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Hotel Housekeeping
Mobile Application in Finland

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Bachelor's thesis
January 2016
Hospitality and Service Management
Degree Programme in Facility Management

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Abstract

This research dealt with the housekeeping management mobile application as a new phenomenon in hospitality industry. Understanding the application and its users' experience and behaviors could facilitate the IT companies and developers to improve the application and hotel and house-keeping managers to take care of their employees and enhance the work process. The subject of the research paper was Serviator – the program that was currently in use in Solo Sokos Hotel Pavil-jonki Jyväskylä, Finland with the aim to uncover the essence of housekeepers' experience using the application; thus, unfolding the strengths and weaknesses of the application and how to im-prove its capability in practice.

In order to better understand and explore such a new phenomenon as housekeeping application using tablets for cleaners, a qualitative research method was nominated. Purposeful sampling strategy was chosen and in-depth interviews were conducted with the aim of achieving personal experience on using Serviator application.

Housekeepers having experience with the housekeeping application Serviator focused on the feel-ing of easiness and simplicity when they were using the application as well as its setbacks when the program was not functioning as expected. Housekeeping application Serviator was a new tech-nology phenomenon at work, nevertheless, essentially indispensable and meaningful to assist planning, organizing and controlling the work. It was regarded as simple and easy to use that pro-vided a great deal of information about rooms and room conditions as well as serving as a commu-nication tool among hotel departments. Ultimately, it was a program with its downsides such as technical and feature problems. The technical problem was the disruption in connection and com-munication while feature problem was related to room information control and housekeeping management aspects.

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1   Introduction

Work process and the ways of working have been tremendously transformed since the British Industrial Revolution in the nineteenth century. While in the late twentieth century the evolution of computers and the Internet marked a new page in human history, the twenty-first century has witnessed a huge breakthrough in new technology with the era of portable smart devices, which seems to absolutely change the ways we live and work. It has always been changing and challenging the ways we used to be. In the hospitality industry and the hotel business in particular, Information Technology (IT) applications have been greatly contributed to the management of operational routine tasks (Law & Jogaratnam, 2005). In the recent years, new applications using smart devices have been widespread in hotel businesses, which was usually limited in the front office system until the adoption of IT programs, for example housekeeping during the past few years.

This research deals with a housekeeping management mobile application as a new phenomenon in the hospitality industry. The subject of the research paper is Serviator – a program that is currently in use at Solo Sokos Hotel Paviljonki Jyväskylä, Finland with the aim to uncover the essence of housekeepers' experience using the application; thus, to unfold the strengths and weaknesses of the application and suggest how to improve its capability in practice.

2   Research Problem

The Housekeeping application phenomenon was primarily discovered in Finland by the author while she was working as a housekeeper in a hotel in Vantaa. It has quickly captured the author's attention. Finland has a great focus on the adoption of technology in working life. Due to Finland geographical disadvantage and high labor cost in the era of globalization, the government has decided to put great effort to technological research and development in order to "stay a few steps forward" (Kanellos, 2008). It is reported that around 3.5 percent of Finland gross domestic

product is spent on research and development while the EU members are still far from that, with most of them reaching about 2 percent. In addition, the prime minister of Finland was stated that twenty years ago it was impossible to imagine today's information technology, believing that a technological breakthrough is possible (Kanellos, 2008). In May 2014, a handbook of the Government Strategy to Promote The Cleantech Business in Finland was introduced with its vision to become a global superpower in the cleantech business by 2020, in which cleantech businesses are the ones producing their products, services and processes that promote the sustainable use of natural resources while reducing emissions (Jokinen, 2014). In accordance with such policies, IT companies and developers have gradually paid more attention to small and detailed processes, for example in the hotel business, in an attempt to create changes following the state vision.

The use of housekeeping applications in hotels is a relatively new phenomenon. It is common knowledge that most front office operations require a well-functioning system in order to generate a stable flow of information for the purpose of sales and accumulate a reliable system of data for management. Housekeeping, on the other hand, is considered to be a manual labour work that used to require no computer skills; therefore, it is uncertain that housekeeping work would become a target group for IT companies and developers.

There are limitless studies for hospitality management and hotel management. However, there is a huge lack of concern for a very important department within the business - the housekeeping department. It is one of the most important and indispensable functions in hotel operation. It affects the hotels' daily workflow of room sales, somewhat makes a change to hotel deprivation rates, and more importantly, the direct impact on hotels' customer satisfaction to say the least (Powell & Watson, 2006). Apparently, due to lack of concern in the housekeeping department and the rapid development of smart devices, the newly introduced housekeeping application has become a subject worth investigating.

Understanding the application and its users' experience and behaviors can facilitate not only the IT companies and developers to improve the application but also hotel and housekeeping managers to take care of their employees, and enhance the work process. Phenomenology research assists researchers to understand the essence of the experience (Creswell, 2007) and thus, become an ideal research process for fulfilling the purpose. Consequently, the aim of this study is to explore housekeepers' experience and figure out the strengths and weaknesses of Serviator – a hotel housekeeping application within the case of Solo Sokos Hotel Paviljonki in Jyväskylä, Finland.

3 Literature Review

3.1 The Relationship of Hotels, Guests and Housekeeping

Hotel business belongs to hospitality industry. The origins of hospitality has been founded based on the concept of the word "hospitality", meaning the cordial and generous reception and entertainment of guests or strangers, either socially or commercially (Jones T. J., 2008, s. 3). The definition gives a sense of warm welcome from the host with open arms and regardless of the reasons people away from home, they will be taken care of with a clean, comfortable place to rest or sleep, food service, socializing and meeting in a secure surroundings (ibid., p. 3). Management, on the other hand, is regarded as "a system of delegation to lieutenants" following the present recognizable principles of line organization, span of control and delegation (ibid., p. 4). In hotel management, it is essential understand the internal organization structure.
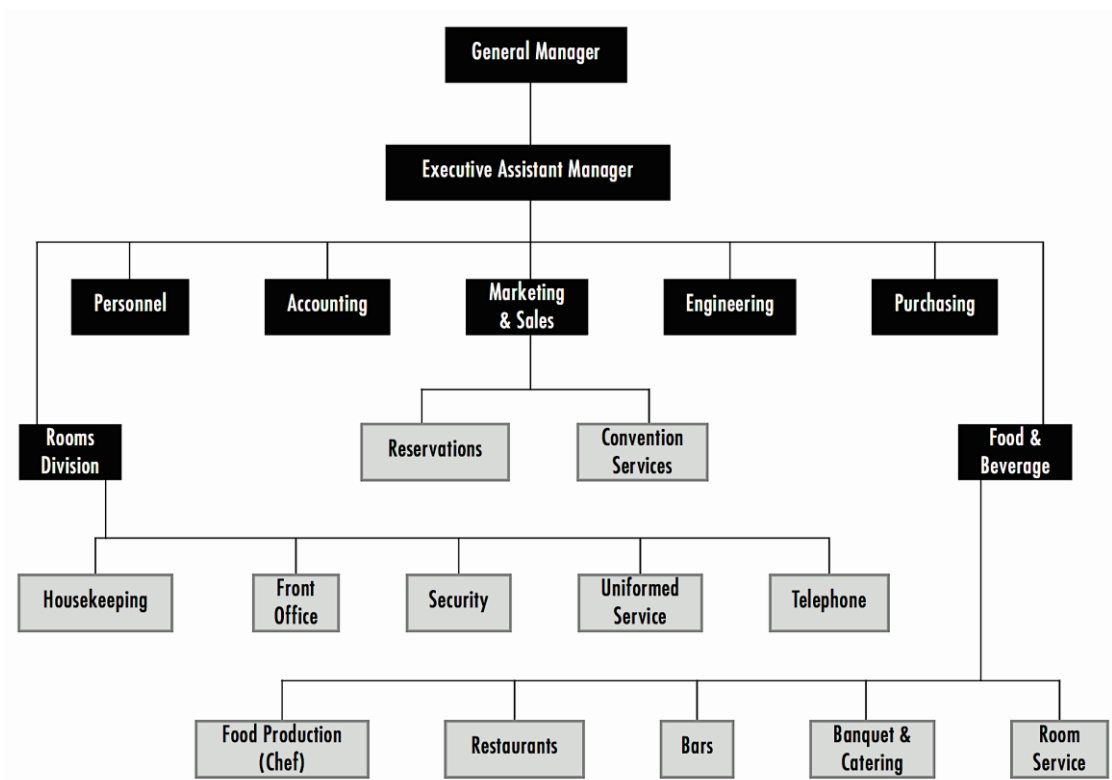
Figure 1 An illustration of Hotel Organization Chart

This chart illustrates a typical hotel organization even though it might differ depending on the company's organization. In this chart, Room Division and Food and Beverage are two major operating divisions of the firm. It also relatively varies among different hotels; however, it is generally perceived these two as basic services to guests (Rutherford & O'Fallon, 2007). In the Room Division, a number of subunits are divided and each one has a specialized tasks. While the front office takes care of guests' arrivals, registrations and further communications at the hotel, the housekeeping department is responsible for the cleanliness of guest rooms and public areas (Rutherford & O'Fallon, 2007, ss. 78-79).

> *A great deal of interdependence exists between the subunits of the room department, thus calling for close coordination of activities. For example, linkages also exist between the front office and housekeeping. Information regarding room status must flow both ways: When a guest checks out, the front office must inform housekeeping so the room may be cleaned. Once it is cleaned, housekeeping must inform the front office so the room may be sold (Rutherford & O'Fallon, 2007, s. 79).*

In order to achieve such close and harmonized coordination of activities, effective management must establish a series of conducts including standardized plans, procedures, schedules and deadlines as well as frequent direct communications between executives of each department (ibid., p. 79).

Although there are three major products that hotels usually offer: accommodation, food and beverage, the majority of hotels are led by accommodation service with its revenue obtained dominantly from room sales (Medlik & Ingram, 2000). While hotel room sales make up for about 55 percent of total hotel revenues, food and beverage account for 23 percent and 10 percent respectively (British Hospitality Association, 2003). It is clearly seen that room sales contribute the most on gross profit margin; therefore, for the hotel operating profit to reach its peak, it is common understanding for hotel managers to generate good room sales.

Accommodation standards play a critical role in the influence of customer satisfaction and the inclination to return. It has been confirmed by a wide range of previous researches namely Kandampully & Suhartanto (2003), Lockyer T. (2002, 2003), Callan (1996), Gillbert & Morris (1995), Weaver & Oh (1993), and Lewis & Nightingale (1991). Thus, the preparation of rooms for sale should be focused so as to acquire customer satisfaction and hotel profitability (Powell & Watson, 2006). In order to achieve these accommodation standards, housekeeping is considered one of the most pivotal processes and essentially important work to be carried out. According to Jones T. (2011), housekeeping work has never been considered a demeamning or menial in good hotel managament but rather acknowledged by the value of the work performed and the people who perform such functions regularly.

The sucess of a hotel, however is rather measured by its overall performance than the performance of one department since each department has a specialized task; therefore, it is sometimes difficult for functional departments to fully appreciate the relationship between their performance and the overall performance and goals of

the hotel (Rutherford & O'Fallon, 2007, s. 82). In short, the hotel goals of customer service and profitability must be thoroughly understood and kept in mind throughout all departments to prevent themselves from narrowly focusing on their own concerns (ibid., p. 82).

Since the relationship between customer satisfaction, hotel operation profit and housekeeping work is profoundly vital, it is worth investigating into the work of housekeeping, its process and development in order to improve the hotel business operation as a whole.

3.2   Housekeeping Work and Management

There are only few researches and books focusing on the housekeeping process, but rather emphasizing on management point of views. The manager in charge of housekeeping department is often known as executive housekeeper. Due to the size, cost and complexity of housekeeping work nowadays, the executive housekeeper has been placed an equal position with managers of other departments. They must be trained frequently for skills such as planning, organizing, staffing, directing and controlling operations as well as human relations management, cost control, strong technical background in purchasing, decorating, renovation and delegation capability (Rutherford & O'Fallon, 2007, ss. 176-177).
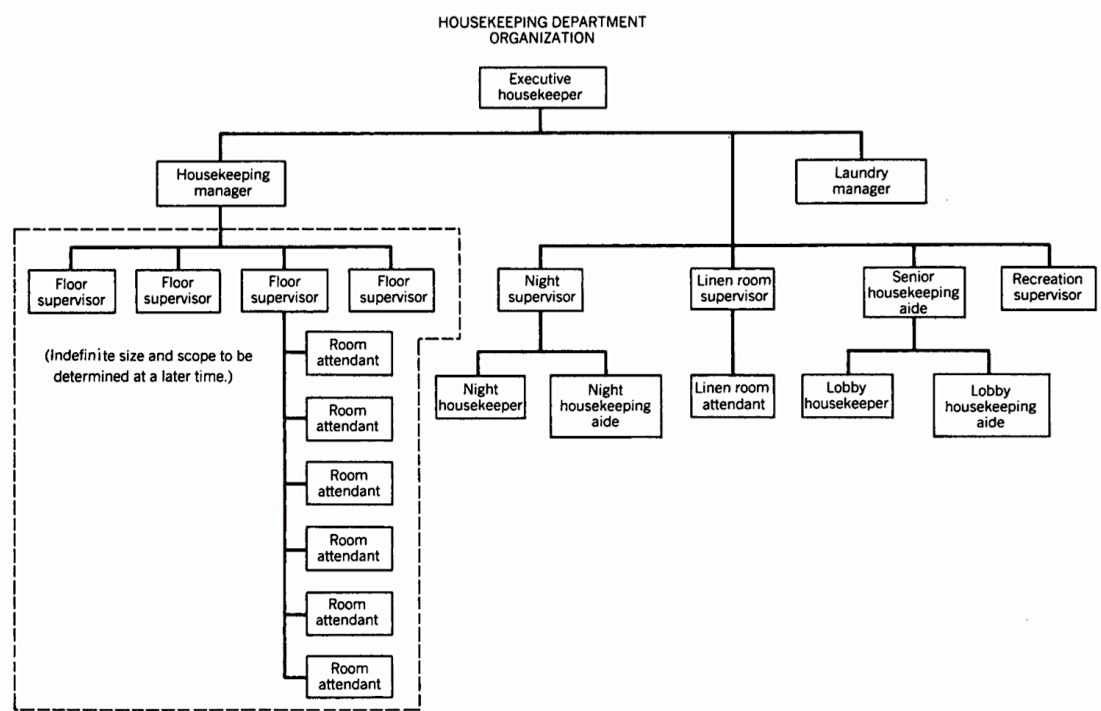
Figure 2 Housekeeping Department Organization Chart

Figure 2 shows a chart of Housekeeping department organization as a typical example and depending on the size and scope of a specific hotel, it is adjusted to match the provision of resources.

According to Jones T. (2008, p. 10-11), housekeeping employees had a diverse background as well as caring a number of common characteristics. Normally, they came from different cultures, speak different languages, had little or no formal education, bear a lower socioeconomic backgrounds or might have emotional or economic problems (Jones T. J., 2008) even though it was not case sometimes.

Nevertheless, it was generally disregard for both the work and the social status of housekeepers and cleaners. Hotel housekeepers appeared to carry social stigma to some extend due to its perception of involving a sterile relationship to others (Ashforth & Kreiner, 1999). Hugnes (1962) argued that even though hotel housekeepers performed unpleasant yet important tasks, others could regard themselves as clean and therefore superior. The common perception of the work

was "unskilled" and mostly the work was "unseen" both academically and empirically (Powell & Watson, 2006). It usually carried the image of unskilled, low waged, low status, physically demanding, dirty and repetitive job as well as mainly women (Shamir, 1975; Saunders & Pullen, 1987; Ellis, 1981) while in fact, one head housekeeper argued that the job of room attendant is a skilled job since not everyone could do it (Powell & Watson, 2006). She also claimed that her new recuits need various training including bed-making technique, the use of cleaning chemical in right proportion, health and safety procedures, and time management (Powell & Watson, 2006). On the other side, the job had a high rate of labour turnover and offers few opportunities for career advancement (Faulkner & Partia, 1997) as well as cheap and easily replaceable (Wood, 1997).

Room preparation was the main responsibility of housekeeping department and it consists of a series of conduct in cleaning, tydiing and re-stocking tasks (Powell & Watson, 2006). According to Powell and Watson (2006), the work was even more complicated particularly in "chain hotels where housekeepers should be able to respond to customers, meet quality and safety standards, carried daily maintenance audits and basic interact with computers. Cleaning procedures might be quickly learned and applied to its tacit level but additional competencies to become service driven, competitive, cost controll had to developed through training and experience (Powell & Watson, 2006).

Powel and Watson research (2006) also found out, in accordance with others' findings from Shamir (1975), Saunder and Pullen (1987) and Faulkner and Partiar (1997), that the workers mostly described the work as hard and tiring, low paid, repetitive, heavy and detailed and fussy while other significant yet less frequently affirmed terms were "not interesting", "lonely", "servile" and even "dealing with awkward guests", especially half of them called it "dirty work". Housekeepers were also exposed to a number of safety hazards at work" (Powell & Watson, 2006), proned to sinal and joint injuries (Faulkner & Partia, 1997) and even vulnerable unwanted attention (Gillbert & Morris, 1995).

In addition, room attendants had to face daily pressure from work meaning they have to work fast, approximately about 30 minutes and maintaining the quality standard, which caused pressure for 60% on most days and for 29% on some days from the study by Powel and Watson (2006). Other reasons would come from lack of needed equipment (Powell & Watson, 2006) and relationship between Reception and Housekeeping (Faulkner & Partia, 1997). Faulkner and Partia (1997) discovered that urgent, simultaneous requests from reception to service rooms was one of the stressful aspects for the room attendants' job.

In terms of intrinsic satisfaction from work, room attendants were generally assumed that they view work as an essential means of earning money to satisfy extrinsic needs (Watson, 1987). Along with Weaver (1988) statement that little motivational strategies were applied to hourly paid workers in hotel industry since personal challenge, self-development and intrinsic satisfaction had no relevance to such workers. On the other hand, Locke et al. (1980) study found out that monetary incentives, changes in job design and goal settings were the major methods to increase motivation of workers; however, even though financial rewards had the biggest impact to improve work quality and quantity, it would tends to lose the power to motivate as the workers get used to extra pay and rewards (Powell & Watson, 2006).

Despite all the hardship, those work done by room attendants or housekeepers remained largely 'unseen' by guests and other hotel employees (Powell & Watson, 2006).
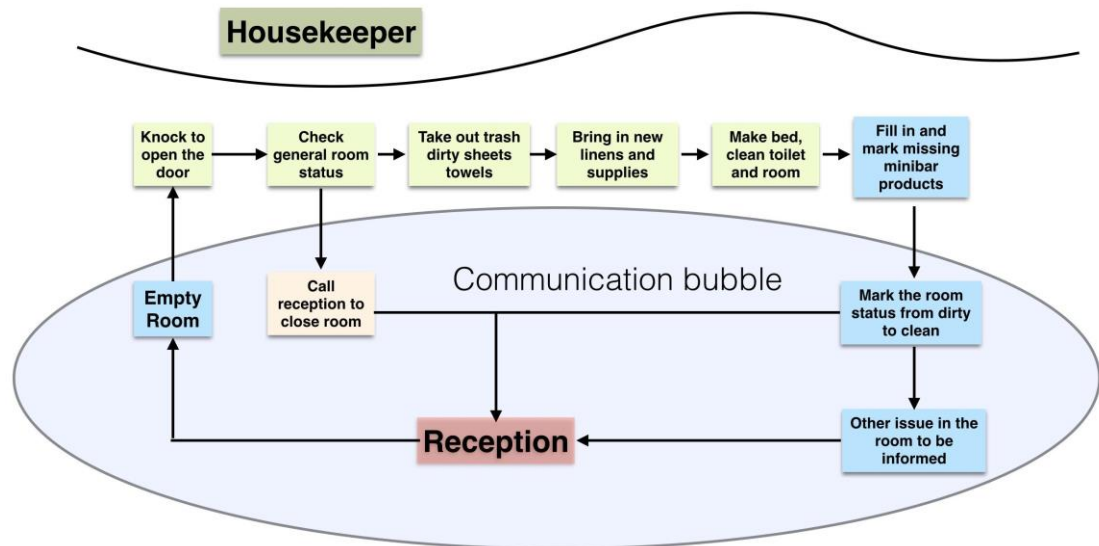
Figure 3 Housekeeping Workflow and Communication with Reception

In Figure 3, the housekeeping workflow for one room and the communication relationship between Housekeeping and Reception are visually represented. The figure only shows one part of the process, which means the process will be continously for housekeepers to clean one room after another. It is crucial to see the importance of the communication flow between these two departments. As the communication is enforced effectively, the more efficient and fluent the housekeeping work will be. Basically, when guests check out from one room, reception will inform housekeepers that the room is empty to be cleaned; then, after the room is cleaned, the housekeepers will inform to reception that the room is now clean and ready to go on sale for the next guests. The process goes on until all the rooms in the hotel are clean.

3.3   Digital Technology in Hotel Operation

According to Rutherford and O'Fallon (2007, p. 2), technology in the hotel business was defined as in the form of computers, communication, personal devices, and labor-saving mechanical equipment that had had a major effect on the way in which

hotels are managed and operated. Indeed, Information technology (IT) applications in the hotel industry had significantly contributed to the handling of the routine operational work while running a hotel (Law & Jogaratnam, 2005). In the study, Law and Jogaratnam (2003) found out that IT was utilized with an attempt not only to replace the existing paper system but also to boost customer services and to improve operational effectiveness. Indeed, the increasing demand for intensive information from customers and hotel professionals had led to the adoption of computer-based IT facilities to enhance operational efficiency, cut down the costs and improve the service quality (Camison, 2000; Cobanoglu et al., 2001; Siguaw and Enz, 1999; van Hoofet al., 1996). In addition, since the hotel industry was considered to be information intensive (Davis & Davidson, 1991), Olsen and Connolly (2000) stated that with the use of IT, hospitality organization's competitive profiles would be placed to a whole new level thanks to its exhaustive knowledge and information.

With a rapid change in the digital technology and computer sciences, the way of working and managing has also been changing in an overwhelming speed. The emergence of smartphones in 2007, and then tablets by the Apple Incorporation in 2010 as a pioneer had challenged the traditional way of working in various fields. By the end of 2013, it was estimated that 6% of the global population owned a tablet while 22% owned smartphones, which meant one in every five people owned a smartphone and one in 17 a tablet (Heggestuen, 2013). The tablets have rapidly become a vital part in the daily work. According to the CDW Tablet Poll (2012), a research carried out in business firms, healthcare services, higher education and state government shows that tablet users spent 2.1 hours daily on their tablet for work purposes, approximately gain 1.1 hours in the daily productivity, especially favoring the email, calendar and note taking functions as many as 84% of them said tablets made them better multi-taskers. The Euromonitor International in 2012 has made a prediction on the tablet sales growth particularly in the United States, which would possibly reach 27.5% over the next five years and mainly purchased by businesses (Grant, 2013).
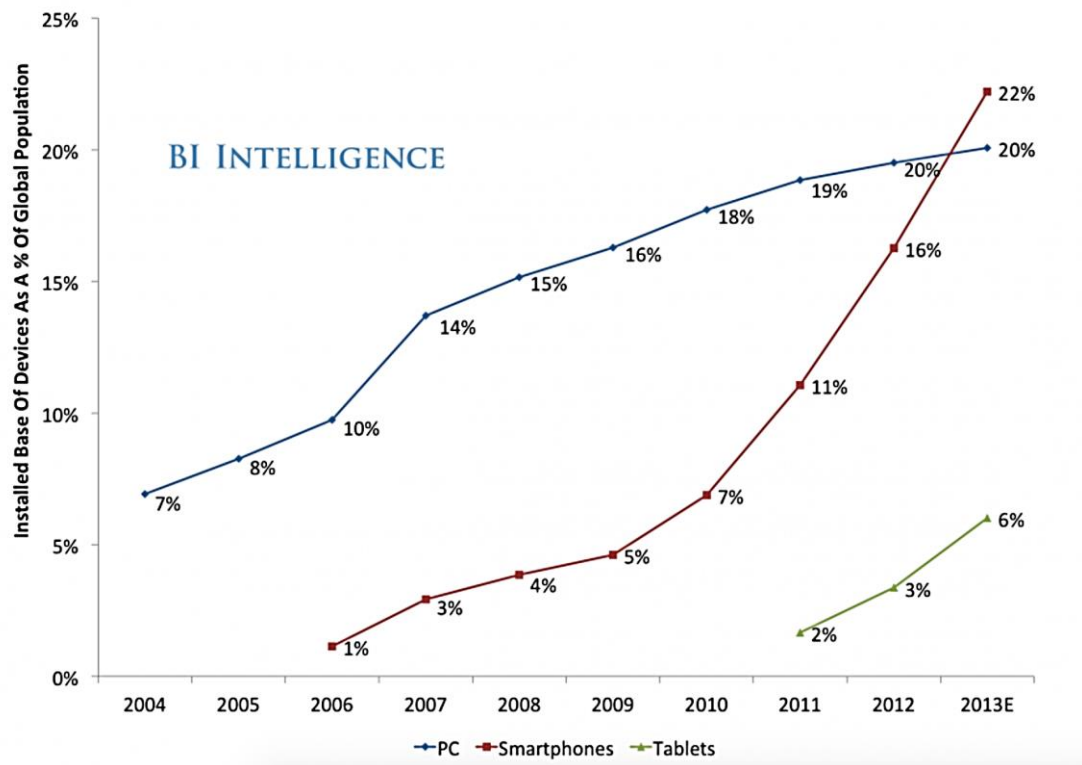
Figure 4 Global Device Penetration Per Capita - Adapted from Business Insider (Smartphone and Tablet Penetration, 2013).

Hotels and the hospitality industry are not exceptions. It is obvious to see that many leading hotels have acquired booking, check-in and check-out applications on smartphones and tablets for guests. Some have even integrated complicated entertainment system and loyalty bonus points the a single modest application. For instance, in the search results, the Apple App Store shows a great number of apps of famous brands namely InterContinental Hotels Group (IHG), Marriot International, Hilton Worldwide and Accor. Indeed, IHG reported its mobile revenue has reached 330 million US dollars in 2012, which made up to 9.7% of online revenues while Choice Hotels International stated in May 2013 that mobile bookings took up to 13% of its online sales (Grant, 2013). According to the Tourism Review (2014), the connections between customers and tourism businesses were largely influenced by the mobile technology; therefore, it is critical to understand the potential and positive effect of personalization and quick direct communications to create brand loyalty and customer relationships.

3.4   Housekeeping Application

Along with a change in direct services and virtual interaction with hotel guests, there has been an effort in changing the backstage work, even though it is not virtually visible to the public.

> *Hardware such as input terminals, microprocessors, disk drive components and printers and hotel software packages such as programs by which computers assimilate information, once thought to be out of reach of housekeeping personnel, have become part of the daily routine of housekeeping operations (Jones T. J., 2008).*

Housekeeping work has been apparently the most time-consuming and human-resource consuming processes in the hotel operations. Increasing productivity and efficiency has been the top priority, which would result in a big improvement in hotel operational performance. Therefore, developers have been thinking and designing such program to provide a better solution to it. Indeed, Jones T. (2008) confirmed that computers have become an important tool for housekeeping department to better and more efficient in information management.

In 1980s, the very first computer in housekeeping started to apply new technology called the 'telephone switch' system (ibid., p. 225). As installed in every room, it was not only helping to handle information but also be able to access the computer, which considerably reduced the cost of updating existing facilities due to additional wiring to every individual room. It meant that there is an interface connection between telephone system and the central processing unit (CPU) of the computer network so that the computer recognized the room number whenever an dialing of a specific sequence of numbers was made on the phone from that room (ibid., p. 225). With some special code, the information was displayed in Room Inventory as different categories such as Rooms Ready for Sale, Occupied Rooms Not Available for Sale, Rooms that were On Change (between departing and newly arriving guests) (ibid, p.226). Housekeeping central operations could make inputs into the system;

however, it was impossible for some status changes to be directly put from a guest room, thus status-board operator was called on duty and two-way radios were used in transferring the information among floor supervisors throughout the hotel. It was convenient that status-board operator could print out the status of all guestrooms at times during the day for instant information in particular section of the hotel or to review total room status for management (ibid, 227).

Having realized the importance of enhancing productivity and efficiency of housekeeping process, cleaning companies, information technology firms and hotels have been cooperatively working on such applications. Following the same concept of establishing a connection between rooms and the computer's CPU, TV-coding system has been set up in the previous decade, which is a part of the Property Management System (PMS). Instead of using telephone, television has become the replacement, from which housekeepers could navigate with a remote control. Room status and other information such as minibar consumption, maintenance notice, therefore, could be easily updated for reception or front office that use PMS to check the status of the whole hotel.

In the era of tablets, there has been a number of established names making such housekeeping application namely StaynTouch, FCS Hotel Operation Management; in Finland HiBox Systems and HoistGroup with Serviator. Nevertheless, the number of hotels currently applying such technology is not conclusive.
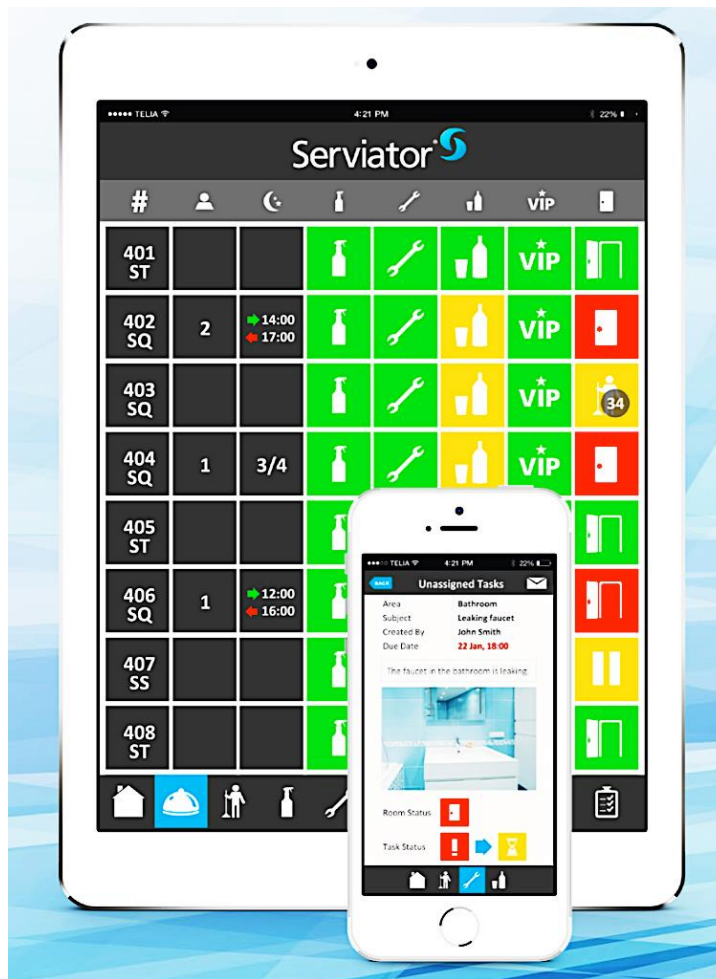
Figure 5 An illustration of Serviator - a contemporary housekeeping management application using tablets' interface - Adapted from Serviator brochure on the website

4   Methodology

Hotel housekeeping in general and room attendants in particular have rarely been the focus of academic research (Lennon & Wood, 1989), let alone the investigation on new technology application in the work process of hotel housekeeping. As the very first tablet, the iPad by the Apple Incorporation, has only been introduced since 2010, there has been even less research about its impact on different industries in general and especially almost nothing about applying its remarkable functions in housekeeping. In short, Serviator as a housekeeping management application is considered such a new phenomenon that it has not been thoroughly researched.

In order to better understand and explore such a new phenomenon as a housekeeping application using tablets for cleaners, a qualitative research method was nominated. Generally speaking, there are two major types of research methods, which are qualitative and quantitative research. Method classifications largely depend on the field of science, in which a qualitative method establishes and defines a phenomenon; however, only after some understanding of the phenomenon is acquired could quantitative research be applied. In short, qualitative research is regarded as the "Mother" of all research, meaning it has created the foundation of a phenomenon or research object for future studies (Kananen, 2011). It was noted by Trochim and Donelly (2008) that the less you know about the phenomenon at hand, the more probable is that only qualitative research is possible. Qualitative research is suitable when there is no knowledge, theories, or research results available on the phenomenon; then, the aim is to acquire a deep understanding of the phenomenon or to create new theories and hypotheses when triangulation, for instance, a mixed research strategy is applied, or the aim is to acquire a precise description of the phenomenon (Kananen, 2011).

While a quantitative approach is usually chosen to confirm a hypothesis or theories about a phenomenon using numerical data (Lincoln & Guba, 1985), a qualitative approach is designed to broaden the perspectives and meaning or interpretation about a complex and difficult to measure phenomenon, in this case, the users' experience towards an application at work.

4.1   Research Design

As the characteristics of qualitative research consists of studying things in their natural settings with the attempt to make sense of them or interpret them in terms of meanings people bring to them (Denzin & Lincoln, 2005), it is appropriate to apply a qualitative approach in this study. After having decided to undertake a qualitative research design, the author has undergone a number of choices of approaches, getting the sense of diversity by examining a number of varieties in different

disciplines or fields. Five qualitative approaches were thoroughly investigated including narrative research, phenomenology, grounded theory, ethnography and case studies (Creswell, 2007). Each of these designs has a different focus: while narrative research emphasizes on exploring the life of an individual, grounded theory seeks to develop a theory grounded on the data from the field, whereas ethnography describes and interprets a culture-sharing group, and case studies focus on developing an in-depth description and analysis of a case or multiple cases.

Among these approaches, it becomes transparent that phenomenology is likely to serve the best design since it assists the author to understand and describe the meaning for several individuals of their lived experiences of a concept or phenomenon (Creswell, 2007). According to Creswell (2997, p. 58), its target was to describe what all participants have in common as they experience a phenomenon and develop a description of "what" they experienced and "how" they experienced it (Moustakas, 1994). Phenomenology is a school of thought that emphasizes a focus on people's subjective experiences and interpretations of the world for the phenomenologist to understand how the world appears to others (Trochim, 2001).

There are two major types of phenomenological approaches to be discussed: hermeneutical and transcendental phenomenology. While in the hermeneutical process, researchers first turn to the phenomenon and in the process reflect on essential themes to make an interpretation of the nature of the lived experience; researchers applying transcendental phenomenology try to identify a phenomenon to study, bracket out one's experiences and collect data from several persons who have experienced the phenomenon (Moustakas, 1994). Following the transcendental phenomenology in this research paper, the author firstly gathered the data and afterwards reduced the information to significant statements or quotes and eventually combined them into themes (Creswell, 2007). As a result, textural and structural descriptions were formed, which meant describing what participants have experienced and how they have experienced respectively (ibid., p.59-60).

By understanding the experience of housekeeping staffs using the Serviator application as a new phenomenon in the operational management of a hotel, there is likelihood that it would provide a valuable discovery in the strengths and weaknesses of the applied technology; thus, the research paper would give suggestions for improvement. Additionally, the way technology application affect the way of working of housekeepers and their behaviors, reaction, and attitude towards innovative technology at workplace would be explored to some extends.

4.2   The Case of Solo Sokos Hotel Paviljonki Jyväskylä

The S Group hotels belong to two national chains: Sokos Hotels and Radisson Blu Hotels & Resorts (SOK Annual Report, 2012). Solo Sokos Hotel Paviljonki opened since 2012 in Jyväskylä is among one of the newest and most modern hotels of Sokos chain hotels. According SOK Annual Report 2012, the hotel offers "genuinely individualized hospitality", stating its key value is that each employee wants to be responsible, succeed and do good. Apparently, the executives of Sokos Hotel Group chain have made a decision on adapting Serviator - a housekeeping application as part of the strategy towards improving employees' working environment as well as promoting the modernized and contemporary use of new technology in one of the latest hotels in the chain.

The hotel consists of 170 rooms, with other facilities such as two restaurants, one of them called Trattoria Aukio Restaurant serving Italian style dishes, a brand new gym, swimming pool, common sauna with lake scenery, children play house, a golf simulator and an Exhibition Centre in the backyard. It is situated close to the train and bus station, a few minutes walk to the city center and mainly target business customers. In general, the building has eight floors in which customers' room are arranged between the second and seventh floor while first floor consists of reception area with the hotel restaurants and the top floor is dedicated to children play room, gym, common sauna and golf simulator room. In addition, the "underground" floor is mainly for storage, staffs' dressing room, an office and a kitchen for housekeepers.
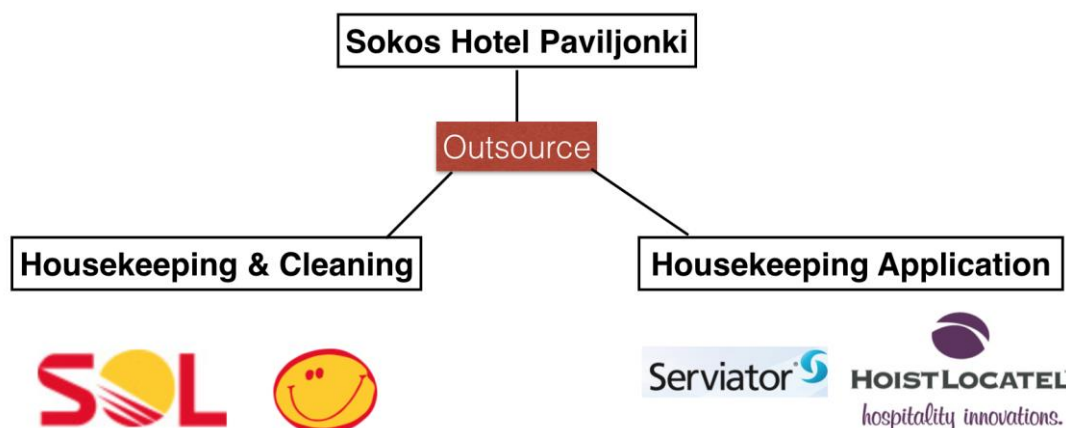
Figure 6 Hotel relationship with its partners in housekeeping

The housekeeping department in Solo Sokos Hotel Paviljonki is outsourced from SOL Pavelut Oy – a multi-service company. SOL Pavelut Oy is a Finnish family business that operates mainly in Finland, Estonia, Russia, Latvia, Lithuania and Sweden. It has over 11000 employees working in different services. Its vision is to become an outstanding service provider for customers, the best operator in the field of environmental issues for both customers and personnel (SOL Pavelut Oy, 2015). There are about 30 SOL employees working as housekeepers and cleaners in Solo Sokos Hotel Paviljonki.

The housekeeping application Serviator is adopted for housekeeping department in Solo Sokos Hotel Paviljonki from Hoist-Locatel™ – an Information Technology (IT) Company that claims to provide "hospitality innovations" through systems, products and services for hotels, health care and public operations (Hoist Locatel, 2015). On the website, it states that the company business concept is to offer complete solutions and systems, products and services that increase our customers' profitability. On the page introducing Serviator, it is defined as an online task manager that helps to plan, streamline and simplify work at the hotel that optimize hotel's operations. Serviator has main functions including real-time information on assignments, internal communication, manage tasks and fault reports, plan the work,

reports and statistics (Hoist Locatel, 2015). It has cloud access functioning through the Internet that provides a connection to the Property Management System.

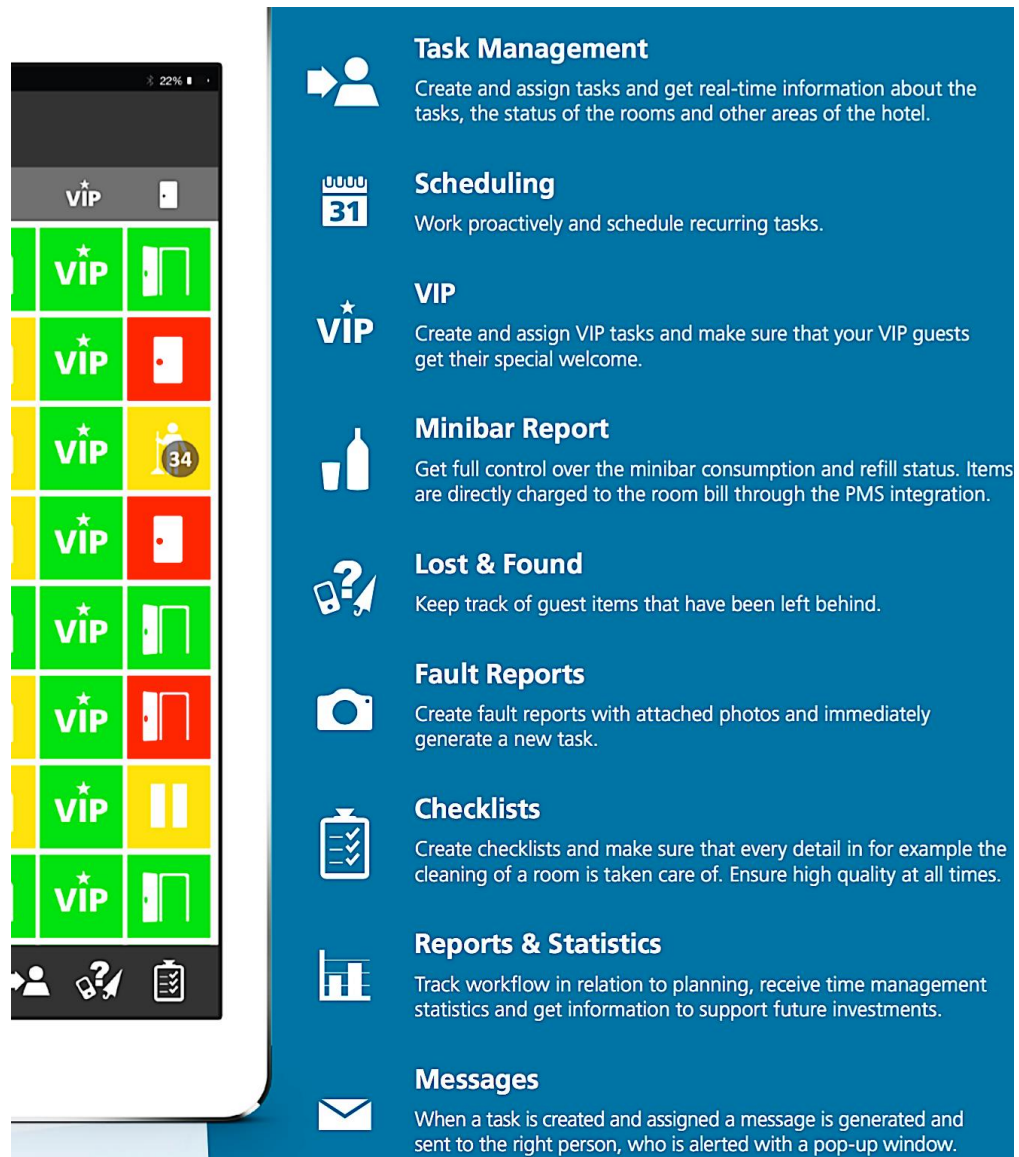Figure 7 Serviator feature profile – Adapted from its brochure on the website.

4.3   Sampling

Adapted from its brochure on the website. Due to the effect of research design and methods, in order to achieve the representative characteristics of a good estimates of the population, a sample of 5 housekeeper staffs, most of them work part-time were chosen to participate in this study (Malhotra & Birks, 2003). The inclusion

criteria were having experience with Serviator, 18 years of age or older, able to communicate in English. This sampling technique is regarded as non-probability or purposive sampling since there are "control characteristics" (ibid., 362-365). The purposeful sampling strategy is utilized in qualitative research in which researcher selects individuals to purposefully inform an understanding of the research problem and central phenomenon in the study; moreover, he or she decides who or what should be sampled, what form the sampling will take and how many people need to be sampled (Creswell, 2007). After that, in-depth interviews are conducted with the aim of achieving personal experience on using Serviator application. It is noteworthy that all the housekeepers here are female.

Table 1 Interviewees Demographic

Name	Age	Origin	Language	Background education
J	22	Nigeria	English, Finnish	Social Services
A	30	Russia	Russian, Finnish, English	Education (Bachelor)
R	19	Finland	Finnish, English, Swedish	Construction (Vocational)
S	19	Finland	Finnish, English, Swedish	Vocational
A	19	Finland	Finnish, English, Swedish	Business (Vocational)

4.4   Data Collection

There are two data collection methods to be conducted in this research. Firstly, observation is employed to gather field-notes as observer, which assists the author to perceive a general demonstration of the application as well as managing impression and preventing potential interviewees' deception later during interviews (Hammersley & Atkinson, 1995). After contacting the hotel manager, the author is allowed a one-hour appointment in the hotel to meet the hotel supervisor and head

housekeeper to have a demonstration session to get to know Serviator for the first time following by questions about the program for deeper understanding.

Secondly, data are collected from participants using in-depth interviews. All of the interviews were recorded and transcribed afterwards along with the interviewers' notes during the process. The interview is essentially semi-structured, meaning that there is a set of prepared open-ended questions, but new questions can be asked during the interview in case of new themes emerge (Semi-structured Interviews, 2015). These additional open-ended questions necessarily focus on gathering data that lead to a textural and structural descriptions of the experiences hat ultimately provide an understanding of the common experiences of the participants (Creswell, 2007). After the interview, the recorded audiotape along with the author's notes is meticulously transcribed for analysis.

With approval from Solo Sokos Hotel Paviljonki Jyväskylä and the representative of SOL Palvelut Oy as housekeeping manager, people who met the criteria mentioned above were approached and asked to participate. Interviews were conducted for approximately 30 to 40 minutes per person at the Hotel. The participants were asked to verbally respond to the following questions: "What feeling come to your mind when you think of Serviator? How would you describe Serviator? Do you have an image of Serviator in mind? How would you define what is Serviator? What is your experience with Serviator so far? Can you describe how you feel using the application every day? What meaning does it have in your work? What do you think or how do you feel about using tablets and new technology in your work as hotel housekeeping? How would you imagine about Serviator in the future? How do you feel about your communication and productivity using the app?"

In addition, background information such as age, origin, language speaking, education background, years of experience and past experiences was obtained as additional questions at the beginning of the interviews.

4.5   Data Analysis

According to Moustakas's (1994) procedure, there are several questions to be answered in order to analyze phenomenological study: "What statements describe these experiences? What themes emerge from these experiences? What are the contexts of and thoughts about the experiences? What is the overall essence of the experience?"

In general, the steps for data analysis in phenomenological research are fairly similar for phenomenologists who discussed the methods (Creswell, 2007). It has been outlined by first going through the collected data, for example interview transcriptions, highlighting important statements and expressions that contribute to the understanding of how the participants experienced the phenomenon; thus, the researcher establishes "clusters of meaning" from these remarks and finally incorporate them into themes (Creswell, 2007; Colaizzi, 1978).

Following this procedure, all transcripts are read several times to attain an overall feeling. From these transcripts, significant phrases and comments about Serviator are identified. Meanings are then formulated and clustered into themes that are commonly shared among the interviewees. Eventually, descriptions of "what" the participants in the study experienced with the phenomenon and "how" the experience happened are integrated in details as "textural description" and "structural description" as results.

4.6   Validation and Reliability

In qualitative research, the reliability and validity is based on the assess-ability and documentation, the consistency of interpretation, perhaps reliability from the in-formants' point of view or saturation (Kananen, 2011). Rich and detailed description is pivotal for readers to make decisions on transferability of "shared characteristics" (Erlandson et al., 1993, p.32). In this research, once descriptions and themes have

been acquired, the final step is to approach some participants a second time to validate the findings. If the relevant data emerge, they are included in the final description. This is considered to be the simplest way of ensuring reliability and validity since it involves the second interpretation of the person involved in the research (Kananen, 2011).

Lincoln and Guba (1985, p.314) has also argued this technique to be the most critical technique for establishing credibility as this approach involves taking data, analyses, interpretation and conclusion back to the participants so that they can judge the accuracy and credibility of the account (Creswell, 2007). In addition, triangulation method is implemented, in which multiple different data sources, investigations, methods and theories are combined in order to broaden understanding and support coded themes or perspectives (Erlandson et al., 1993; Lincoln & Guba, 1985, Creswell, 2007; Kananen, 2011).

5   Research Results

5.1   Observation

The observation took place at the Solo Sokos Hotel Paviljonki for approximately one and a half hours. The author had meetings with the hotel manager and the hotel supervisor in order to create the first impression, got to know the hotel organization and staff related to housekeeping and especially got to know the housekeeping application Serviator and its functions. A detailed description of Serviator was given and a demonstration was performed.

In general, Serviator is a web-based application, meaning all or some part of the program were downloaded from the web each time it was run (PC Magazine, 2015) or it was accessed over a connection using the Hypertext Transfer Protocol (HTTP) rather

than existing within a device memory (Techopedia, 2015). Therefore, it was unnecessary to install the program and the reception, housekeeping supervisor and housekeepers could access on the same interface through the Internet. The housekeeping department dominantly used the application while the reception claimed that they occasionally used it, only with the purpose of checking the Room Status in case it might not show correctly on the Property Management System (PMS) Opera - the program that the Reception mainly used. Its interface was designed with a number of columns of small squares, which had different colors to show different meanings. For example, if the room was clean and ready for sale, the square color became 'green' while 'red' indicated that the room was unavailable or dirty, and 'yellow' meant the room required checking. Serviator had five main features, including Room Status, Maintenance, Special Cleaning, Minibar and VIP Room; thus, mainly utilized in the day shift where the housekeepers cleaned the rooms.

To go deeper in each function, Room Status was basically meant to inform users of the room status were in the hotel. Maintenance was useful when there was something out of order in the room, housekeepers could inform and take some notes for the repairman to come and fix the problem. Special Cleaning was a feature for the housekeeping executives to inform housekeepers of what kind of special, or occasionally additional cleaning for a particular room or rooms was needed. The minibar function was a tool to record what the guests consumed in the rooms and to inform to reception for billing. 'VIP Rooms' was a function where special requests from guests were recorded such as extra beds, baby beds, pets, etc.
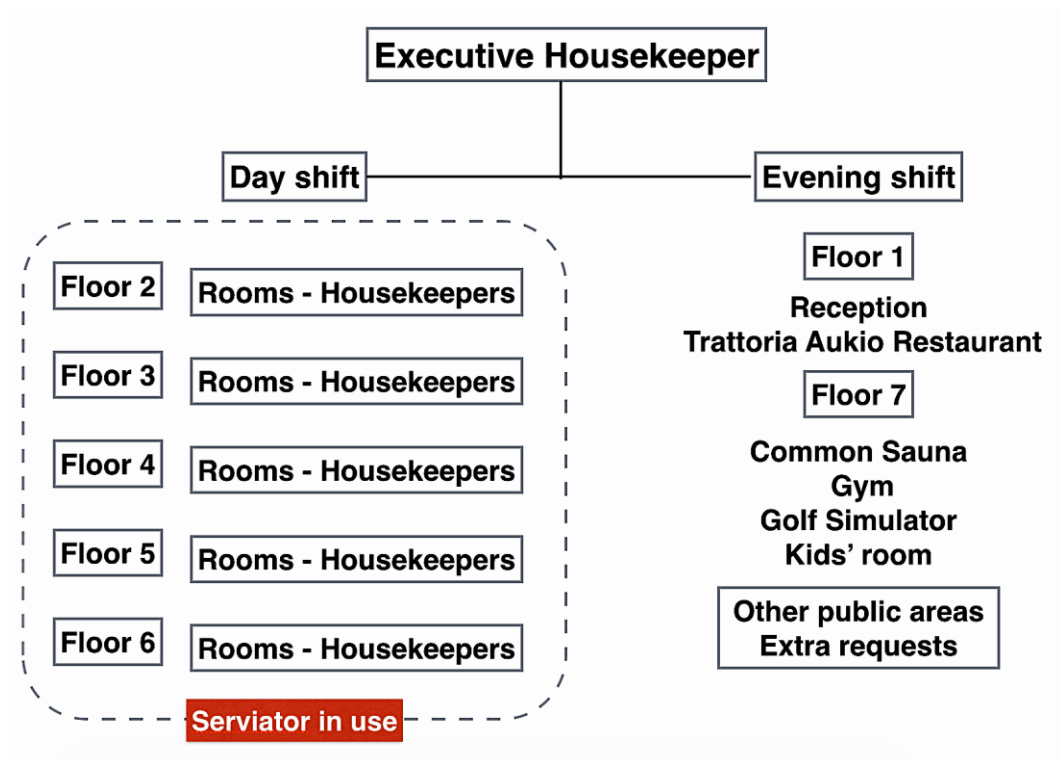
Figure 8 Housekeeping Departments at Solo Sokos Hotel Paviljonki

Nevertheless, at the Solo Sokos Hotel Paviljonki, the two functions mostly in use were Room Status and Minibar. The reason for other functions not fully in use was currently unclear. The communication between the reception and the housekeepers more or less still relied on notes and phones. Since the 'VIP Rooms' feature was not taken advantage of, the reception had to print the list of rooms with guests' requests daily from the PMS Opera for the housekeeping department. In addition, phones were used to call during the day in the case of a breakdown of the system or the application as well as in the case of emergency situations.

5.2   Interview
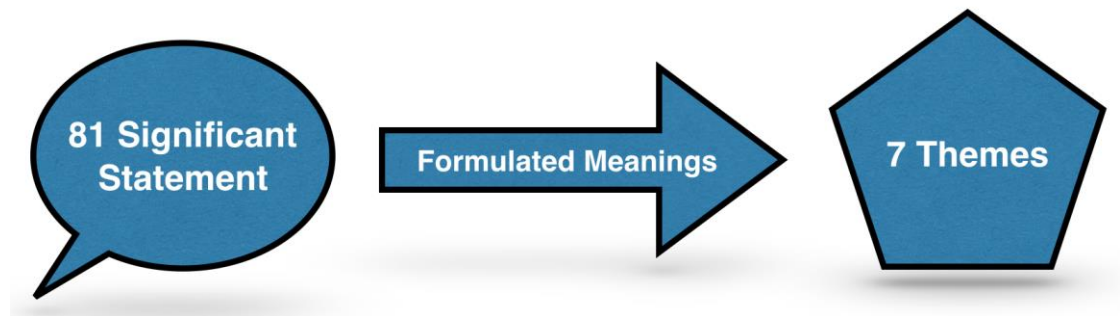
From 5 interview transcripts, 81 significant statements were cited. Table 2 consists of examples of significant statements with their formulated meanings, which afterwards, clustered into 7 themes as shown in the Table 3 as two examples.

Table 2 Selected Examples of Significant Statements and Formulated Meanings

Significant Statement	Formulated Meaning
It's very simple looking; it's easy to see what information it has. It just shows which room has checked out and you can see if the room is staying more than one night, which one will be moving on.	Serviator is well designed and gives comprehensive information about the rooms
If there is something in the room broken, it's a red one and you can put in the box for example, TV is broken, and someone will see and they can send someone to fix it.	It is possible to communicate with other department such as maintenance using the program
It's very important because if they get the information quickly we can sell the rooms and everything goes smoothly like customers are happy, everybody is happy.	Serviator is an essential program that helps to improve information flow in order to maximize productivity and acquire customer satisfaction
It makes our jobs easier and it's nice to have some technology in cleaning also. It's a smart idea and it makes our work interesting. It was a bit shock when I saw the tablet on the first day work, like "why do we have that here?" then I understood it and it's good.	Serviator is a new phenomenon in cleaning work that motivates housekeepers to work

Table 3 An Example of Two Theme Clusters With Associated Formulated Meanings

Theme 1 An Essential Application
Essential application to maximize productivity
Things get messy if it does not work properly
Impossible to work effectively without it
Creates an easy connection
Avoid unnecessary repetitive, time-consuming process

Theme 2 A Simple and Easy to use Application
Easy to use without a lot of things to remember
Using color-coding to distinguish room status
Much more convenient to work than with papers and pen
Easy to learn for people of all ages and groups

Theme 1: An Essential Application

Serviator was acknowledged as playing a major part in the working process as house-keepers confirmed it helped to do their work and made the work easier. They said it was impossible to work without Serviator. It was big part even though they could use papers instead, however, it was much easier because they could check if the clients had already left. It was hard for them to imagine what it would be without Serviator and stated that "we need it and couldn't work without it" or it will get messy. One housekeeper even emphasized on the indispensability of Serviator by having realized the connections between their work and customer satisfaction when everything goes smoothly, customers are happy and everybody is happy. "It's a program we use to control our work and make it easier to do all the work."

Theme 2: Simple and Easy to Use

As frequent as it could be, Serviator under housekeepers' impression was a simple to learn and easy to use application. Normally the first thing came to their mind when they were asked about Serviator is "it's easy to use", "simple", "handy", "good and

convenient". In this theme, they expressed their general impression of Serviator, including the design, the appearance, the way information was presented and the level of difficulty while interacting with the application. Most of them described the application with color coding design and illustration that assisted users to distinguish different status: green as clean, red as dirty, and yellow with question mark as need checking. They stated that the colors helped them see and understand what it meant.

> *There are all these rooms and little boxes that say if the room has customers inside, then "the door is closed" or if the clients have left then "it's open", if it is not cleaned, it is red and if it's clean, it's green. And if there is a cleaning lady inside or the room has some problem, it is yellow and has a question mark on it.*

One housekeeper said it was nice because it was simple so you did not have to remember a lot of things. The housekeepers understood that with the iPad, "you just go touching it and just click" rather than having to write down many things on papers with pen. Another recalled "it's easy to code when the room was ready", "it did not take a long time" without having to "remember a lot of things so that you could use it". One housekeeper even emphasized that its simplicity was key because housekeepers might be people from different ages and coming from different backgrounds, which might cause difficulty in learning and working due to language barriers and ability to adaptation.

> *It's simple, simple to learn how to use it because you know we have people from all ages, groups… you know not everyone is young here so it's like it's very easy to learn, and that's very important. And myself, I'm really not good with all of those new gadgets and stuffs so it's very easy if I could learn and use the Serviator.*

The design of the application, or the user interface, was complimented by most of the housekeepers. Everything, the rooms, the floors, how the information was presented on the iPad was really easy and well done. They did not expect big change in this aspect as long as it would be even simpler. Another evidence for its straightforward and uncomplicated design was that it required short period of time for basic training on how to operate the application. Usually the training took one to three

days, which was fairly short in such a multi-task manual-labour work; however, train-ees did not learn everything at once at the beginning but were rather left to learn on the go.

Theme 3: A Convenient Source of Information

The housekeepers at Solo Sokos Hotel Paviljonki considered Serviator as a great source of important information. First and foremost, it was easy to see what infor-mation it had, whether guests were still inside or had already left, the number of people staying in a room and the length of their stay. Besides this basic information, it also indicated in the application whether the room had a shower or a bathtub. This was especially important since the housekeeper would be able to prepare in advance the supplies that he or she need to bring in. It was also shown in the application the different between the ones that guests were going to leave on that day and the ones that were going to stay, respectively known as "due-out" and "stay-over".

> *With this program, we can see all rooms in the hotel. When I worked in 7th floor, I can see how many rooms we need to clean for example on the 5th floor. I don't need to go there to know, I can see everything there on the iPad.*

In short, Serviator provides a comprehensive information system for housekeepers to support them in their work. Apparently, the information about whether or not the customers were still inside the room happened to be a profoundly convenient solu-tion for the housekeepers to avoid many awkward situations for both parties. As one housekeeper explained:

> *The best information is to know how many people in the room and whether or not we can come or not to clean the room. I don't have to go to the room and ask, "Can I clean?"*

Theme 4: Just an Application with its downsides

In this theme, the housekeepers cognitively represented Serviator simply as "an iPad, just click", "a system", "a program we use to do the work", and "just a program we

use it and we need it". Some described that it was handy and made the work easy. Many stated that the application is a program with both its positive and negative sides. On one hand, it was easy, on the other hand, it brought some difficulties. They understood that when it was not working, the information of clean and dirty rooms did not go from the cleaners to the reception and vice versa, and sometimes technical problems made things a little bit hard, and it could get messy.

There were a number of problems that were divided into three main categories: technical problems, feature problems and human matters. Technical problems were mainly about the connection between Serviator and the PMS Opera and the Internet disconnection. Sometimes the application just stopped working, and it was unable to code the room or something strange happened, mostly referred as a connection disruption. When technical problems occurred, there was a communication breakdown and a loss of control throughout the hotel that required time and outside support to work again.

> *Sometimes there is some problem that it just doesn't work. There are many floors and you can see it from the tablet that okay, 7th floor there were 20 rooms not cleaned, and you have done your floor so we know if other floor needed help, but now everyone is calling to one another like "Do you need help?" and then we don't know that if they (reception) send customers into the room because they were all red.*

It was especially stressful on busy days.

> *Like last Friday, we had lots of rooms and the Serviator stopped working so it's really a problem then because we don't know what to do, we can't put what the customers have taken from the minibar in the Serviator so we have to write everything down, and when it started working again we need to put them. It's annoying when you have a lot of rooms and it stops working.*

Besides the technical problems, there were several feature issues that had been addressed. For instance, the messages for the maintenance of broken things in rooms once sent cannot be seen afterwards, causing a sense of losing control. Another issue was that there were no editing options if the minibar consumption was wrongly

coded on the Serviator. During observation, the researcher had noticed that paper version were still in use in the process. It turned out that there was a lack in the capacity of showing arrival rooms function, which meant that all the priority rooms were not shown in the application, and housekeepers had to check on the paper version for such information.

> When you have the room as yellow with question mark, then there should be somewhere to read what's wrong in the room because now we don't know and we can't see what's wrong in there. It's just yellow, so you just don't know what's wrong with that. There is a place for the yellow box where you can write things (messages) but it goes straight to someone who is going to fix it and you don't get to see what's the problem in the room when you coming to clean the room the next days. You don't know what' wrong and you can't read it anywhere, either.

The papers were also used to mark down the name of an individual who had cleaned a number of specific rooms for the purpose of keeping track of housekeepers' productivity during the day; nevertheless, Serviator did not provide any of such functions. It also showed a lack of instant communication in the application in case of emergency where phones were utilized for the communication of reception and housekeepers. One housekeeper also noted the lack of highlight between due-out rooms and stay-over rooms since the cleaning process for such rooms was totally different and could be easy to lose track on tiring days. More notably, even though there was a VIP-Room function where extra requests from guests could be separated, at the Solo Sokos Hotel Paviljonki Jyväskylä the function was not in use.

Last but not least, it was the human matters on using tablets and the application in the housekeeping process. Many housekeepers had mentioned the disturbance caused by the tablets going out of battery. It was frustrating when the iPad battery ran out since it took a while to charge and re-installed it. They also acknowledged that the problem was due to their forgetfulness and claimed that it was their responsibility to eliminate the problem.

Theme 5: A Communication Tool

Full some housekeepers the application was regarded as an indispensable communication tool. They understood that when the application was not working the information flow on cleaning room and dirty room between housekeepers and reception was interrupted. They also realized the relationship between productivity and the speed of information flow. It was quicker with the app because it could transfer messages in a matter of seconds compared to writing down everything. It was obvious to them that the application was a convenient tool to communicate with other departments such as the reception and the maintenance.

> *When I use the program, of course it changes my productivity because it saves time. When I finish cleaning one room, I just need to touch the screen to make it "green" and I can continue my work in the next room without going to the reception to tell them. The reception then can sell to customers that room.*

> *This is good program because in the room if there is problem like shower is broken, we can write a message in this program. And then the repairman see that message, he can go and fix that.*

They assumed that when using the program that productivity was improved because it saved time. After the cleaning one room they just need to touch the screen to continue to the next room without having to go to the reception or call them to inform. Thanks to the application it was possible to eliminate unnecessary repetitive and time-consuming process in terms of communications and information exchange among housekeeping, maintenance and reception.

> *Of course we have phones but that (Serviator) is the easy connection because we don't have to always say that 'this room is clean'. It's like we just put it in there and they see it, so there is no problem or a big deal, and so it's easy to have the connection with them in here.*

> *If there is something in the room broken, it's a red one and you can put in the box (message). For example, TV is broken, and someone will see and they can send someone to fix it.*

Theme 6: A Meaningful Application

When housekeepers were asked about the meaning of Serviator to their work, most of them agreed that it was very useful and important part of the process that helped them to plan, organize and control their work. It gave them a sense of direction and management as "you can see what is going on", "what we have done and we haven't done".

> *It's like the biggest part of it so that we can organize our work, we can plan it because if we wouldn't have it, it would be a mess, but if we could just see the rooms which are free, we can make a plan in your head like what's going next, and then these (rooms) are free so I'm going to take it in one hour.. So it's very meaningful.*

> *You can make a plan like if I had to clean 12 rooms, so I can start with this one and then two rooms that have to be cleaned at 2pm so I can choose from Servitor that these (rooms) I'm going to do next. And then, if it wasn't free, I'm going to do that in the end.*

Serviator application, more or less, played a part in boosting housekeepers' motivation. One of the housekeepers even mentioned color presentation somehow encouraged her to have the work done by mentioning it made them move on and when it was all green, it meant they could go home. They acknowledged that even though sometimes it did not work, they still prefer the electronically way of doing everything and they did not want to use the paper work and it made their jobs easier and it was nice to have some technology in cleaning also. "It's a smart idea" and it made their work interesting.

More interestingly, according to one housekeeper, it was a good idea to take advantage of using new technology in housekeeping process to establish a marketing image for the hotel since "we can introduce the hotel as a modern one that use modern technology".

Theme 7: A New Technology Phenomenon at Work

Although the idea of using tablets at work seemed to be neutralized nowadays, it was still considered to be a new phenomenon in manual labour work such as house-keeping. Most of them came to terms with using the iPad with Serviator without much surprise, but some realized their first impression on their first day.

> *It was a bit shock when I saw the tablet on the first day work, like "why do we have that here?" Then I understood it and it's good.*

Along with the experience with Serviator during the time working at the hotel, some housekeepers showed their related expectations in the future. Most of them were optimism, carrying a number of hopes in improvement in the application functions and the possible minimization of technical issues.

> *Maybe it could have the things that we have on the papers, like you could write your name on the tablet also, that would be nice, and the extra beds in the tablet also so we don't need the papers anymore.*

In addition, one housekeeper expressed her aspiration of the application possibility for expansion in the future, as "I'm not sure which kind of program they have in other hotels but I think Servitor is very useful and I hope I could see it in other hotels too."

6 Discussion

In this study, housekeepers having experience of the housekeeping application Serviator focused on the feeling of easiness and simplicity when they were using the application including its setback when the program was not functioning as expected. The initial response was their first impression of the easy and simple interaction, even though most found it hard to recall and describe in details. Housekeepers seem to focus on the autonomy of the cleaning work rather than paying attention to the application characteristics and critically think about the pivotal role of the program in their work. A few housekeepers only had a vague opinion of the established

connection between housekeepers and other departments thanks to the application, only assuming that workers from other departments such as reception and maintenance could see the information on the application as they did. Moreover, there was a lack of housekeepers' interest in expecting feature improvement of the program that would actually be beneficial to their work even though most housekeepers figured out that there were some parts of the program that could be fixed and enhanced to meet their work characteristics.

More importantly, the application failed to fulfill some needs of the housekeeping management. This might be due to the IT Company and their limited knowledge of the housekeeping process and management that caused a gap. It is commonly known as service quality gap, in which the IT Company does not have adequate knowledge of the nature of housekeeping management. In terms of a housekeeping job, it is hard and labour demanding work in which the workers' productivity is key. Workload division and individual productivity monitoring play such a critical role in housekeeping management. The lack of understanding this resulted in a gap in their service provision in the program for the management process of the housekeepers.

Another finding in this study was discovered in the course of the author's observation and partly revealed in the interviews. As mentioned previously, the housekeeping application has five main functions, in which the "VIP Rooms" feature was not in use. The "VIP-Room" feature is capable of storing information of the guests' special requests such as extra beds, baby beds, allergy notices, etc. Although such an important and useful feature has been considered, it was not fully exploited in the hotel. Currently, the task division papers were used in order to inform those requests to housekeepers for them to prepare for the rooms accordingly. The reasons for not utilizing the feature remained unclear.

In conclusion, the thesis explained the impression and experience of the housekeepers using the housekeeping application on tablets. It was not only

essentially contributed to other information technology development researches in terms of applying new technology devices and programs in the workplace, but also critically revealed the strengths and weaknesses of the application. The paper version proved that the housekeeping application Serviator was a new technology phenomenon at work. Nevertheless, it was essentially indispensable and meaningful to assist planning, organizing and controlling the work. It was regarded as simple and easy to use, providing a great deal of information about the rooms and their conditions apart from serving as a communication tool among the hotel departments. Ultimately, it was a program with its downsides such as technical and feature problems. The technical problem was the disruption in communication while the feature problems related to room information control and housekeeping management aspects.

Recommendation

With regard to the entire setback mentioned above, it is recommended that the IT company takes this research paper into great consideration in order to make appropriate upgrades to the application to improve the users' experience. Technically, it is suggested that the connection should become stronger with the Property Management System in order to minimize the disruption in the process. More importantly, the management tools for the executive housekeepers should be developed with a special emphasis on the workload division and productivity measurement in order to better manage human resources.

For hotel managers, it is important to take this thesis paper into great consideration to make wise decisions on understanding the fast-pace trend of using new technology in housekeeping management work; therefore, searching for an effective method to successfully integrate new technology and improve the way of working should be contemplated. It is a great challenge but also a remarkable opportunity to gain competitive advantages in the market in terms of productivity and the employees' satisfaction at work.

Research Limitation

This research paper could be considered valid as meaningful matters of the housekeeping application were researched with the aim to discovering and providing suggestions for improvement. The reliability of the research was certified through the similarity in interpretation as well as similar issues were collected among five interviewees.

Nevertheless, there are a number of research limitations in this study. First and foremost, a language barrier was inevitable. While the interviewers' and interviewees' mother tongues were not the same, it would cause some variations in expressing the meanings and interpretations in English. Some even found it hard to explain what they meant in English, possibly because they were not at the same proficiency level.

During the implementation process, the author realized a limitation in the semi-structured interviews. In semi-structured interviews, a set of prepared open-ended questions was established but new questions could still be asked during the interview in case of new themes emerging (Semi-structured Interviews, 2015). The questions were planned with a good frame in order to achieve meaningful results, however, the answers were still narrow and gave little information.

Thirdly, the author could also have interviewed also executive housekeeping supervisor and more housekeepers. From the executive supervisors' perspective, it might produce more information on the matters while more interviews with housekeepers could provide more information and possibly generate more precise results. Nevertheless, due to the lack of time this could not be achieved.

Future Research

Since all the functions of the housekeeping application were not in use in practice, it would be worth investigating into the roots of the reasons for that. This paper only recognized that there existed unclear issues that prevented hotel managers from applying the full capacity of the application despite the strengths and weaknesses of the method. Moreover, this research could be the foundation for future studies measuring housekeepers' productivity and motivation changes while working in a technology-enhancing environment.

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