Challenges and Opportunities in Integrating Multiple ICT Systems for Contemporary Loyalty Program Management

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Abstract- A customer Loyalty Program (LP) is a popular CRM technique. It attracts huge investment from firms in travel, hospitality, retail, and banking industry across the globe. Lately, however, it appears that these LPs, in their current form, have reached a stage of maturity. Hence, researchers and industry experts alike strongly recommend use of modern information processing and communication technologies such as smartphones, social media and big data, and personalization solutions to (i) keep these programs relevant; and (ii) to continue to derive value out of them in future. Use of multiple software applications and technologies in managing LP related business processes necessitates integration between these applications and systems. This paper explores the technological challenges that are faced by firms in integrating many systems and technologies that are used in managing their LP. The study, through a grounded approach, uncovers several issues and classifies them in two broad categories. The study reveals that while increased adoption of middle-ware solutions has greatly simplified the task of designing, building and maintaining EAI; there are still a few challenges that are not adequately addressed by the existing technology. These challenges highlight the limitations of the existing EAI solutions and provide an opportunity to build future solutions. Software application developers and service providers can take a cognizance of these findings to develop custom solutions; such solutions may assist organizations in making an efficient use of ICT towards managing their LPs; and thereby, making the LPs more effective in managing customer loyalty.

Keywords- Loyalty Program; ICT; Enterprise Application Integration

I. INTRODUCTION

Organizations make huge investments in order to achieve their customers' loyalty. It is reflected in the fact that the global spend on loyalty solutions, which includes customer loyalty, employee retention, and channel loyalty, is expected to grow from USD 1.6 Billion in 2015 to USD 4.59 Billion by 2021 (Loyalty Management Market Worth 4.59 Billion USD by 2021, 2017). Loyalty Programs (LPs) are one of the popular methods for managing customer loyalty; they are very popular in hospitality, travel, retail and banking industry. Firms across globe seem to launch new programs on a regular basis (AIR MILES® Stage Pass gears up to rock Canadians, 2015) (ITC launches common loyalty programme, 2012) (Time Inc. UK Launches Subscriber Loyalty Programme) ; or, modify and expand their existing ones (Heathrow Rewards and Emirates Skywards Form Loyalty Program Partnership, 2015) (Singapore Airlines And Vistara Launch Frequent Flyer Programme Partnership, 2015). The membership in such programs has also grown exponentially in last two decades (Berry, 2015).

Although, academic literature on LPs reports mixed results on their effectiveness towards achieving customer loyalty but, researchers do seem to believe in their potential as a CRM tool (Bijmolt, Dorotic, & Verhoef, 2010). Believing in their potential, academicians have also provided guidelines for LP implementation (Berman, 2006) (McCall, Voorhees, & Calantone, 2010). Recently, however, researchers have started warning that loyalty programs in their current form have reached a prosaic state and companies must bring some differentiation in their programs in order to get return on their investment in future (McCall, 2015). Academicians also seem to believe that effective use of ICT can play a significant role in such an endeavor; and recommend use of big-data and analytics, smart phones, and personalization across multiple channels (McCall, Voorhees, & Calantone, 2010) (Breugelmans, et al., 2015).

A review of literature, however, shows that that there are several gaps in the existing body of knowledge on use of technologies in LP (Purohit & Thakar, 2018). One of the topics, which is not adequately covered in extant academic research, is - *how firms use these diverse applications and technologies in tandem* for managing their LP? (Purohit & Thakar, 2018, p. 1017).

A grounded theory methodology (GTM) based research was conducted to understand and develop a holistic view on the use of technology in the context of a loyalty program. The study showed that multiple applications and technology systems are *integrated* for managing LP related business processes; and the task of Enterprise Application Integration (EAI) in context of a loyalty program appears to have its own unique set of challenges. This paper presents various technological issues and challenges that are uncovered through the study. The identified challenges are classified in two broad

categories – (i) challenges related to lack of skills; and (ii) challenges due to lack of appropriate technology. The skills related issues appear to be transient in nature; and those should be addressed in due course of time as the service providers acquire required skills in the emerging technologies. However, issues due to unavailability of appropriate technological solution present an opportunity for development of custom software solutions.

The rest of this paper is organized as follows. First, a brief review of extant literature on loyalty programs, the role of technology in managing LPs, and enterprise application integration is presented. Followed by this we discuss the data collection and analysis procedures deployed for this qualitative study. Next, we present the findings from the study and discuss the categories that emerged from interview data. Finally, we conclude by listing the contributions and limitations of our research.

II. LITERATURE REVIEW
Loyalty Programs Effectiveness and Use of Technology
In academic literature Loyalty Programs are defined as long term, structured marketing efforts (Sharp & Sharp, 1997) that aim at achieving customer loyalty through reward and recognition (Butler & D'Souza, 2011). According to research, there are many reasons for LP adoption by firms (Uncles, Dowling, & Hammond, 2003). An LP may be deployed as a vehicle for maintaining customer loyalty or brand share; or to improve market conspicuousness for a brand; or simply due to the me-too pressure. Management studies researchers have been studying LPs for a long time now and as result there is a vast amount of academic literature. There are numerous studies that measure effect of LP on brand equity (Voorhees, White, McCall, & Randhawa, 2015), customer loyalty (Hu, Huang, & Chen, 2010) (Kang, Brashear-Alejandro, & Groza, 2015) (Brashear-Alejandro, Kang, & Groza, 2016), cross-buying behavior (Liu, 2007), share of wallet (Leenheer, Heerde, Bijmolt, & Smidts, 2007) (Wirtz, Mattila, & Lwi, 2007) (Meyer-Waarden, 2007), store engagement (Ramly & Omar, 2015), and word-of-mouth (So, Danaher, & Gupta, 2015). Results from these studies are mixed – some of the papers show a positive effect of implementing a loyalty program while some others report no significant effect (Kim, Lee, Bu, & Lee, 2009; Shugan, 2005). Moreover, one of the research studies indicates that incidents related to LP services may cause member frustration; and as a result, the member may start avoiding the brand altogether (Stauss, Schmidt, & Schoeler, 2005). In general, researchers seem to believe that loyalty programs can contribute positively towards "(a) behavioural metrics like retention, share-of-wallet, aggregate sales, and profit; and (b) attitudinal loyalty" (Bijmolt, Dorotic, & Verhoef, 2010, p. 243). Of late, however, more questions are being raised on future ROI from LPs. Academicians and industry experts both warn that LPs in their current form have reached a maturity stage and firms must adopt "next practices" in order to continue to extract value out of their investments (McCall, 2015, p. 8).

Use of ICT can help in this endeavor and academic literature encourages firms to "embrace new technologies" (McCall, Voorhees, & Calantone, 2010, p. 12). Purohit & Thakar (2018), through a review of literature, identified the main themes in extant academic research on use of information and communication technology (ICT) in LP. According to this review paper, extant academic studies have explored use of Digital Channels (Mobile, Web, and Social Media), Database and Analytics (Text Analysis), and Privacy and Security (Consumer privacy concerns, and Security and Fraud) issues in modern LPs. The paper (i) shows that research on use of ICT in LP is "scant and sporadic" (p. 1011); (ii) argues that a "systematic, holistic, and coherent academic research" in this direction is missing in current body of knowledge (p.1016); and (iii) suggests many pertinent areas for future academic exploration. The review shows that while use of individual technologies (internet, smart phone, or social media) in LP has been studied, *use of multiple applications and technologies in tandem* is not explored. Such use of multiple systems necessitates integration between those applications and systems.

III. ENTERPRISE APPLICATION INTEGRATION
In literature, Enterprise Application Integration (EAI) is defined as unrestricted sharing of data and business processes among these connected applications and data sources of the enterprise; and is classified based on different criteria like topology, depth of integration and inter v/s intra enterprise application integration (Linthicum, 1999) (McKeen & Smith, 2002). The interconnected applications may be integrated at data layer, the application layer, or the user interface layer. Organizations can use one or more integration patterns, such as file transfer, shared databases or SOA/messaging to integrate the applications based on their requirements (Hohpe & Woolf, 2003). An example of accomplishing EAI using Service Oriented Architecture (SOA) is found in the work of Patil, Kshirsagar, & Jaypal (2014). Similarly, another paper shows how large volumes of data transfer between connecting applications is handled using Enterprise Service Bus (ESB) (Górski, 2014).

Based on the ownership of connecting applications, the EAI is also classified as intra-organization or inter-organization (McKeen & Smith, 2002). In the intra-organization EAI, a single organization has control over the systems; and hence, efficient policies and procedures can be developed (and enforced) to achieve a common application architecture and security, operation, and support models (LaFata & Scott, 2015).

`Prior EAI research has investigated integration between ERP and CRM (Ruivo, Mestre, Johansson, & Oliveira, 2014), Web portal and ERP (Solanki, Shah, & Vora, 2014), and ERP and SCM (Poranki, Perwej, & Akhtar, 2015). Researchers have also explored drivers of EAI adoption by firms (Hung, Chang, Yen, & Lee, 2015); desirable features in an EAI middleware solution (Moradi & Bahreininejad, 2013); and challenges in EAI deployment (Asante, Agbesi, & Tahiru, 2015) (Palanimalai & Paramasivam, 2015). From a methodological perspective, researchers have shown that requirements for an EAI project are different from a regular software project, and hence, different types of tools and templates are needed (Surugiu, 2012). However, irrespective of the EAI technology used, an organization must focus on five aspects - business process, integration requirements, user exposure, cost and infrastructure (Hojaji, 2012). Sometimes, existing EAI technology may prove inadequate and so companies may develop their own solutions with a combination of various available technologies (Hanson, et al., 2015).

The above review of literature shows that Loyalty Programs are an effective CRM tool; and they may continue to provide return on investment in future if right technology solutions are deployed for managing them. Use of *multiple systems and technologies in contemporary LPs* provides an interesting landscape for academic exploration to advance body of knowledge; and such academic exploration may also generate valuable insights for practicing managers. However, extant academic research has not adequately investigated this dimension of IT usage in LP.

This paper tries to address the knowledge gap by exploring the technological issues and challenges that are experienced by the implementation teams while integrating multiple systems in context of an LP.

IV.   RESEARCH METHOD

Grounded Theory Method (GTM) is a research design in which a general explanation of a phenomenon is derived through the views of a large number of participants and by using a systematized set of procedures (Glaser & Strauss, 1967). Interview transcripts, and other documents, videos, pictures, etc. (the qualitative data) are analyzed to recognize patterns and themes. The GTM approach is characterized by theoretical sampling, concurrent data collection and analysis, coding and categorization, and inductive logic (Birks & Mills, 2015).

A GTM based qualitative study was conducted to understand the use of multiple applications and systems in context of an LP. An important theme that emerged in the study was *integration*. Subsequent exploration in this direction uncovered various technological issues and challenges that are observed while integrating LP related applications.

In this research, we used purposeful sampling and snowball strategy for data collection (Cresswell, 2005, p. 125); and

interviewed several practicing IT professionals with hands on experience in implementing IT projects related to loyalty programs. The interviewees had experience of 5 to 21 years in implementing LP related IT solutions in Retail, Hospitality, Travel and Banking industry across globe. We interviewed a total of 26 experts. Some of these were software developers, integration architects, business analysts, and project managers involved in implementation of IT systems for LP. Some others were business managers and loyalty program executives, who were involved with day-to-day operations and management of loyalty program.

Semi-structured interviews were used for data collection following the guidelines from Myers and Newman (Myers & M, 2007). Many interviews were conducted over phone as the respondents were from different countries around the world. The key points were noted during the interview and detailed notes were prepared post haste. As the focus of our inquiry was only on *technological challenges* pertaining to the integration of various information systems, and hence, we did not delve into the business, managerial, or organizational challenges associated with LP EAI.

In GTM, there is a continuous interplay of data collection and analysis as the analysis affects the data; and the data affects the analysis (Myers M. , 1997) (Carroll & Swatman, 2000). We used methods of coding, clustering, and memo writing as prescribed by Saldana (2009) and continued to reflect and discuss the findings to identify categories and themes in the data.

V.   FINDINGS

The technological challenges and issues, as shared by the respondents, are presented in this section.

1.   Dynamic Vouchering at Point Of Sale (POS) System

One of the issues reported during the interviews was related to the integration of Loyalty System with the POS system. According to the respondent, the store wanted to print and provide a discount voucher to the LP members at POS based on their current purchase (invoice) *and* their member profile as present in the Loyalty System (gender, age, status, and locality). The example shared by the respondent was that "if the invoice had Organic Bread and Organic Milk, then the consumer was to be presented with a discount voucher for Organic Eggs, or Organic Tea, or Organic Soap depending on the profile". The grocery chain (organization where this particular issue was faced) had a large store base and a very large number of LP members in their program. The issue was that the total round-trip time for this integration was unacceptably long. There are stringent response time expectations at POS because consumers do not want to wait longer there.
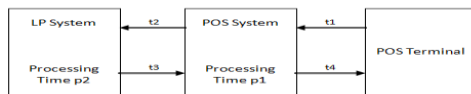
Fig.1: Round Trip elapsed time for POS
integrated transaction = p1+p2+t1+t2+t3+t4

Hence, the interviewee reported, "instead of printing the discount voucher along with the invoice, we decided to calculate and maintain the *offer* in the LP System…… and it was printed and given during the next customer visit". The interviewee pointed out that this work around had to be applied because of the limitation of response time; and emphasized that it reduced the impact of the offer saying that "although, we printed and offered the right discount coupon on their next visit, but who remembers their last week's purchases?"

2. Drop-Basket integration at E-Commerce Website

A similar challenge was reported by another interviewee while implementing "dynamic offers based on drop-basket". The business requirement and the issue that were reported by the interviewee were as follows.

Many times consumers log on to the ecommerce portal, browse items, and add them to the purchase list; but leave/logout before completing the shopping transaction. In such an event of "drop basket", when the customer leaves items in basket and does not finish the purchase, the business wanted to remind the customer in a subtle way and nudge her/him towards buying. For this it was planned to present "relevant discount offers" on those partner sites that the customer visited later. The interviewee recalled that "if the customer had a pair of sunglasses in the dropped basket, and if she visited a partner website (a news portal), then, we wanted to make an offer on sun glasses". This required a fast integration between the partner site, and the loyalty program application (to generate the relevant discount offer based on member profile). This integration could not be implemented as it had issues related to the response time.

3. Partner Integration

This integration appeared to be a major challenge for Loyalty Programs as a large number of the respondents discussed this and shared their own experience with it. The integration requirement, as emerged through discussions with respondents is as follows.

Firms, who own and run the LP, generally have two types of partner organizations in their loyalty eco-system. In the first category of partners, are those firms that provide ancillary products or services to the members. Members of the program earn points while using these partner services. For example,

members of several airline frequent flier programs earn mileage points by staying at a hotel, or by renting a car from a firm who is partner in the airline LP. The second type is BPO Partners. These are the firms who assist loyalty program's operational support, such as creation and distribution of various packages to the members, or creation and execution of marketing campaigns.

As part of the LP business processes, the Loyalty Program application has to be integrated with these partner systems. This integration was reported as a complicated and challenging task by most of the respondents. The main points that were reported about partner integration are:

A. *File based integration:* It appears that most of the integrations in loyalty program EAI are implemented through real time transactions that involve a single member. These are easily implemented using SOA/messaging techniques. However, the partner integration requires handling of multiple member transactions/activities through large files that are periodically exchanged between the loyalty host organization and partner organizations. These files are exchanged using ftp or email; and, at times, are also encrypted using an encryption mechanism such as PGP. There are many discrete steps in processing these files; and with this the complexity, and chances of failure, increase in proportion.

B. *Size and volume:* Another reason that seemed to contribute to the complexity of partner system integration in LP processes is the size and volume. In general, loyalty programs seem to have a large number of partners. One of the respondents reported that there were thirty two different partners for a large European airline loyalty program that were integrated using file based integration. In addition to the large number of partners, the amount of data that is received in a single file is also very large. In a typical file from partner airline, thousands of records of members' flight information are received on a daily basis. As explained by one of the interview, due to this large size and volume "the whole process takes longer; and if something goes wrong, then the entire batch has to be reprocessed".

C. *Heterogeneity*: Another important contributor for partner integration complexity seemed to be its heterogeneous nature. These partners have their own existing IT systems that generate the files. As a result they send data at different times, in different formats, using different channels (email, ftp), and different file types (csv, txt, xml). They also demand different validations and security checks (like encryption) on the file interchange.

D. *Dynamic environment*: It also appears that the partner integration is very dynamic in nature. Several respondents reported that data file formats for the partner integration keeps changing due to changes in the operational systems,

or due to process changes at partner organizations. They also reported that new partners are added frequently in a loyalty eco-system; and occasionally, existing partners are dropped from the program. All these changes make maintenance of this integration time consuming and difficult.

E. *Complexity of processing:* The processing of records, received through these multiple partner files, is also complicated and requires different procedures for different partners depending on the contract with the partner. An example of an "accrual file", which contains member activities performed at the partner (a stay at the hotel, spending on partner credit card, or taking a flight on a partner airline), was cited by one of the interviewees. Every such accrual file, and each of the activities that is present in those files, use a complex set of rules and validation procedures to process the activity and allot appropriate number of points to the member. These procedures vary from member to member, and from partner to partner, making the whole processing logic complicated.

F. *Traceability and Audit*: Like many other integrations, traceability is a requirement for this integration because multiple organizations are involved. One SME quoted, "there are financial implications of allocating miles against a member activity……, (and hence) complete trace of the file processing is to be maintained". However, there are two reasons that make traceability and audit a bit more complicated in case of partner integration. These are the heterogeneity of the files (and processing logic), and inherent dynamism of the whole partner ecosystem as discussed above.

G. *Acknowledgement Files*: It is found that as a part of the process, an acknowledgement file is sent to the partner, corresponding to each of the data file that is received. The acknowledgement file reports the status of each record that is processed from the original data file. This acknowledgement file also follows a specified format, and specific naming conventions as agreed with the partner. Creation of this file, encrypting it, and then transporting it is a complicated process.

4. Software as a Service (SaaS) Application Integration

Adaption of cloud based/SaaS applications among enterprises is increasing. LP integration with such cloud based applications is not much different from integration with other on-premise enterprise applications. However, the following points were observed during this study.

A. *Custom Development:* Some interviewees reported integrating other SaaS based applications with their loyalty system. According to them, while generic SOAP or REST APIs for business components are mostly available from these SaaS vendors; however, there are still areas where custom APIs have to be developed. As one SME reported, they had to develop their own APIs when the business logic required atomic transactions involving more than one component; and the transaction was to be orchestrated in the middle ware. This was the case when a complete order, along with all the products, was to be passed to a SaaS based application. Hence, according to him, the integrations with SaaS application was more challenging than the integration with an on-premise enterprise application.

B. *Quota, Limits and Cost:* Another issue that was pointed out about integration of SaaS based application with the loyalty system is related to the limits imposed by the SaaS vendors; and the associated monetary implications. "Especially, when the other application is not deployed on company LAN or private cloud", as reported by one of the interviewee, "but subscribed as SaaS on a multi-tenant platform, then there are several limits…. imposed by the SaaS provider…….like number of simultaneous active connections, or number of API calls in a given period, or even number of records uploaded". He acknowledged the need to design these integrations by taking these limitations into consideration to keep the cost in check.

C. *Firewall and security issues:* In addition to the design and development, a deployment related issue was also reported during the interviews. It was reported that several organizations make use of restricted range of IP addresses to prevent unauthorized use of their SaaS applications. Some of them also make use of "restricted hours" where the application can be accessed only during a certain time period. The on-premise integrating application IP has to be included in this access list and the scheduled integrations must consider the permitted access hours. Similarly, when the cloud based application has to access the on-premise application, then, the corresponding ports have to be opened in the organization firewall.

5. Social Media Integration

From this study it appears that use of social media in the context of LP is in its early stages. Only one SME reported to have hands on experience with Facebook integration. According to him, this integration was done for a Hotel Chain in order to allow program members to log-on via their FB account. It also rewarded the members when they used 'check-in' feature at one of the hotel properties. The interviewee acknowledged that this was his first project to integrate Facebook with the LP system. He had to learn to integrate these two systems through various forums, which was "not an easy task; and it was time consuming".

6. Gamification Platform Integration

Gamification is the process of adding games or game like elements, such as points and scores, competition with others,

and some game rules to a task to increase engagement, motivation, and participation (Brian Burke, 2014). Companies, such as Bunchball and Badgeville, use the research about motivation, big data and interactive design to build Gamification platforms that are being used by firms to increase customer and employee engagement (Customers and Clients, 2016) (Gamification Case Studies and Customers, 2016). The importance and growing popularity of gamification in the context of LP is underlined by the fact that the Loyalty Magazine Awards now has a new category that is bestowed upon the companies who make "Best use of Gamification to Enhance Loyalty" (Loyalty Awards 2016 Finalists, 2016) .

While discussing the latest trends in loyalty, only one interviewee, who heads the loyalty implementation business for a large software service organization, mentioned that a good number of his customers are exploring the possibility of using Gamification platforms with their LP. He also, however, did not have any live LP projects in hand where this technology was being deployed. The lack of responses about this technology during the interview cycle indicates that this is

an emerging trend and practitioners have yet to learn and acquire skills in this particular area of loyalty program integration.

VI.   DISCUSSIONS

Further reflection on the reported issues and challenges show that the number of technological issues that are reported by interviews is not very large. This may be attributed to use of middle ware solutions and better integration capabilities of the applications. Most of the respondents reported use of a middleware for EAI as well as use of web based APIs, which seem to have resulted in efficient integration architecture; and ease of design, build, and maintenance.

Analysis of the reported issues also shows that these issues can be classified into two broad categories depending on the reasons that can be attributed to their existence. In the first category are the issues that seem to be due to a lack of appropriate technology solution, while the second category of issues and challenges are due to lack of skills in the implementation teams.

Table 1. Challenges and Issues in integrating Information Systems and Technologies for managing an LP

Reported Issue or Challenge	Reasons attributed to the Challenge/Issue	Category
POS integration	Response Time requirement could not be met	Technology Related Issues
SaaS Application Integration	Custom development, Limits of API calls, Security and Firewall issues	
E- Commerce integration	Response Time requirement could not be met	
Partner Integration	Complex File Handling, Large volume of Data, Dynamic and changing environment	
Gamification Platform Integration	New and Emerging Technology	Skills related Issues
SaaS Integration	Emerging Technology	
Social Media Integration	Emerging Technology	

Challenges that belong to the first category provide an opportunity to design and build new solutions. Emergence of faster data processing techniques, such as big data, may provide a solution for such near real time information processing requirements. Alternatively, the firms may use parallel channels of communication in such situations, say SMS or a smart phone application, and send the voucher through that channel. So, instead of waiting for the consumer

to arrive at the store next time (in case of POS) or using cookies and 'following the customer' (in case of ecommerce), the discount voucher may be sent to the customers' mobile in near real time, while the purchased (or dropped basket) items are still fresh in their mind. However, in order to implement this alternate approach the consumer must have a mobile /smart phone and their number must be present in the loyalty database, which does not seem to be such a restrictive

condition given the high penetration and use of smart phones in present times.

It has also been observed in past that when existing EAI technologies prove inadequate; companies develop their own custom solutions with a combination of various available technologies (Hanson, et al., 2015). Hence, for partner system integration, which appears to be a major pain point for loyalty programs, software developers can come up with a specific solution that meets these specialized requirements of a loyalty eco system.

The issues reported for SaaS application and Gamification platform integration with loyalty program appear to be skill related. These appear to be relatively new technologies in context of a loyalty program and the implementation teams seem to lack adequate experience. These challenges appear to be transient; and shall cease to exist eventually, as integration service providers gain experience and expertise in these new and emerging technologies.

VII.   CONCLUSION

Firms make substantial investment in Loyalty Programs but these programs, in their current form, appear to have reached stage of maturity. Systematic and goal driven use of ICT can help in achieving continued return on investment. Academic research in this direction can help by contributing to existing body of knowledge.

This research, through a GTM approach, identifies key issues and challenges in integrating multiple information systems and technologies that are used in managing LPs. These issues are then categorized based on the reasons that may be attributed to their existence. This research has focused only on technological issues and has not considered other managerial or organizational issues.

The study shows that EAI between most of the business applications is not a challenge anymore because (a) most modern applications support web based APIs; and (b) companies have adopted middle ware solutions that result into efficient architecture and easy implementation. Integrating emerging and new technologies such as social media and Gamification platforms into a LP still seem to pose challenges; but these challenges appear to be transient in nature. They exist due to lack of expertise and experience in the technology teams.

The paper also highlights some issues that appear to be due to lack of a proper technology. These challenges offer an opportunity for development of new technological solutions to address these issues. The partner integration appears to be one such issue which is also a critical requirement for loyalty programs. Software developers and service providers may take a cognizance of the findings of this research in developing a technology solution that eliminates the issues cited in this integration.

VIII.   REFERENCES

[1]. AIR MILES® Stage Pass gears up to rock Canadians. (2015, Jun 16). Retrieved July 17, 2015, from Loyalty One: https://www.loyalty.com/news-events/latest-news/news-releases/air-miles-stage-pass-gears-up-to-rock-canadians

[2]. Asante, G., Agbesi, S., & Tahiru, F. (2015). Investigating the challenges faced by Ghanaian companies in their implementation of B2B Application Integration. International Journal of Innovation and Scientific Research , 13 (1), 114-125.

[3]. Berman, B. (2006). Developing an effective customer loyalty program. California Management Review , 49 (1), 123-148.

[4]. Berry, J. (2015). The 2015 COLLOQUY Loyalty Census: Big Numbers, Big Hurdles. Toronto: COLLOQUY.

[5]. Bijmolt, T., Dorotic, M., & Verhoef, P. (2010). Loyalty Programs: generalizations on their adoption, effectiveness and design. Foundations and Trends in Marketing , 5 (4), 197-258.

[6]. Bijmolt, T., Dorotic, M., & Verhoef, P. (2010). Loyalty Programs: Generalizations on Their Adoption, Effectiveness and Design. Foundations and Trends in Marketing , 5 (4), 197-258.

[7]. Birks, M., & Mills, J. (2015). Grounded Theory A Practical Guide 2nd ed. London: Sage.

[8]. Brashear-Alejandro, T., Kang, J., & Groza, M. (2016). Leveraging loyalty programs to build customer-company identification. Journal of Business Research , 69 (3), 1190-1198.

[9]. Breugelmans, E., Bijmolt, T. H., Zhang, J., Basso, L. J., Dorotic, M., Kopalle, P., et al. (2015). Advancing research on loyalty programs: a future research agenda. Marketing Letters , 26 (2), 127-139.

[10]. Brian Burke. (2014). How Gamification Motivates People To Do Extraordinary Things. Gartner Inc.

[11]. Butler, T. D., & D'Souza, G. (2011). The role of antecedents and consequences of soft and hard benefits in loyalty program success. International Journal of Marketing , 201-217.

[12]. Carroll, J., & Swatman, P. (2000). Structured case: a methodological framework for building theory in information systems research. (p. Paper 42). ECIS 2000 Proceedings.

[13]. Cresswell, J. (2005). Educational research: Planning, conducting, and evaluating quantitative and qualitative research. (2nd ed.). Upper Saddle River, NJ: Pearson Education.

[14]. Cresswell, J. (2007). Qualitative Inquiry & Research Design: Choosing Among Five Approaches. Thousand Oaks, CA: Sage.

[15]. Customers and Clients. (2016). Retrieved 6 1, 2016, from Badgeville.com: https://badgeville.com/customers/

[16]. Gamification Case Studies and Customers. (2016). Retrieved 6 1, 2016, from Bunchball.com: http://www.bunchball.com/customers

[17]. Glaser, B., & Strauss, A. (1967). The discovery of grounded theory: Strategies of qualitative research. London: Wiedenfeld & Nicholson.

[18]. Górski, T. (2014). The use of Enterprise Service Bus to transfer large volumes of data. Journal of Theoretical and Applied Computer Science , 8 (4), 72-81.

[19]. Hanson, J., Ohlsson, J., Ertan, N., Johannesson, P., Wernmo, S., Schjødt-Osmo, O., et al. (2015). P2PIE: A NEW ENTERPRISE APPLICATION INTEGRATION SOLUTION. Proceeding from CAiSE 2015 Industry, (pp. 60-70).

[20]. Heathrow Rewards and Emirates Skywards Form Loyalty Program Partnership. (2015, 5 15). Retrieved 7 18, 2015, from Loyalty 360: http://loyalty360.eu/resources/article/heathrow-rewards-and-emirates-skywards-form-loyalty-program

[21]. Hohpe, G., & Woolf, B. (2003). Enterprise Integration Patterns: Designing, Building, and Deploying Messaging Solutions . Addison Wesley Signature Series.

[22]. Hojaji, F. (2012). Five aspects of application integration requirements. ARPN Journal of Systems and Software , 2 (3), 97-103.

[23]. Hu, H., Huang, C., & Chen, P. (2010). Do reward programs truly build loyalty for lodging industry? International Journal of Hospitality Management , 29, 128-135.

[24]. Hung, W.-H., Chang, I.-C., Yen, D. C., & Lee, C.-M. (2015). Critical factors of adopting enterprise application integration technology: An empirical study on larger hospitals. Communications of the Association for Information Systems , 36 (1), 619-641.

[25]. ITC launches common loyalty programme. (2012, Mar 21). Retrieved July 17, 2015, from ITC Ltd.: http://www.itcportal.com/media-centre/press-reports-content.aspx?id=1182&type=C&news=itc-launches-common-loyalty-programme

[26]. Kang, J., Brashear-Alejandro, T., & Groza, M. (2015). Customer–company identification and the effectiveness of loyalty programs. Journal of Business Research , 68 (2), 464-471.

[27]. LaFata, J., & Scott, H. (2015). Enterprise application integration - A primer in integration technolgies. Retrieved 6 18, 2015, from Liquidhub: www.liquidhub.com/docs/Horizons_EAI.pdf

[28]. Leenheer, J., Heerde, H. J., Bijmolt, T. H., & Smidts, A. (2007). Do loyalty programs really enhance behavioral loyalty? An empirical analysis accounting for self-selecting members. International Journal of Research in Marketing , 31-47.

[29]. Linthicum, D. S. (1999). Enterprise Application Integration (Vol. 1st Edition). Addison Wesley Professional.

[30]. Liu, Y. (2007). The long-term impact of loyalty programs on consumer purchase behavior and loyalty. Journal of Marketing , 71 (4), 19-35.

[31]. Loyalty Awards 2016 Finalists. (2016). Retrieved 6 1, 2016, from Loyalty Magzine Awards: http://theloyaltyawards.com/shortlist/

[32]. Loyalty Management Market Worth 4.59 Billion USD by 2021. (2017). (Markets and Markets) Retrieved May 12, 2017, from Markets and Markets: http://www.marketsandmarkets.com/PressReleases/loyalty-management.asp

[33]. McCall, M. (2015). Whats next in loyalty programs: Highlights of the 2014 Cornell loyalty program management roundtable. Cornell Hospitality Reports , 15 (5), 6-11.

[34]. McCall, M., Voorhees, C., & Calantone, R. (2010). Building customer loyalty: ten principles for designing an effective customer reward program. Cornell Hospitality Report , 10 (9), 6-12.

[35]. McKeen, J. D., & Smith, H. A. (2002). New developments in practice II: Enterprise application integration. Communications of the Association for Information Systems , 8 (29), 451-466.

[36]. Merriam-Webste Online Dictionary. (n.d.). Retrieved 04 25, 2016, from Merriam-Webste Online Dictionary: http://www.merriam-webster.com/dictionary/gamification

[37]. Meyer-Waarden, L. (2007). The effects of loyalty programs on customer lifetime duration and share of wallet. Journal of Retailing , 83 (2), 223-236.

[38]. Moradi, H., & Bahreininejad, A. (2013). Toward a comprehensive framework for evaluating the core integration features of enterprise integration middleware technologies. JOURNAL OF SYSTEMS INTEGRATION , 13-29.

[39]. Myers, M. (1997). Qualitative research in information systems. MISQ Discovery , 21 (2), 241-242.

[40]. Myers, M., & M, N. (2007). The qualitative interview in IS research: Examining the craft. Information and Organization , 17, 2-26.

[41]. Palanimalai, S., & Paramasivam, I. (2015). An enterprise oriented view on the cloud integration approaches – Hybrid cloud and big data. 2nd International Symposium on Big Data and Cloud Computing (ISBCC'15) (pp. 163-168). Elsevier.

[42]. Patil, N., Kshirsagar, M., & Jaypal, P. (2014). Enterprise application integration using service oriented architecture with generic pattern. International Journal of Current Engineering and Technology , 3540-3545.

[43]. Poranki, K., Perwej, Y., & Akhtar, N. (2015). Integration of SCM and ERP for competitive advantage . Research Journal of Science and IT Management , 17-24.

[44]. Purohit, A., & Thakar, U. (2018). Use of ICT in Customer Loyalty Programs: A State of the Art Review. International Journal for Research in Applied Science & Engineering Technology (IJRASET) , 6 (VI), 1010-1020.

[45]. Ramly, S. M., & Omar, N. A. (2015). Relative contribution of loyalty program and store attributes to store engagement and store equity. Full Paper Proceeding MISG-2015. 1, pp. 211-226. KualaLumpur, Malaysia: Global Illuminators.

[46]. Ruivo, P., Mestre, A., Johansson, B., & Oliveira, T. (2014). Defining the ERP and CRM integrative value. CENTERIS 2014 - Conference on ENTERprise Information Systems (pp. 704-709). Elsevier.

[47]. Saldana, J. (2009). The Coding Manual for Qualitative Research. London: SAGE.

[48]. Sharp, B., & Sharp, A. (1997). Loyalty programs and their impact on repeat-purchase loyalty patterns. International journal of Research in Marketing , 14 (5), 473-486.

[49]. Singapore Airlines And Vistara Launch Frequent Flyer Programme Partnership. (2015, Jan 29). Retrieved July 17, 2015, from Singapore Air: https://www.singaporeair.com/jsp/cms/en_UK/ppsclub_krisflyer/sia-and-vistara-ffp-partnership.jsp

[50]. So, J. T., Danaher, T., & Gupta, S. (2015, Feb). What do customers get and give in return for loyalty program membership? Australasian Marketing Journal , 1-11.

[51]. Solanki, M., Shah, S., & Vora, D. (2014). Integration of a web portal and an ERP through web service based implementation and testing approach. International Journal of Research in Engineering and Technology , 3 (11), 269-278.

[52]. Stauss, B., Schmidt, M., & Schoeler, A. (2005). Customer frustration in loyalty programs. International Journal of Service Industry Management , 16 (3), 229-252.

[53]. Surugiu, I. (2012). Integration of information technologies in enterprise application development. Database Systems Journal , 3 (1), 21-32.

[54]. Time Inc. UK Launches Subscriber Loyalty Programme. (n.d.). Retrieved 10 28, 2016, from TimeInc.UK: http://www.timeincuk.com/about/news/press-release/time-inc-uk-launches-subscriber-loyalty-programme/

[55]. Uncles, M., Dowling, G., & Hammond, K. (2003). Customer loyalty and customer loyalty programs. Journal of Consumer Marketing , 20 (4), 294-316.

[56]. Voorhees, C., White, R., McCall, M., & Randhawa, P. (2015). Fool's gold? assessing the impact of the value of airline loyalty programs on brand equity perceptions and share of wallet. Cornell Hospitality Quarterly , 56 (2), 202-212.

[57]. Wirtz, J., Mattila, A. S., & Lwi, M. O. (2007). How effective are loyalty reward programs in driving share of wallet? Journal of Service Research , 9 (4), 327-334.