the relationships between Individualizing, Empowering, Concerted, Financial, Altruistic motives and W2C. In terms of Individualizing motives, Neghina et al. (2017) indicate that they are important drivers of W2C in generic services, in which consumers wish to express their needs and to establish mutual understanding with service providers. The data analyzed in this study does not support this finding. In a pharmaceutical conference context, doctors may only care about whether a conference contains useful information to make it worth the time they spend on it. It is perhaps unnecessary for doctors to ask for a personalized experience or to express their own individual needs, wants and preferences in a conference.

Meanwhile, Neghina et al. (2007) suggest that in professional services, consumers are less willing to co-create if they seek empowerment. In the present study, empowering motives have no significant effect on W2C, which is in contrast to the hypothesis. This finding can be explained by the sample characteristics which include 82.9% of respondents who co-create in a conference as attendants and only 17.1% of respondents who co-create as speakers or chairpersons. Besides, 74.3 % of the sample are normal doctors and only 15.7% are chiefs of departments or directors of hospitals. The majority of the sample is normal doctors and attendants who are less likely to seek empowerment in a conference. Doctors with higher positions such as chiefs of departments, directors of hospitals, presidents of medical societies or doctors who participate as speakers and chairpersons are obviously more powerful in co-creation projects with the pharmaceutical industry. Therefore, they are more likely to exercise control and wish to influence the final outcome of a conference.

For Concerted motives, there is no significant effect on W2C in this study. This finding can also be explained by the sample characteristics, with the majority of respondents participating in a conference as attendants. This implies their role in a conference is mostly passive, rather than active. That is to say, they are not organizing, developing contents or promoting a conference. Therefore, the need to easily collaborate and communicate with other project members within a conference would probably be less relevant than for people who hold active roles.

The last two, Financial and Altruistic motives, also have no significant effects on W2C. It is presumably because they are underlying and indirect motives which do not directly trigger

doctors to co-create in a conference. Put simply, a conference is not the proper venue for making most doctors financially better-off, or for improving a treatment's efficacy and benefiting patients right away. To obtain an improvement in terms of individual finance as well as in terms of benefits for patients may require a more complicated process and a longer time than that which is involved in merely participating in a conference. Besides, when doctors co-create in a conference as speakers or chairpersons, they may get significant financial rewards; meanwhile, an attendant of a conference is not likely to get such significant financial benefits. Given that the sample in this study mostly consists of conference attendants, this fact therefore influences the results of the relationship between financial motives and W2C. These results, however, conflict with the suggestions from the exploratory interviews. This is probably because of the different focuses in terms of co-creation activities between the interviews and the surveys. The interviews focus on co-creation activities in general and doctors reveal that financial and altruistic motives are important to trigger their W2C, which could be true in some types of co-creation activities such as disease-scanning programs, consultant programs or clinical trials. The survey, which is conducted after the interviews, only focuses on a specific co-creation activity- conferences. As such, financial and altruistic motives can be important in some other types of co-creation activities. In the case of conferences, these motives can also have an impact on W2C on the part of doctors who serve as speakers and chairpersons.

### **5.3. Practical implications**

Conferences are the most common marketing activity in the pharmaceutical industry, and firms usually use them as a means to familiarize doctors with their products. Therefore, encouraging doctors to co-create in these conferences is crucial. Understanding what prompts doctors to engage would help firms stand out from a number of other pharmaceutical firms in the market. The study sheds light on what are the motives that trigger doctors to co-create in a conference. First, managers should focus on the developmental aspects of co-creation by paying more attention to the content of a conference. Doctors need to learn and stay up-to-date with new information, knowledge and guidelines from leading medical associations. New treatments, innovations and clinical studies may attract doctors because they satisfy the need to learn as well as their curiosity regarding new knowledge. Besides obtaining new information, doctors also aim at learning from their peers' and seniors' experience. Therefore, event or product



managers should also pay attention to the format of a conference. A forum to share their clinical experience could give doctors opportunities to learn from one another by exchanging their experience and discussing various treatments. In sum, a conference that can satisfy the developmental needs of doctors will trigger them to co-create by emphasizing the potential for doctors to learn in a conference.

At the same time, managers can motivate doctors to co-create by focusing on the relational aspects between doctors, between doctors and medical associations and between doctors and firms. A conference should be able to give doctors opportunities to relate to one another and, thus, potentially expand their professional networks. Managers can cooperate with medical associations for a conference in order to make the connection wider and attract more doctors to participate with a higher degree of co-creation. A wide network available in a conference also satisfies the need of some doctors such as the speakers and chairpersons to influence others.

Another important condition that managers should pay attention to is the ethical aspect of co-creation. Managers should ensure doctors are treated equally and fairly during a conference because this is a principal factor for successful collaboration. If a firm fail to do this, doctors might have negative attitude towards the firm; in the worst case, they might end up boycotting the firm and refuse to co-create in future projects. Furthermore, managers should also ensure transparency regarding how a conference is executed. Additionally, managers should ensure ethical guidelines are properly applied not only to a certain conference, but to the business as a whole, for instance proper and ethical business, marketing strategy, messages and product information. In general, doctors highly esteem firms and projects that respect ethical guidelines and this positive consideration will result in more trust in firms and projects, which, in turn, leads to a higher degree of W2C.

As doctors' W2C in a conference decreases when they have more experience, managers should have a different strategy for this specific group of doctors. Instead of holding an ordinary conference for all doctors, managers can come up with more special types of conferences, for instance expert meetings, which are exclusively organized for more experienced doctors. An expert meeting, which is a better way to make doctors feel special and feel like they belong in an influential group, would more highly satisfy the need to relate, and potentially better attracts these doctors to co-create.

#### **5.4.Limitations and further research**

As mentioned before, the study has some limitations in terms of sample characteristics. The majority of the sample are normal doctors in public hospitals in Ho Chi Minh city, who participate in conferences as attendants. Although this ratio may represent the population, the small sample size in this study makes it difficult to analyze whether there are differences in W2C across different groups of doctors. Future research should try to obtain a larger sample size in order to be able to generalize the results, and to examine whether W2C changes among different groups of doctors. This step is practical for the pharmaceutical industry since it is crucial for firms to have a proper understanding about the varying motives of different groups of doctors. In turn, firms have evidence to tailor their strategy and marketing activities, aiming to enhance doctors' W2C.

Furthermore, apart from conferences, there are other co-creation activities between doctors and the industry such as disease-scanning, consultant programs for patients and clinical trials. Each activity holds different characteristics which may trigger different motives to co-create. Therefore, future research can focus on examining how it works in other contexts within the pharmaceutical industry.

Future research can also focus on examining motives to co-create across various cultures and economies because culture and economic conditions in different countries can affect underlying motives to co-create. Different cultures may lead to different level of emphasis on motives (Neghina et al. 2017). For instance, diverging social norms can influence ethical motives or the need to relate. Differences in economic conditions can result in different level of W2C since people may target the satisfaction of different need levels in Maslow's (1983) hierarchy. Neghina et al. (2017) suggest that consumers in developed countries would be more willing to co-create as a way of self-actualization.

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# Appendixes.

## Appendix 1. The measures

### Description

This survey aims to investigate how you as a doctor think about participating in conferences. As you may know, conferences are a common phenomenon in the pharmaceutical industry and can be organized by pharmaceutical firms, medical associations, hospitals or a combination of them. Doctors like you can participate in such conferences by acting as a speaker, chairperson, facilitator, conference organizer, giving feedback during the conference sessions, and by merely attending conferences. When answering the following questions, please think of these types of activities that you can employ at a conference.

### Construct items

1. Willingness to co-create (W2C) (based on Etgar, 2008)
  - W2C1- I am willing to participate in a conference in the near future
  - W2C2- I am willing to invest time into a conference
  - W2C3- I am willing to invest energy into a conference
2. Individualizing motives (IND) (based on Berthon and John, 2006; Coelho and Henseler, 2012)
  - IND1- I want a conference to fit with my specialization
  - IND2- I want to express my own interests and preferences when I participate in a conference
  - IND3- I want to ensure that the content of a conference fits my needs
3. Relating motives (RE) (based on Nambisan and Baron, 2009)
  - RE1- I want to extend my existing professional networks when I participate in a conference
  - RE2- I want to be part of an influential group
  - RE3- I want to strengthen my social status within my professional network.
4. Empowering motive (EMP) (based on Yi and Gong, 2008)
  - EMP1- I want to exercise control when I participate in a conference
  - EMP2- I want to be able to determine how much I want to be involved in a conference
  - EMP3- I want to have an influence over the final output of a conference

5. Ethical motives (ETC) (based on Franke et al., 2009; Maxham and Netemeyer, 2002)
  - ETC1- I want to be treated honestly and fairly in a conference
  - ETC2- I want to ensure that ethical guidelines are applied when I participate in a conference
  - ETC3- I want to ensure transparency in how a conference is executed
6. Developmental motives (DEV) (based on Fuller, 2006; Nambisan and Baron, 2009)
  - DEV1- I want to develop new knowledge and skills when I participate in a conference
  - DEV2- I want to gain knowledge about things that are related to a conference
  - DEV3- I want to learn from the experiences of my peers and seniors when I participate in a conference
7. Concerted motive (CON) (based on Karpen et al., 2012)
  - CON1- I want to be able to easily collaborate during a conference
  - CON2- I want to be able to easily communicate during a conference
  - CON3- I want to feel that my input is appreciated
8. Financial motives (FIN)
  - FIN1- I want to gain financial reward for my participation in a conference
  - FIN2- I don't want my income is reduced by spending time for a conference
  - FIN3- I want that with the knowledge, skills and relationships I gain from a conference, would result in a higher income in the long run
9. Altruistic motives (ALT)
  - ALT1- I am more enthusiastic in a conference when it brings benefits for patients
  - ALT2- I want a conference to help me increase treatment efficacy for patients
  - ALT3- I want a conference in the end to bring benefits for patients
10. Intended co-creation behaviors (BE) (based on Neghina et al, 2017)
  - BE1- I will attend a conference in the near future
  - BE2- I will give advice on possible improvements for the organizer
  - BE3- I will provide feedback on the content and organization of a conference
  - BE4- I will communicate any problems during conference (if any)
  - BE5- I will fill in the evaluation forms of a conference
  - BE6- I will volunteer time and energy to co-create in a conference
11. What is your role when you co-created in a conference? (an audience; speaker/ chairperson)
12. Years of experience in medical practice

How many years have you practiced as a doctor (below 5 years; equal or above 5 years)

13. Age

How old are you? (below 30 years old; from 30 to 40 years old; above 40 years old)

14. Position

What is your position in the hospital? (Normal doctor; chief of department/hospital director)

15. City of residence

Where is your city of residence? (Ho Chi Minh city; other cities)

16. Type of hospital (Public hospital; Private hospital; academic hospital)

**Appendix 2. The original analysis**

**a. Construct reliability**

Construct	Dijkstra-Henseler's rho ( $\rho_A$ )	Jöreskog's rho ( $\rho_c$ )	Cronbach's alpha( $\alpha$ )
Individual	0.9871	0.9284	0.8926
Relating	0.8590	0.9072	0.8474
Empowering	0.9625	0.9632	0.9431
Ethical	0.8703	0.8876	0.8176
Developmental	0.8619	0.9073	0.8476
Concerted	0.9976	0.8472	0.7609
Financial	0.9998	0.9197	0.8840
Altruistic	0.8578	0.8948	0.8267
W2C	0.7868	0.8717	0.7797
Co-creation behavior	0.9053	0.9100	0.8821
Experience	1.0000	1.0000	

**b. Discriminant validity**

Construct	W2C	BE	ALT	FIN	CON	DEV	ETC	EMP	RE	IND	EXP
W2C											
Co-creation behavior (BE)	0.5587										
Altruistic (ALT)	0.2832	0.2824									
Financial (FIN)	0.1514	0.1963	0.4182								
Concerted (CON)	0.1191	0.0095	0.1555	0.0563							
Developmental (DEV)	0.4056	0.3260	0.0621	0.0104	0.2381						
Ethical (ETC)	0.3488	0.2357	0.4286	0.0964	0.2892	0.2284					
Empowering (EMP)	0.0825	0.0964	0.0646	0.0541	0.4559	0.1859	0.1304				
Relating (RE)	0.5174	0.4293	0.2702	0.3122	0.1822	0.3357	0.1946	0.1226			

Individual (IND)	0.1646	0.1240	0.2862	0.3720	0.1093	0.1472	0.1110	0.0003	0.3127	0.3127	
Experience (EXP)	0.5259	0.2337	0.1579	0.0086	0.0476	0.1607	0.1311	0.0534	0.2765	0.2765	0.1179

### Appendix 3. Sub-analysis

#### a. Goodness of fit (saturated model)

	Value	HI95	HI99
SRMR	0.0732	0.1065	0.1289
d <sub>ULS</sub>	2.1736	4.6021	6.7418
d <sub>G</sub>	1.5863	2.3716	2.8861

#### b. Goodness of fit (estimated model)

	Value	HI95	HI99
SRMR	0.0732	0.1065	0.1289
d <sub>ULS</sub>	2.1736	4.6021	6.7418
d <sub>G</sub>	1.5863	2.3716	2.8861

#### c. Construct measure and factor analysis

Construct and scale items	Indicator reliability	Factor loading	AVE	$\alpha$
Individualizing motives (IND)			0.8478	0.9150
IND1	0.7562	0.8696		
IND2	0.9038	0.9507		
IND3	0.8834	0.9399		
Relating motives (RE)			0.7670	0.8485
RE1	0.8118	0.9010		
RE2	0.7772	0.8816		
RE3	0.7121	0.8438		
Empowering motives (EMP)			0.8806	0.9355
EMP1	0.8794	0.9378		
EMP2	0.8538	0.9240		
EMP3	0.9086	0.9532		
Ethical motives (ETC)			0.7269	0.8207
ETC1	0.7483	0.8650		
ETC2	0.8064	0.8980		
ETC3	0.6262	0.7913		
Developmental motives (DEV)			0.7717	0.8527
DEV1	0.8244	0.9080		
DEV2	0.7294	0.8541		
DEV3	0.7613	0.8725		
Concerted motives (CON)			0.6530	0.7666
CON1	0.6369	0.7980		

CON2	0.8713	0.9334		
CON3	0.4509	0.6715		
Financial motives (FIN)			0.7920	0.8890
FIN1	0.8244	0.9079		
FIN2	0.6462	0.8039		
FIN3	0.9054	0.9515		
Altruistic motives (ALT)			0.7271	0.8171
ALT1	0.7250	0.8515		
ALT2	0.7768	0.8814		
ALT3	0.6793	0.8242		
Willingness to co-create (W2C)			0.7112	0.7970
W2C1	0.6967	0.8347		
W2C2	0.6958	0.8341		
W2C3	0.7410	0.8608		

#### d. Discriminant validity

Construct	W2C	ALT	FIN	CON	DEV	ETC	EMP	RE	IND	EXP
W2C										
Altruistic (ALT)	0.2916									
Financial (FIN)	0.1597	0.3942								
Concerted (CON)	0.0839	0.1230	0.0982							
Developmental (DEV)	0.4617	0.0499	0.0310	0.2660						
Ethical (ETC)	0.3491	0.4463	0.0774	0.2694	0.2662					
Empowering (EMP)	0.0491	0.1077	0.0752	0.5207	0.2085	0.1789				
Relating (RE)	0.5629	0.2624	0.3065	0.1491	0.3532	0.1335	0.1408			
Individual (IND)	0.1918	0.2719	0.3459	0.1166	0.0864	0.1274	0.0033	0.3127		
Experience (EXP)	0.5070	0.1146	0.0117	0.0072	0.2044	0.1279	0.0020	0.2765	0.1512	

#### e. Structural model assessment

Construct	Coefficient of determination (R <sup>2</sup> )		Adjusted R <sup>2</sup>	
W2C	0.4294		0.3627	
Effects	Standard bootstrap results			
	Direct effect (β)	Cohen's f <sup>2</sup>	t- value	P- value (2 sides)
Individualizing -> W2C	0.0552	0.0040	0.5270	0.5983
Relating -> W2C	0.2442	0.0715	2.5444	0.0111
Empowering -> W2C	-0.0868	0.0098	-0.7580	0.4486
Ethical -> W2C	0.2025	0.0518	2.0530	0.0403
Developmental -> W2C	0.2190	0.0680	2.5023	0.0125
Concerted -> W2C	0.0026	0.0000	0.0223	0.9822
Financial -> W2C	0.0560	0.0043	0.4788	0.6322
Altruistic -> W2C	0.0303	0.0011	0.3043	0.7610
Experience -> W2C	-0.3031	0.1392	-2.7918	0.0053

