MANAGERIAL GUIDANCE FOR APPLYING RFID IN THE TOURISM INDUSTRY

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Abstract
Companies in the tourism industry can use radio frequency identification (RFID) for a wide range of applications to enhance their operations and marketing and help provide new and improved services for guests. Motivated by examples of RFID use by hotels, resorts, cruise ships, amusement parks, and festivals, this paper offers managerial guidance on avoiding pitfalls and taking advantage of opportunities when developing and executing RFID strategies. Among the practical issues discussed are the leveraging of investments through the deployment of multiple applications, the need to change processes to effectively use and support RFID, application ease of use and robustness, guest and staff privacy and trust, public perception, human factors, and potential challenges when applying the technology. This synthesis of issues and guidance should be useful for both practitioners and future research.

Keywords: Radio frequency identification, RFID, Tourism, Operations management, Technology

1. Introduction
Radio frequency identification (RFID) tags have a number of advantages over bar codes for identifying people and objects. Multiple RFID tags can be read nearly instantaneously, without human intervention, even if they are inside of pockets or items (O’Connor, 2007a, 2008a; Wyld, 2008). Tags embedded in wristbands or plastic cards are less likely than paper bar code labels to be damaged by grime, tearing, abrasions, and water (O’Connor, 2008a; Wyld, 2008; Wasserman, 2011). Some types of tags can have data written to them multiple times (Öztayşi et al., 2009). The enhanced capabilities and data collection made possible by RFID’s numerous advantages can improve both operations and marketing (Lee et al., 2008; Gambon, 2009; Swedberg, 2010c).

Despite the advantages of RFID, not much academic research has examined RFID applications specific to service environments (Heim, 2009), and even less has looked at the use of RFID in the tourism industry. For example, Ngai et al. (2008) and Liao et al. (2011) discussed a wide range of RFID applications, from animal detection to solid waste management, but those two literature reviews only briefly observed that RFID could be used in museums and casinos. In the Ferrer et al. (2010) study of RFID applications in services, theme park visitor location services and industrial laundry management were most relevant to tourism. The RFID literature review of Zhu et al. (2012) had a paragraph about travel and tourism that included five academic and practitioner citations related to passports, museums, ski resorts, and a prototype tour system.

A few academic articles more focused on RFID use in the tourism industry have been published in recent years. For example, Wyld (2008) focused on managerial and guest issues related to RFID use in casinos. Öztayşi et al. (2009) listed several tourism applications and presented a hypothetical case study of RFID use at a hotel. Véronneau and Roy (2009) described how RFID could be used to improve inventory control and reduce labor in cruise ship supply chains. Hozak (2012) classified the benefits that can be achieved from a wide range of RFID applications in tourism.
This paper highlights practical issues concerning RFID’s use in the tourism industry and guides managers in how to better apply the technology. Both pitfalls and opportunities are identified in order to help companies develop and execute their RFID strategies. Practitioner sources are referenced to more richly illustrate the discussion because few academic articles that are based on in-depth primary research of actual tourism applications have been published. Although most of this paper’s examples describe how RFID is used by hotels, resorts, cruise ships, amusement parks, and festivals, many of the practical issues and much of the managerial guidance are also relevant for other industries and should be useful for future research in additional areas apart from tourism.

2. Managerial Guidance for Applying RFID in the Tourism Industry

Table 1 highlights the key suggestions for applying RFID more effectively in the tourism industry. The subsections following the table elaborate on each of the points.

Table 1: Summary of managerial guidance for applying RFID in the tourism industry

<table>
<thead>
<tr>
<th>Leverage investments by deploying multiple applications (section 2.1)</th>
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<tr>
<td>• Leverage investments by deploying multiple applications that help achieve economies of scale.</td>
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<td>• Consider the trade-offs associated with different technologies when choosing an RFID architecture that will let future applications build on existing infrastructure.</td>
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<td>• Invest in standards-based technologies to facilitate integration and leveraging of hardware, software, and staff skills.</td>
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<tr>
<td>• Creatively use RFID in both the front and back office and for applications that are not traditional core tourism processes (e.g., using RFID to integrate the real world with the virtual world of social media).</td>
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<tr>
<th>Change processes to effectively use and support RFID (section 2.2)</th>
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<tr>
<td>• Obtain top management support.</td>
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<td>• Change operations, marketing, and accounting processes to support and take advantage of the technology.</td>
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<tr>
<td>• Ensure that the changed processes are correctly and consistently executed.</td>
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<td>• Realize that using RFID to reduce theft may be unexpectedly difficult over the long term.</td>
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<tr>
<td>• Know that using RFID to improve one bottleneck may uncover other bottlenecks that also need improvement before substantial benefits are seen in the system.</td>
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<th>Make applications easy to use, test them, and understand design trade-offs (section 2.3)</th>
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<tr>
<td>• Make sure that applications are tested and easy to use.</td>
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<td>• Consider design trade-offs when evaluating the various ways to implement RFID applications.</td>
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<th>Consider privacy, trust, and public perception issues (section 2.4)</th>
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<tr>
<td>• Realize that guest responses to RFID will be affected by their demographics, the nature of the applications, the value the applications offer to guests, and how a company communicates to guests about the applications.</td>
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<td>• Communicate and execute policies and procedures that ensure guest and staff trust and support.</td>
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<th>Account for human factors when applying RFID (section 2.5)</th>
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<td>• Understand that just because something is technically possible using RFID does not mean that it should be done.</td>
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<td>• Do not inadvertently eliminate valuable uses of the “human touch.”</td>
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<tr>
<td>• Use RFID to automate both back-office and select front-office processes where the presence of staff does not enrich the guest experience.</td>
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<tr>
<td>• Use RFID to improve guest interactions with one another, social networks, and staff.</td>
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<td>• Do not use RFID data to micro-manage or detract from enjoyable characteristics of the guest experience.</td>
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Companies in the tourism industry have employed RFID in a wide variety of applications (Hozak, 2012). The technology has been used for inventory control and tracking of alcohol (Swedberg, 2008, 2011b; Wasserman, 2011), pool towels (Welch, 2011), linens (O’Connor, 2007c, 2009b), uniforms (O’Connor, 2008b), costumes (Swedberg, 2012), and luggage (NEC, 2008). It has helped reduce waiting in line at hotels (Kugler, 2011), resorts (O’Connor, 2008a), cruise ships (Cruise Critic, 2011), and terminals (NEC, 2008). RFID-tagged cards and wristbands have facilitated more convenient purchasing at water parks, resorts, and cruise ships (Goldhaber, 2011; Wasserman, 2007, 2011). The technology has made it easier to find people on cruise ships (Swedberg, 2010b) and at amusement parks (SafeTzone Technology Corporation, 2002) and ski resorts (Vail Resorts, 2010). Using RFID for personal identification helps employees greet guests by name and serve them better (Wasserman, 2007), track and report guest performance for games and competitions (RFID Journal, 2002; Contagious, 2010), cross-reference guests to pictures taken by company photographers (Goldhaber, 2011), automate messages on signs to give personalized guest directions (Event Solutions, 2007), and automate social networking posts (Bast, 2011; Carr, 2010; Contagious, 2010; Swedberg, 2010c; Vail Resorts, 2010). The data from RFID have been used to improve marketing and operations that benefit both companies and guests (Gambon, 2009; Swedberg, 2008; Hozak, 2012).

Companies can leverage their RFID investments by strategically deploying multiple applications based on common hardware and software infrastructure and staff competencies. For example, resort guests could use the same RFID cards or wristbands to open room doors, make purchases, enable self-serve drink dispensers, gain access to storage areas, automate Facebook posts, and more easily find meeting rooms and one another. RFID tags used to track uniforms could also grant authorized staff access to rooms and to identify opportunities for process improvement based on staff movement through company facilities. It may be possible to use the same readers for tracking inventory and tracking guests or staff. Investments to support RFID applications could support additional applications that are not RFID-related and vice versa. For example, a cruise ship created a guest location system that uses iPhones and RFID tags that communicate through the same Wi-Fi network used for some of the other systems on the ship, and the same iPhones can also be used to make reservations at on-board restaurants and spas and receive notifications that restaurant tables are ready (Swedberg, 2010b).

Companies may be able to leverage the RFID investments of their supply chain partners in addition to their own. For example, a company that rents and launders RFID-tagged linens uses them with an automatic laundry sortation system to reduce labor, increase capacity, eliminate errors in its orders and inventory, and improve customer service (O’Connor, 2007c). Its customers receive benefits regardless of whether they use RFID themselves, but if they opt to place readers in their own facilities, they would be able to perform their own internal tracking (e.g., for loss prevention, linen closet management, uniform check-in/check-out) at a much lower cost compared to tagging each of the items themselves.

Different cost and performance characteristics are associated with the various fixed frequency ranges used by RFID tags and readers (Gambon, 2009; Swedberg, 2011a, 2011c). Companies should carefully consider both current and future applications when choosing a system architecture in order
to balance the goal of leveraging investments in common infrastructure with the desire to use a wider range of technologies that might provide better solutions for specific applications. Even if relatively little hardware is used in common across applications, it may be possible to leverage common software infrastructure (e.g., middleware for filtering the data) and information technology (IT) staff skills related to RFID. Using technologies based on standards (e.g., from organizations such as GS1 and EPCglobal) makes it easier to integrate and leverage investments (Edwards, 2012; Roberti, 2012).

Companies should not limit themselves to applying RFID to just the front office or just the back office or to only enhancing traditional core tourism processes. Guests at a series of festivals in Israel used RFID-tagged wristbands that were cross-referenced to their Facebook accounts to automatically post messages about attractions they liked at the festival, and festival organizers used information from the tags to know how many guests were in the park and in the cafeteria so that they could organize meal preparation accordingly (Swedberg, 2010c). A water park resort chain that was a pioneer in deploying systems that allowed guests to use RFID for unlocking doors and making purchases is further innovating by using RFID to help guests automate the posting of pictures on Facebook (RFID Journal, 2011). The Vail Resorts CEO said that “…resorts need to think about digital and social media-based offerings the same way they think about the restaurants, ski shops, and ski schools they set up on the mountains. ‘The digital experience is going to merge with the real-world experience,’ he says, ‘and [guests] are going to start thinking about both.’” (Boyd, 2011) The wide range of applications for RFID helps companies stay ahead of the competition by offering many opportunities to creatively leverage their investment even after the initial application is implemented.

2.2 Change Processes to Effectively Use and Support RFID

As with other technology investments (Carr, 2004), companies need to take advantage of process changes enabled by RFID (Hozak and Collier, 2008). This will often require top management support to ensure sufficient resources, cross-functional coordination, and staff motivation (Gambon, 2009; Ting et al., 2011; Ngai et al., 2012). The changed processes must be executed well or disappointment will result. For example, if guests expect to use their RFID-enabled cell phones or member cards to bypass check-in and go straight to their room, but they instead encounter problems and have to visit the service desk to get helped, the higher expectations made possible by the technology make such service failures even more maddening (Kugler, 2011).

To avoid such problems, the data collected via RFID must be used effectively, and processes need to be in place to support the technology (Roberti, 2009; Supply Chain Digest, 2009). For example, one hotel uses daily monitoring and monthly guest surveys to continuously improve their RFID key system and track the sources of problems, even user error, that diminish the guest experience (Kugler, 2011). A vendor selling a system that uses RFID-tagged bottles to monitor the amount of alcohol poured provides training for customer managers and bartenders, allows them to practice as necessary (sometimes for hours) until consistently accurate pours are achieved, and works remotely with managers for the next two months to examine the data and find opportunities for improvement (Swedberg, 2008). The aforementioned Israeli festivals offered prizes as incentives to encourage their visitors to frequently use their RFID wristbands with Facebook “like boxes” that generated word of mouth advertising (Swedberg, 2010c).

While the need to effectively use collected data and change processes to support RFID may seem obvious, it is instructive to consider a widely discussed application that was initially identified as a success but later ended with negative publicity after Wal-Mart failed to sufficiently act on information that identified deficient processes (Roberti, 2009; Supply Chain Digest, 2009). Proctor & Gamble was allegedly frustrated that Wal-Mart did not take advantage of RFID data that showed that promotional displays were not being moved onto the retail floor at the appropriate time, even though such displays are coordinated with expensive advertising and can increase sales by as much as 20 percent (Roberti, 2009). If Wal-Mart, a company renowned for its high-performing operations, can fail to properly execute processes that seem basic, other companies should be especially careful to ensure that they are taking full advantage of their RFID systems by correctly and consistently performing necessary processes. This discipline is especially necessary when wages are low and staff feel overworked.
The example of a hotel using RFID-tagged pool towels to prevent shrinkage (Welch, 2011) illustrates the number of process changes across several functions that need to be considered when applying RFID. For example, how should staff and guests be made aware of an improperly (but perhaps innocently) removed towel? Operations and marketing processes should be in place to ensure that guests are not insulted, embarrassed, or otherwise treated inappropriately, that staff can safely, legally, and effectively handle any issues that might arise, and that guest, employee, and media concerns are not allowed to escalate out of control. Should the emphasis of the hotel be on prevention (which might lead it to advertise the use of RFID for this purpose) or detection (which might lead it to hide the fact that tags are used in order to prevent their removal from tracked items)? Would guests be bothered by the tagging of property by hotels, or would they accept it as a means to hold down costs? Accounting processes may need to change to bill guests or staff for shrinkage. Gambon (2009) and Contagious (2010) have additional examples of cross-functional teamwork between information technology (IT), operations, marketing, and sales functions to better utilize RFID systems.

Theft may not be substantially reduced over the long-term if would-be thieves learn to simply remove tagged labels from items or place stolen items in foil-lined bags that block the reading of the tags (Robert, 2008). One strategy would be to automatically link specific tracked items (e.g., towels) to guests and then identify those that are missing, but guests may not want to be made responsible for things that could be casually and innocently left unattended in the course of normal use. Although O’Connor (2009b) noted that an RFID reader at an employee entrance and exit could deter theft, it is likely that staff would quickly learn how to defeat the tracking, which might be one reason why the RFID vendor behind the system declined to comment on whether it had actually detected employee theft.

Sometimes RFID may be able to improve one process, but another process may also need to change before substantial overall improvement in the system occurs. For example, if guests at a ski resort have their tickets read faster but there is not enough capacity on the lifts or hills, there will still be waiting and frustration, just at a different point in the system (Jay Peak Resort, 2010). Some have speculated that RFID could be used with reservations and virtual queuing systems to allow fewer people to wait in physical lines at amusement parks, but others believe that the parks could feel more crowded as more people would then be moving about instead of standing in line, and so new parks or attractions might be a better investment (Garcia, 2010). Companies may want to use the theory of constraints (Kim et al., 2008) in conjunction with RFID to help manage bottlenecks in their system.

2.3 Make Applications Easy to Use, Test Them, and Understand Design Trade-Offs

It is important that RFID applications for guests be especially easy to use. Applications that are complicated or difficult to use can provide a very negative experience, particularly if guests are already stressed (e.g., if a family member is missing or they are arriving after traveling a long time) or not thinking clearly (e.g., if it is late at night or much alcohol has been consumed). Even under the best of circumstances, most guests simply want to relax and not struggle to understand complex procedures. Ease of use and a focus on fun were key parts of a successful and widely acclaimed RFID application used by a ski resort to track guests’ accomplishments on the slopes (Carr, 2010; Contagious, 2010; Vail Resorts, 2010; Bast, 2011). A press release for the application stated that it is “hassle free” and that “the basic functionality… does not require…guests to do anything but ski and ride as they always have. There is nothing to buy, nothing new to wear and no required check-ins with their mobile devices.” (Vail Resorts, 2010) Resorts and festivals are using RFID tags linked to guests’ accounts to help automate the process of sharing photos on Facebook and make social networking easier (Swedberg, 2010c; RFID Journal, 2011).

Because there are relatively high expectations for smooth functionality in a tourism context, it is very important for companies to extensively test the complete system before wide-scale implementation to help prevent misunderstandings, accidental and intentional misuse, annoyances, and other problems. One company underwent two years of extensive planning and testing before replacing its bar-coded ski lift passes with RFID-enabled passes on five mountains (Gammon, 2009). Gammon (2009) noted, “Testing was extensive because the launch of the Easy Scan system would be so public—any snafus would impact hundreds of thousands of customers… ‘People were sensitive to
the guest experience. It had to be perfect.”” That amount of time for planning and testing may not be
typical as the technology and pool of skilled vendors and consultants continue to improve (Odin
Technologies, 2010), but the emphasis on making the experience smooth, easy, and enjoyable for
guests is still vitally important. Staff should be easily and quickly accessible if guests have questions
about the technology in order to keep them from becoming frustrated by it. For example, staff are
available at one ski resort to help guests flow smoothly through automated gates at the lifts by
explaining how to resolve common problems (O’Connor, 2008a).

Poor ease of use and lack of testing can lead to significant frustration, as the following blog
post about problematic ski lift access attested: “I can’t believe [the resort] put in such a buggy system.
Having spent 3 days at [the resort] over the holidays, I found the RFID system frustrating. Half the
time the gates were not working, so everyone was getting waved through, which defeats the
purpose...While I agree with the goal of the new system, I get the feeling the gates were NOT
thoroughly (sic) tested...a misread causes more annoyance and delay in the line than before. This
kind of system is something that should have been part of a test pilot first to get the bugs worked out.”
(Jay Peak Resort, 2010) Similarly, another blog post said it was a “nightmare” when a French ski
resort used RFID tags with a relatively low range that necessitated lifting children to position them
close enough to readers and led to guests falling over the gates (Jay Peak Resort, 2010). Such blog
posts are a form of negative publicity that better planning and testing can help prevent.

RFID can facilitate multiple ways of accomplishing a task, and companies should understand
the trade-offs of the alternatives. For example, the kiosks used by the guest location system of a
Tennessee water park only identify the 20-300 foot wide “zone” where a RFID-tagged wristband was
last read because more precise information may not be completely accurate by the time a parent leaves
the kiosk and reaches the identified area (RFID Journal, 2003). Despite this, the director of operations
at a water park using the location system stated, “It’s very simple to use. It’s inexpensive for our
guests. They love it.” (RFID Journal, 2003) Guests in environments where they are less likely
to get their cell phones wet might appreciate the option of receiving more precise and timely information on
their phones to avoid additional stress if the person being sought (e.g., a child) wanders out of the
zone originally indicated by a kiosk.

2.4 Consider Privacy, Trust, and Public Perception Issues

Just because something is technically possible using RFID does not mean that it should be
done. Privacy, trust, and public perception issues should also be considered when implementing
RFID. Although more research is needed, guest responses to RFID are likely to be affected by the
nature of the applications (e.g., for tracking guest behavior versus directly enabling an improved
process), guest demographics, the value offered by the applications, and how companies communicate
with guests about the applications. For example, Welch (2011) described three hotels using RFID tags
sewn into robes, linens, and towels that did not want their names to be published. Perhaps they were
concerned that they would be perceived as mistrustful of their guests or that their guests would fear
that the technology would be used to track their activities in an invasive way. On the other hand, a
hotel that was consciously targeting “tech-savvy” early adopters of technology observed that it had
not heard any privacy concerns regarding its use of RFID room keys (Kugler, 2011). There is some
indication that hotels and ski resorts in Europe adopted RFID earlier than their counterparts in the
United States and Canada (O’Connor, 2008a; O’Connor, 2009a), perhaps because they perceived
greater public acceptance of the technology.

The chairman of Walt Disney Parks and Resorts (Staggs, 2011) observed, “We have the
extraordinary benefit of having customers who actively seek a relationship with us, a relationship that
is based on emotion and trust.” Such relationships are clearly invaluable, which is why it is vital that
guests are not afraid that personal information collected with RFID could be used in undesirable ways.
Companies need to communicate and execute policies and procedures that ensure that guest trust is
not damaged or betrayed. A company operating several ski resorts stated in a press release that strict
privacy policies are employed, information collected using RFID will not be shared unless guests “opt
in”, guests can disable their RFID tag, and special controls are in place for children using the
application (Vail Resorts, 2010). It also stressed the importance of strong protections and security for guest financial data and to prevent unwanted tracking (O’Connor, 2007a).

As RFID and other forms of tracking (e.g., cell phone global positioning systems) become more prevalent, guests may grow more comfortable with such technologies, particularly if companies provide clear statements that the information will only be used in limited ways that clearly benefit guests. Companies contemplating collecting relatively mundane data through RFID should be encouraged that many in society share far more personal aspects of their lives through social networking web sites like Facebook and Twitter. Some may bemoan an apparent loss of privacy, but relatively few seem to make the effort to resist tracking technologies. Just as many consumers accept some privacy trade-off when using grocery store affinity cards because the cost savings are large and the perceived loss of privacy is relatively small, guests may not be overly concerned about using RFID if its value proposition is sufficiently high and the collected information is not overly personal.

The service-profit chain (Heskett et al., 1994) suggests that happy staff lead to greater profits, and employee trust has been shown to be a key enabler for companies trying to implement lean processes (Adler et al., 1999). Without a history of good relations between management and staff and continued good communication about how the technology will be used, staff may not actively help identify and support the necessary process changes that are necessary to make the implementation a success (section 2.2). While communication with staff is important regardless of the RFID application, it is especially important when staff will be tracked. A hotel that tagged staff uniforms worked with its human resources department to help build trust and alleviate staff concerns that it would monitor how much time they spent on tasks or track them throughout the building (O’Connor, 2008b).

Difficulties changing processes are not the only problems that might result from staff who are apathetic or resistant. If staff feel that the tracking is invasive and that the collected data will be used against them, it will be detrimental to morale and negatively affect the atmosphere that guests seek. Without staff support, tracking could stifle staff initiative and ironically harm performance. For example, RFID-tagged bottles can help insure that bartenders not give away more product than management intends (Swedberg, 2008), but it may ultimately be counterproductive if bartenders have less leeway in deciding how to serve frequent or high-spending customers. Although the alcohol tracking systems are unobtrusive (Wasserman, 2011), guests who are aware of them may associate monitoring with other “corporate” and controlling aspects of life that they are seeking to avoid when on vacation. Tracking staff without their support may also cause potential guests to be sympathetic and choose to visit competing companies that do not have a bad reputation for managing staff privacy. Using RFID in inappropriate ways may cause governments and unions to react strongly and limit even relatively non-invasive uses of RFID. More information on the ethics and legalities of using RFID to collect information can be found in Cochran et al. (2007) and Magid et al. (2009).

2.5 Account for Human Factors When Applying RFID

As section 2.4 suggested, companies should be careful to not use RFID for applications perceived to be personally invasive and of little benefit or that are unethical or illegal. Companies should also avoid implementing RFID in ways that detract from interactions that are valuable to the guests or company. Understanding when to leave the “human touch” in place and how to accommodate those who prefer it over automated systems are important considerations. Just as some customers prefer to interact with humans for customer service rather than use automated help over the phone, not everyone will want to work with automated systems made possible via RFID. Some guests may think that RFID applications offer unnatural, creepy, or superficial familiarity (e.g., being greeted by name and having their preferences and other facts about them known only because of the technology, not because they are personally remembered). A ski resort described in O’Connor (2007b) felt that allowing staff to interact with guests was beneficial, so unlike some of its competition, it did not install RFID readers to automate access to the ski lifts. By continuing to use staff to check tickets, the resort believed that guests could more easily get help, provide feedback to improve processes, and receive the personal attention that they expect from visiting a high-end resort (O’Connor, 2007b).
Companies deciding where to deploy RFID might want to adopt the strategy of facilitating automation of service tasks where a human touch is not needed to enrich guest experiences, which would in turn free staff to focus on situations where characteristics such as warmth, flexibility, initiative, and creative insight can provide more value. Although many companies focus on automating back-office processes, the front-office can also benefit from targeted applications of this strategy. For example, the specific task of checking passes for ski lift access can be automated with RFID, which would free staff to focus on more value-adding activities near the lifts (e.g., providing guest assistance) (O’Connor, 2008a). Although one resort’s “die-hard” patrons initially accused the resort of becoming “overly corporate” after the resort unveiled plans to use RFID, after trying the system, “...even the most vocal opponents [to the plan] said that they were wrong, and they loved it.” (O’Connor, 2008a) The system also benefits staff because they can help guests instead of being “...the bad guys, checking everyone’s ticket [and looking for frauds].” (O’Connor, 2008a) Although the resort described in O’Connor (2007b) may cater to guests with different preferences than the guests of the resort described in O’Connor (2008a), the latter resort’s strategy of targeted automation through RFID and focused staff attention allows it to both operate more efficiently and improve guest services.

It is necessary to understand how RFID can improve human interactions (and not just replace them) because of the importance of those interactions in how guests perceive their experience. The chairman of Walt Disney Parks and Resorts stated (Staggs, 2011), “…people cite interactions they have with our cast [employees] as the single biggest factor in their satisfaction and intent to return…” Many people believe that RFID will be a key component in a top-secret $1 billion Disney project that is aimed at improving guest experiences (Garcia, 2011), including allowing costumed staff to greet and interact with guests in a more personalized way (Garcia, 2010; Staggs, 2011). Staff do not have to be costumed for RFID to be beneficial in improving interactions. The ability of a cruise ship’s maître d’s to greet passengers by name because of their RFID-tagged key cards “…has quite a stunning effect on passengers. It enhances service tremendously.” (Wasserman, 2007)

Guest interactions can also be enhanced by the technology. Skiers carrying RFID tags can automatically record their accomplishments on leader boards with their Facebook friends and be recognized for performing various feats (Contagious, 2010; Vail Resorts, 2010). This skiing application creates loyalty by easily linking social networks together in ways that create fun competition and improve guests’ social experiences on and off of the mountain (Carr, 2010; Contagious, 2010). Because of those better experiences and interactions, the CEO of Vail Resorts said about their proprietary system, “This is an app that’s going to make it hard to go to another resort.” (Carr, 2010; Contagious, 2010)

Companies should be careful that they do not pay so much attention to their RFID data that it detracts from their other competencies. For example, it has been observed that “control is Disney’s middle name” and that itviews guest monitoring as “just another part of its efforts to pull every possible lever in the name of a better guest experience” (Barnes, 2010). Nonetheless, Yee (2010) fears that some of the “magic” could be lost if the company tries to use the mountain of data from RFID to micro-manage the experience such that it feels too “homogenized”, “packaged”, and “artificial”. What looks like waste to an accountant could be a nice “extra” that makes the experience especially memorable and enjoyable (Yee, 2010). Companies should remember that the important “fun” aspect of tourism may not always be fully captured by numbers. It will be vital for tourism companies to carefully use RFID in synergistic ways that continue to allow their defining characteristics (e.g., being whimsical and carefree) to shine through. Managers should consider system-wide causes and effects related to the human factors of their guests and staff before making changes based on RFID data.

2.6 Be Aware of Potential Challenges

As with many technologies, companies should be aware that challenges may be experienced when applying RFID that are often not as well publicized as its benefits (Supply Chain Digest, 2007). For example, posters in the online comments of Welch (2011) reported problems such as a slow and inaccurate system and a lack of tagged towels that were not discussed in that article, nor are such problems discussed in many (if any) other related articles about the use of RFID for tracking towels.
A vendor (Odin Technologies, 2010) replaced RFID readers deployed by a competitor at a ski resort in 2008 that only had 80 per cent read rate accuracy, a rate much lower than what is generally reported. Similarly, posters on a ski resort’s blog (Jay Peak Resort, 2010) had a variety of complaints about RFID systems used at ski resorts that received little coverage elsewhere. The pilot testing recommended in section 2.3 can also help companies better understand potential issues and keep them from becoming more expensive and widespread.

The founder of the leading periodical about RFID recently observed that many CEOs are skeptical about RFID because they have heard vendors of prior technologies claim benefits that were not actually achieved (Roberti, 2011). He stated that to overcome such skepticism, “…companies need to have a vision of how RFID would be used enterprise-wide, but start with small projects that can deliver real value.” (Roberti, 2011b) The discussion in section 2.1 about leveraging investments gives perspective about how RFID can be deployed throughout a company, and the discussion in sections 2.2 and 2.5 is particularly relevant for identifying ways that value can be achieved from RFID implementations. Companies considering the use of RFID should also look for vendors and implementation partners with a proven record of success who demonstrate a solid understanding of both the technical and business process issues related to applying the technology. Following the guidance in this paper will help companies meet challenges and achieve the many benefits already being enjoyed by others in the tourism industry.

3. Conclusion

Roberti (2011a) noted that companies can often learn much from RFID use in other industries. It would be beneficial for future research to study similarities and differences in best practices for RFID implementations not only between different sectors within tourism, but also across industries. Companies and researchers interested in other industries might consider Ting et al. (2011), which identified critical steps and lessons learned from a healthcare implementation, and Ngai et al. (2012), which listed success factors and lessons learned from the implementation of a manufacturing process management system. Within the tourism industry, more research is needed to create deeper understanding of how to better identify and execute RFID-enabled processes that add value for customers and provide return on investment (ROI) for companies.

RFID can improve tourism industry processes in many different ways, but information technology, operations, and marketing functions will often need to work closely together to fully take advantage of its capabilities and ensure that it is not misused as a result of poor strategy or execution. This paper illustrates many of the issues and opportunities that exist when applying RFID in the tourism industry and gives managerial guidance for avoiding pitfalls and more effectively using the technology. Companies and their guests should benefit from RFID for years to come as the technology becomes more prevalent and new innovations are developed.
References


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