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The components of knowledge intensive business services (KIBS) model for food safety management system (FSMS) in the hotel industry

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Abstract

Due to the outbreaks of foodborne illness, the number of outbreaks is continuously increasing and food-borne illnesses from food service businesses in the global low/middle income countries cost an average of 110 billion US dollars per year according to the World Bank in 2018. In order to eliminate such business risks, this research is commencing to study the components of a new food safety management system (FSMS) learning platform in knowledge intensive business services (KIBS) firms in the form of a qualitative research through in-depth interview. Eighteen of luxury and upscale hotels and 2 knowledgeable service provider companies were interviewed. The keys of success that help drive the food safety management and continuous improvement in the hotels are a group of experts who provide advice on food safety management systems (P-KIBS), information and communication technology (ICT) systems that are used to link communication, information (T-KIBS) and process control and analysis.

Keywords: knowledge intensive business services (KIBS), food safety management system (FSMS), technology-oriented KIBS (T-KIBS), traditional professional services (P-KIBS), information and communication technology (ICT)

1. Introduction

The food and beverage services sector contributes greatly to the profits in the hospitality industry. Effective food management system including procurement, quality control, storage, processing, and service, is necessary due to increasing outbreaks of foodborne illness. In 2018, the World Bank found that foodborne diseases were disproportionate on children under the age of 5 and the population of low and middle income countries in Asia. African countries with low to moderate incomes expected a loss of approximately US $ 95

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billion per year because of unsafe food (Jaffee et al., 2018; Zhang et al., 2014). Although, many experts from public sectors, universities, HACCP organizations, and related research institutes are trying to work closely together in order to build a safe food standard for the food and beverage services sector (Wu, 2012), they have also identified other factors such as knowledge, attitudes and practices for creating sufficient knowledge, positive attitudes and adequate practices that can decrease the risk of foodborne diseases (Zanin et al., 2017). In addition, the middle-upscale business hotel segment has implemented a food safety system to prevent the risk of businesses that organize seminars and international tourism. However, food safety management in accordance with HACCP and ISO22000 may not be suitable for some food business due to internal and external communication management standard requirements, and audit systems that are too complex (Charalambous et al., 2015).

Furthermore, the linkage of management of internal and external innovation of an organization is a strategy that will increase the efficiency of food safety management in the hospitality industry. This is consistent with the research that introduces the definition of the term "knowledge intensive business services (KIBS)". Knowledge-intensive is defined as knowledge and specialization of the training in crucial areas and business is defined as providing information, rather than focusing on production or final service activity, and the customers can be both small and large businesses, charitable organization, and public sectors. Services can be defined as services that affect tangible things by using intangible factors such as software, information system, communication, and system management (Miles et al., 2018). Moreover, integrated ICT implementation has a significant positive relationship with the operational productivities in the hotel (Sirirak et al., 2011). On the other hand, others indicate that ICT may increase the performance of human resources to get more effectiveness in internal control environment of the organization (Amatya, 2018). Consequently, the strategy of technology-oriented KIBS (T-KIBS) includes the service of knowledge management of experts in computer systems, engineering, and research and development. T-KIBS linked with traditional professional services (P-KIBS), is an alternative for innovation management for promoting the business operations for customers and/or users (Doloreux et al., 2019).

The future of the food safety management system in the hotel can be relied on improving the gap between the operational knowledge of the food business and the supervising expert (Ovca et al., 2018). Consequently, the important factors such as knowledge, attitudes and practice can prevent foodborne illness in the food business more effectively. Therefore, the purpose of this study is to explore successful factors/components of KIBS model for a sustainable and internationally recognized food safety program of the hotel.

2. Theoretical background and research questions

2.1 Food safety management system in hotel

A top management would make their decision based on their vision of food safety (Wu, 2012). Trainings background and their expertise are important key success factors of food safety management in the hotel (Baser et al., 2017). This is also aligned with Rossi et al. (2017) that claim that food handlers involved in food preparation and food serving can bring in a risk of food contamination or poisoning, affecting business reputation and a loss of profit.

Meyer et al. (2017) explained that understanding of the barriers to communication and trust is imperative in food safety to gain trust from consumers. Therefore, food business owners or management are careful to handle the food safety properly. Hence, the first research question (RQ) is the following.

RQ1: How is food safety management system implemented in hotel business?

Moreover, lack of knowledge about HACCP and other food safety programs was identified as the main barriers for food safety in food businesses (Baş et al., 2007). There are critical factors deemed necessary by owners/senior managers and food safety managers/coordinators to implement a food safety program, for example external resources and support, involved employees, effective communication and the right food safety staff. Participants in the pilot project also identified motivation to complete the implementation within the timeframe required by the project (Wilcock et al., 2011). In addition, the level of food safety knowledge and major knowledge gaps among food handlers are related to food-borne diseases and cross contamination. Thus, qualified staff are key to success and innovative food knowledge strategies should offer a wide spectrum of training formats (Smigic et al., 2016). However, the management of food safety across all sectors in the hotel and prevention of food-borne diseases present a major challenge worldwide (Al Yousuf et al., 2015). This constitutes the second RQ of this study.

RQ2: What are challenges of food safety management system in hotel business?

2.2 Knowledge intensive business services

Based on a literature review of knowledge intensive business services over the past 10 years, is conducted a summary of research data that focuses on technology-oriented KIBS (T-KIBS) and traditional professional services (P-KIBS) as shown in Table 1. Based on Miles (2008) the distinctive innovation patterns are displayed by KIBS based more on professional knowledge and by large network-based service firms, while many smaller service firms conform to a supplier-driven pattern. Also, KIBS can be identified as drivers of knowledge dynamics in multilevel contexts. Though there are many traditional segments of knowledge intensive services, the introduction of new ICT has brought about huge structural changes. (Strambach, 2008).

Table 1. P-KIBS and T-KIBS according to various authors

Author	KIBS Topic	P-KIBS	T-KIBS
Miles (2008)	Patterns of innovation in service industries		▪
Strambach (2008)	Knowledge intensive business services (KIBS) as drivers of multilevel knowledge dynamics		▪
Scarso and Bolisani (2010)	Knowledge-based strategies for knowledge intensive business services: a multiple case-study of computer service companies		▪
Paiola (2010)	Learning in service relations: The case of technological KIBS		▪
Landry et al. (2012)	Knowledge-exchange strategies between KIBS firms and their clients	▪	▪
Fernandes and Ferreira (2013)	Knowledge spillovers: cooperation between universities and KIBS	▪	▪
Lessard (2014)	Designing and managing value co-creation in KIBS Engagements	▪	

Bettiol et al. (2015)	Service customisation and standardisation in combinatory knowledge-intensive business services	▪	▪
Zhang et al. (2014)	How to interact with knowledge-intensive business services: a multiple case study of small and medium manufacturing enterprises in China		▪
Rodriguez et al. (2017)	Variety in external knowledge sourcing and innovation novelty: evidence from the KIBS sector in Spain	▪	▪
Rodríguez et al. (2018)	International collaboration and innovation in professional and technological knowledge intensive services	▪	▪

In addition, the effort of extending and adapting computer service companies to knowledge assets can be particularly effective, even in small businesses (Scarso and Bolisani, 2010). The T-KIBS service networks are also worth mentioning that can act on the base of different recourse to external knowledge and capabilities (Paiola, 2010). However, the cooperation between KIBS and universities occurs irrespective of the typology (whether professional or technological in focus). The factor bears great influence over cooperation while such cooperation proves to have a positive impact on the company capacity to innovate (Fernandes and Ferreira, 2013). By comparison, other P-KIBS engagements to rely on a professional could help to establish more successful collaborations among KIBS providers, clients, and partners (Lessard, 2014). The combination of T-KIBS and traditional P-KIBS is associated with the exchange of codified rather than mixed knowledge (Landry et al., 2012). Moreover, Bettiol et al. (2015) highlight that services are combined to develop specific business strategies which achieve superior performance in customization and standardization. They pair customer interaction aimed at service customization and knowledge codification useful in providing standard services and also in investing in networking. Also, T-KIBS generally act as a knowledge source and P-KIBS as a knowledge bridge for small and medium manufacturing enterprises (SMMEs) (Zhou et al., 2017).

Furthermore, a negative relationship was found between the variety of research sources used and the introduction of innovations new to the firm. T-KIBS' innovativeness is more strongly associated with variety of information sourcing (except general sources) and cooperation. P-KIBS' innovativeness is related specifically to variety of general information sources (Rodriguez et al., 2017). In addition, there is more important one for professional knowledge intensive services, while diversity in international collaboration is more important for technological knowledge intensive services (Rodríguez et al., 2018). It is reasonable to speculate that T-KIBS and P-KIBS are potent on food safety management system with RQ3 and RQ4.

RQ3: How important is T-KIBS in the food safety management knowledge in hotels?

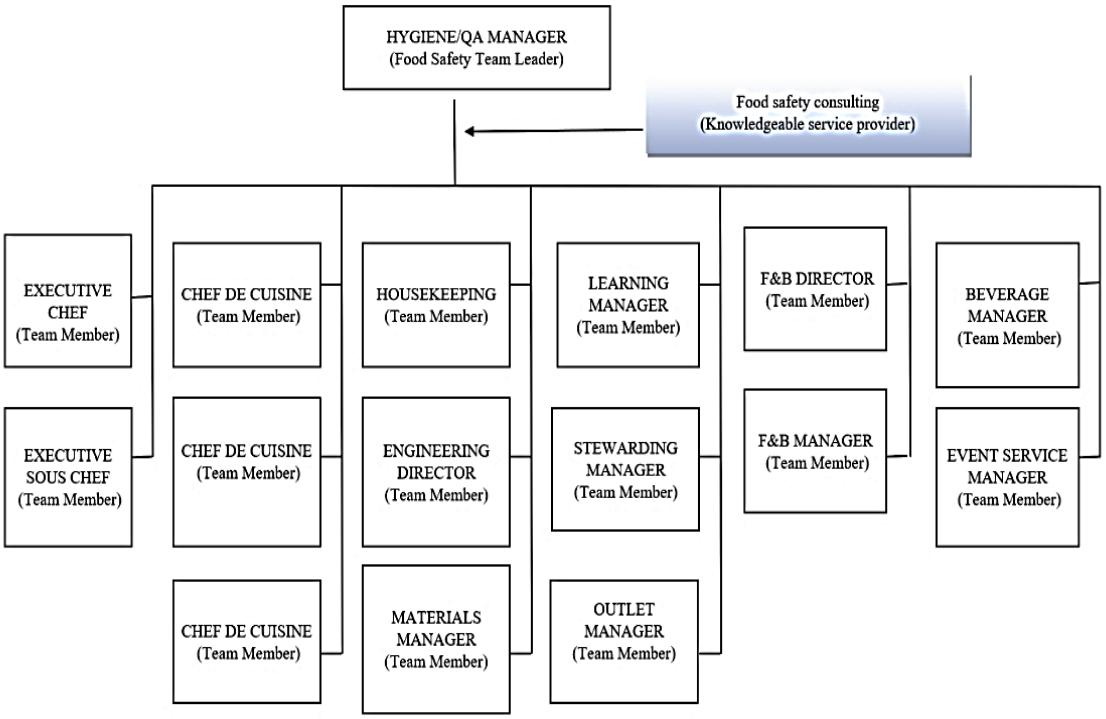
RQ4: How important is P-KIBS in the food safety management knowledge in hotels?

3. Methods

3.1 Hotel and company selection

The context of the study is components of KIBS model. In deductive reasoning we hold a theory based on T-KIBS, P-KIBS and Food Safety Management System. There are three main components of the reasoning that can be implemented in a hotel organization. Therefore, a qualitative research through in-depth interview was done.The study sample consisted of 20 participants who had experiences in food safety management systems or consultancy services for hotels. Of the 20 participants, 18 from luxury or upscale hotels (4-5 star hotels) were randomly interviewed, while the other 2 interviewed were from knowledgeable service provider companies in Thailand. As indicated in Figure 1. All the interviewees experienced FSMS projects at least for two years. Data were collected through face-to-face interviews and recordings of the interviews. Researchers may also ask questions not included in the semi-construction interviews, if they considered those questions to be necessary for providing a more insightful and rich interpretation.

Figure 1. Hotel FSMS implementation and knowledgeable service provider (KIBS)



3.2 Interviews

This study was conducted through a qualitative approach as it aimed to explore issues and the interviews followed a semi-structured protocol (Mason, 2017). Each interview with a food safety team leader in a hotel

and a consultant from a KIBS company took around 60 minutes. During each interview, a total of 11 questions which were grouped into 3 subtopics were asked as in Table 2.

To all questions the interviewees were allowed to express their opinions freely, and the researchers carefully listened to their answers without any interruptions before moving into the next question. In this process which reflected research questions in the literature, we were able to balance the convergence of the dialogue as well as the initiative of the interviewees.

Table 2. Questions for interview

Subtopics	Questions	RQ1	RQ2	RQ3	RQ4
Implementing Food Safety Standard in the hotel.	Please introduce yourself and working experience regarding FSMS in the hotel.	■			
	Please describe the food safety system program in the hotel.	■	■		
	How is currently status of the food safety standard program?	■	■		
	What is the key of success on the system?	■	■	■	■
Food Safety Team & Leader	Do you have any food safety committee team or consultant?	■	■		
	Can Food Safety Leader assign task teams to work on specific processes?			■	■
The knowledge intensive business services (KIBS)	What kind of the tools or technology using with the food safety program?			■	
	Does hotel need innovative food safety? Why?			■	■
	Why did hotel decide to use the consultant service?				■
	Please divide the FSMS into several stages with important milestones.	■	■	■	■
	How were hotel employees willing to learn new things from the consultant service?			■	■

4. Findings

4.1 Luxury and upscale hotels

There are 18 international hotel brands in Thailand, classified as luxury and upscale ones, with a variety of interviewees' background knowledge: 10 with food science background, 4 with hospitality background and 4 with non-food science/non-hospitality background. The followings are the questions provided for the interviewees and the summary of their responses.

The food safety system program is a cycle of "the flow of food" consisting of receiving, storing, preparing, cooking, cooling, reheating, holding and serving.

Table 3. Types of food safety system implementation/consulting

No.	Name of hotel / Company	Type of hotel	FSMS Brand Standard Audit	HACCP	ISO22000
1	JW Marriott Hotel Bangkok	Luxury	x		
2	The Athene Hotel, a Luxury Collection Hotel, Bangkok	Luxury	x		
3	SO Sofitel Bangkok	Luxury	x	x	
4	Sofitel Bangkok Sukhumvit Hotel	Luxury	x	x	
5	Anantara Mai Khao Phuket Villas	Luxury	x	x	
6	Anantara Vacation Club Mai Khao Phuket	Luxury	x	x	
7	Anantara Layan Phuket Resort	Luxury	x	x	
8	Banyan Tree Phuket	Luxury	x		
9	Banyan Tree Samui	Luxury	x		
10	Park Hyatt Bangkok	Luxury	x		x
11	Grand Hyatt Erawan Bangkok	Luxury	x		x
12	Hilton Hua Hin Resort & Spa	Luxury	x		
13	Millennium Pa Tong Phuket	Upscale	x		
14	Centara Grand Ladprao Bangkok	Upscale	x		
15	Novotel Bangkok Platinum Pratunam	Upscale	x		
16	Angsana Laguna Phuket	Upscale	x		
17	Hyatt Regency Hua Hin	Upscale	x	x	
18	Bangkok Marriott Marquis Queen's Park	Upscale	x		x
19	FSSC Company Limited	SME			
20	VServe Solutions Company Limited	Start-up			
		Total	18	6	3

As listed in Table 3 there are 7 hotels which have implemented the FSMS brand standard audit and 11 hotels that have already reached the HACCP standard, whilst three hotels have already implemented ISO

22000. All interviewees share the same concern about their management's food safety vision; a lack of management oversight results in a suspension of budget, information technology investment or ignorance of food safety implementation and training program. In addition, the front-line staff are dealing with their daily routine differently according to their level of literacy, education and language.

There are three main factors that drive a successful HACCP or ISO22000 implementation:

(1) A seamless collaboration between management of each department, starting from procurement procedure to food handling process

(2) All training activities within the hotel

(3) Trustworthy food safety consultation company involvement: well-trained and longer work experience.

Based on the interviews, it is found that there is an FSMS working team set up (described in Table 1) to implement the FSMS and certification process of the HACCP or ISO22000 standard, (shown in Figure 1) by having a consultant or a professional company coach for developing documentation. Representatives holding a position of Department Head are involved in the food flow process. Their role and responsibility are to comply with the policies from the food safety team leaders, by providing guidelines to the staff under their control. However, the most struggling challenge is the communication between supervisors and staff, which has been found common in every hotel.

The interviews of the three hotels with ISO22000 certification have found out incompetency of the team leaders for food safety knowledge. Information and communication technology from abroad (e-learning platform) has been utilized as an extra tool. However, language barrier is still deterring the learners from fully understanding those e-learning courses.

According to the interview, a hotel that has an annual FSMS Brand Standard Audit, directed by the corporate office, either HACCP or ISO22000 system certification, is using an international LMS e-learning technology for all staff levels. The food safety training modules have been assigned to individuals according to their position, roles and responsibilities. However, language barrier, education levels, complexity of technology and learning styles preferences of staff may prevent them from being a successful learner or achieving food safety management certification. In addition, all interviewees are in need of an innovative food safety learning system to improve knowledge of supervisors and employees for better understanding of their roles and responsibilities effectively.

Along with their corporate direction of FSMS, a hotel with an assistance of consultant service company brings expertise to its food safety team. This is a great help for a quick implementation of the system and certification within the timeframe set by the hotel.

The interviewees have described the process of the FSMS implementation stage as follows:

(1) Gap assessment is conducted by the consultant company.
(2) The gap report is helping to evaluate corrective actions and the timeline.
(3) The FSMS policies are announced for an implementation in the hotel.
(4) Training all hotel employees especially who are related in the flow of food.
(5) The internal weekly/monthly audit is being conducted by hygiene manager/food safety team leader of the hotel.
(6) Corrections to be made, tracking records for future monitoring, and monthly or quarterly FSMS team meeting to cross check.
(7) Annual audit is conducted by corporate representative or hotel signed contractor.

The interviewees have mentioned the differences between the situations before and after using the service of professional consultant company that can greatly help to improve food safety. The consultant company can point out the significant gap of food safety to the premises to management and all employees, and support to prepare according to the timeline of certification.

However, due to a budget limitation and a short length of consultancy period, some hotels cannot afford such services. And even though a sufficient budget is allowed, having enough time for an implementation is another key to success. It is found that a communication breakdown, less food safety practice and knowledge amongst FSMS team leaders and/or heads of department can put things on hold.

4.2 Knowledgeable service provider companies (KIBS)

The two interviewees are the representatives of the consultant service companies who earned master's degrees in food science and worked more than ten years as food professionals for hotel brands in Thailand and abroad. The key to success in food safety consultancy business is a professional collaboration with customers in a timely execution according to the requirement.

Regarding the implementation process, two companies mentioned that they were using the same ICT such as Google Drive, Line chat and Facebook for exchanging knowledge and communicating to the hotels to enhance effectiveness of consulting service in a real time. Therefore, food safety has been monitored and improved when using ICT wisely.

The two interviewees mentioned that it was time for food safety innovation utilized in the hotels to help to manage an effective food safety program related to training and learning system. This will help all hotel employees to fully access to the information and gain more understanding of their roles and responsibilities.

The two consulting companies believed that their customers decided to use their consultant services because of their expertise in the consultation and their experiences in delivering both timely and accurate project outcomes, which were based on the following FSMS milestones:

Stage 1: Risk and Gap Analysis on Facility, Process and Documentation
Stage 2: Comprehensive Food Safety Training
Stage 3: Documentation of the Pre-Requisite Programs
Stage 4: Development of Manual (FSMS, HACCP or ISO22000)
Stage 5: System Implementation
Stage 6: Consultative Food Safety Audit & Review

The important keys to getting all employees to accept and be interested in learning and working with the consultant team are an effective and accurate working process that can be communicated quickly, and simple and practical knowledge providing process that is not too difficult to understand, and certainly not interrupting their work.

4.3 Implementing food safety standard in the hotel

The interviews revealed that 12 luxury and 6 upscale hotels have implemented food safety management system brand standard. In addition, some hotels have implemented an FSMS based on HACCP or ISO22000 certification system. However, the context of food safety system in hotels was described as the same implementation process to control the "flow of food". Moreover, lack of management oversight, information technology, language and culture, literacy and education, and inadequate food safety training program" are

concerns as barriers. Mercan and Bucak (2013) suggested to seek support from professional consulting firms or P-KIBS when dealing with problems. It was challenging to find an individual who had technical knowledge of food safety system or HACCP because of a hiring budget problem (Wilcock et al., 2011). This is the reason why hotels cannot use a professional consultant company in the implementation process.

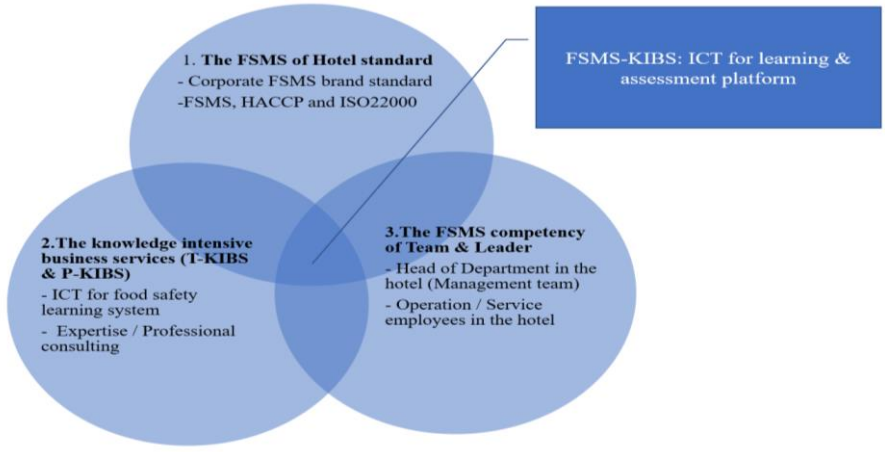
4.4 Food safety team and leader

The interviewees described that hotels had a food safety committee team, but there was a challenge to internal-communication from the food safety team leader and heads of departments to all employees in hotel for understanding their role and responsibilities correctly. Therefore, understanding the mechanisms that translate knowledge into practice can help to develop new strategies for ensuring food safety implementation (Rossi et al., 2017). However, managers also think that the high turnover of staff constitutes a great barrier to HACCP efficiency (Casolani and Del Signore, 2016).

4.5 The knowledge intensive business services (KIBS)

The interviews revealed connection between hotels and KIBS which required hotel management collaboration, effective food safety training program, expertise of food safety consultant and technology for internal-external communication on food safety standard. Moreover, two interviewees from KIBS company described that a successful FSMS depends on qualified FSMS team in hotel and collaborative relationships with the consultant in order to exchange knowledge and develop consistence of food safety system. In addition, Paiola (2010) has found that the T-KIBS service networks are also worth mentioning so that they can act based on different recourses to external knowledge and capabilities. All interviewees are in need of an innovative food safety learning system as a knowledge source of an FSMS program.

Figure 2. The components of knowledge intensive business services (KIBS) model for food safety management system (FSMS) in the hotel



4.6 The components of knowledge intensive business services (KIBS) model

Based on findings, our proposed conceptual framework for the new model of KIBS which is using ICT for learning and assessment platform to become an effective FSMS in hotel, consists of three components : 1) management system and implementation process, 2) traditional professional services (P-KIBS), 3) traditional professional services (P-KIBS) as shown in Figure 2.

5. Discussion and conclusion

It is crucial that food services keep their food safety up to international certification and standard, and especially, the context of organizational risk management may be emphasized in the hotel industry. Regarding to food safety learning system, this study has taken a step direction of defining the relationship between the hotel FSMS standard, the knowledge intensive business services (T-KIBS and P-KIBS) and the FSMS competency of team and leader. They are shown in Figure 2. In addition, food safety consulting service providers (P-KIBS) are intensive knowledge sources to provide and update guidance related to food safety specifications or requirements specific to the hotel industry for controlling the common risk factors of foodborne illness. On the other hand, it is necessary to ensure that the food safety information has to communicate to the head of department who is concerned in deciding on the food areas in which ICT such as Line group chat or Facebook may be selected for internal communication, and that the specific technology in food safety learning (T-KIBS) should be made available and easy to use for both of operational productivity and hotel employees satisfaction. Therefore, this study also highlighted a successful FSMS implementation program, supporting hoteliers to be more educated, gaining more knowledge with these three elements. Firstly, a seamless collaboration between management of each department, starting from procurement procedure to food handling process. Secondly, the more of food safety training and communication technologies implementation provided in the hotels, the more effectiveness of knowledge exchange. Thirdly, trustworthy communication technology and professional consultant involvement.

In addition, the food safety team leader and knowledgeable service provider companies are importantly driving a successful FSMS program in the hotels. This resulted from in-depth interviews that have been clustered in relationship to the three components: management system, implementation process, T-KIBS and P-KIBS, all of which constitute an integrated FSMS model for KIBS. Theoretically, knowledge and attitudes, time limitation, staff turnover, costs and lack of management commitment are barriers to implement FSMS in the Thailand Hotel Tourism industry. Based on the result, this study has provided three components of KIBS-FSMS model for implementing. Moreover, there is a value proposition to the hotel that addressed a sweet-spot KIBS-FSMS. ICT for learning and assessment platform would be more accomplished where adding a new channel simultaneously provides additional value to existing FSMS implementation plan for future business model innovation of knowledge service business.

6. Research limitations

Only 20 participants took part in this study. As the number is relatively small, the generalization of the study findings could be limited. Therefore, it is recommended that further studies with a larger sample size could be conducted to confirm the findings of the performance both of T-KIBS and P-KIBS for Food Safety Management System (FSMS) in the hospitality industry that can influence the new business model.

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