

# **Risk culture in card payment acceptance: a case study**

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## **PREFACE**

This mini-dissertation is the final deliverable in the Centre for Applied Risk Management (UARM)'s taught master's degree programme. The mini-dissertation was written in article format and consists of three sections: Research project overview, Article and Reflection.

This mini-dissertation is the student's work. The student was responsible for the final concept, set up, execution of the research project and writing of the mini-dissertation. The members of the supervisory team contributed in an advisory and technical support capacity on study conception and design, analysis and interpretation of data and critical revision of the manuscript. The mini-dissertation was language edited.

The main study supervisor gave the student permission to submit this mini-dissertation for examination.

## **ABSTRACT**

There are not many published academic articles on risk culture in the financial services. This academic study seems to be the first to focus on risk culture in the unexplored area of the card payment acceptance industry. Financial sector risk management requires robust risk management practices underpinned by a strong risk culture, thereby assisting institutions that provide payment acceptance services to gain the trust and confidence of their stakeholders. In this project, we assessed the risk management culture at management and non-management levels of a merchant card acquiring bank ('the acquirer') in the card payment acceptance industry, using the Centre for Applied Risk Management Risk Culture Questionnaire (UARM RCQ-2016). The results indicated that a strong risk management culture is perceived to exist at this institution. In addition, we found significant differences in risk management culture perception between managers and non-managers of the organisation. This research project illustrated a practical method for assessing risk culture and obtaining suggestions for improving the maturity of risk culture in card payment acceptance and related organisations. The approach employed in this study provides valuable and real-world information, which may also be used to assess the risk culture of other segments in the card payment acceptance process, such as issuing banks and merchants.

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Lastly I would like to acknowledge the various authors who increased my body of knowledge I have acquired from this research work.

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# **RESEARCH PROJECT OVERVIEW**

## **Project background**

This study is about risk management culture in the card payment acceptance arena. The card payment acceptance industry is susceptible to the typical risks experienced in the financial sector. Innovations currently taking place in the card payment acceptance space bring with them additional risk management challenges. There are not many published academic articles on risk culture in financial services. This academic study seems to be the first to focus on risk culture in the unexplored area of the card payment acceptance industry.

In the card payment acceptance space, new innovative payment methods are still being introduced. Consumers are now enjoying the payment for goods or services through what is called “card present and card not present” forms of transactions. Risk management forms an important part of understanding technology trends, and how companies are able to leverage off new technology. Industry governance requirements such as rules, laws and regulations affect the operations of the payment acceptance industry. Recent changes brought about in the South African National Credit Act have implications for businesses dealing with credit cards. Current inflationary trends introduce challenges that may affect operations of the card industry. Stiff competition exists in the card payment acceptance industry. In addition, new payment methods are continuously being introduced. Therefore, the card payment acceptance industry is a complex and fast growing business, which calls for players to ensure that they have a robust risk management culture.

## **Purpose of the study**

This study aimed to:

- Understand risk and risk culture in the context of the card payment acceptance industry;
- Understand risk culture perception of management and non-management employees in a card payment acceptance division of a financial institution (‘the acquirer’);
- Make recommendations to enhance the risk culture in the card payment acceptance division, based on the study findings.

**Justification for the selected journal**

The journal selected for this research report is the *Journal of Business Research*. The factors considered when selecting this journal included reputation, popularity, accessibility, nature of studies, and previous articles published in the journal. This journal is a business publication journal that is internationally recognised and accredited. Articles from this journal have been widely cited by other authors. This journal has published a number of articles on business management, risk perception, risk management and organisational culture. From a literature search undertaken on articles related to risk culture, it appears as if there are no published articles on risk culture in the journal as none could be found through the internet search. This scarcity was seen as an opportunity for registering the first article on risk culture in this journal. The internet address for this journal is

<https://www.elsevier.com/journals/journal-of-business-research/0148-2963/guide-for-authors>

The journal requires the use of American English. For the purposes of the mini-dissertation, UK English was used, following the North-West University's language style guidelines. American English will be used should the article be submitted to the journal. The APA 6<sup>th</sup> edition reference style used in the mini-dissertation corresponds to the journal's reference style requirements.

# ARTICLE

## **Risk culture in card payment acceptance: a case study**

### **1. Abstract**

There are not many published academic articles on risk culture in the financial services. This academic study seems to be the first to focus on risk culture in the unexplored area of the card payment acceptance industry. Financial sector risk management requires robust risk management practices underpinned by a strong risk culture, thereby assisting institutions that provide payment acceptance services to gain the trust and confidence of their stakeholders. In this project, we assessed the risk management culture at management and non-management levels of a merchant card acquiring bank ('the acquirer') in the card payment acceptance industry, using the NWU Centre for Applied Risk Management Risk Culture Questionnaire (UARM RCQ-2016). The results indicated that a strong risk management culture is perceived to exist at this institution. In addition, we found significant differences in risk management culture perception between managers and non-managers of the organisation. This research project illustrated a practical method for assessing risk culture and obtaining suggestions for improving the maturity of risk culture in card payment acceptance and related organisations. The approach employed in this study provides valuable and real-world information, which may also be used to assess the risk culture of other segments in the card payment acceptance process, such as issuing banks and merchants.

Keywords: risk culture; card payment acceptance; acquiring risk; financial sector risk

## **2. Introduction**

Card payments have increased in importance internationally and also in South Africa over recent years as the payments acceptance industry introduces new and innovative products. These products are often linked to online shopping. The growth of the card payment acceptance industry has led to stiff competition among service providers in the field, leading to increasing demand for more sophisticated card products (Schneider & Garon, 2014). The payment acceptance industry has to instil confidence in the market to encourage customers to trust the system. Individuals who work in this sector should therefore be risk cautious so as to minimise the risks. One way to achieve this is to establish and maintain a strong risk culture in this industry.

A review of previous academic research and published articles indicated a lack of research on risk culture and its assessment in the card payment acceptance industry. The purpose of this research project, therefore, was to:

- Understand risk and risk culture in the context of the card payment acceptance industry;
- Understand risk culture perception of management and non-management employees in a card payment acceptance division of a financial institution ('the acquirer');
- Make recommendations to enhance the risk culture in the card payment acceptance division, based on the study findings.

## **3. Background**

As we could not find published academic research pertaining to risk culture in the card payment acceptance industry, we relied on related work on internet banking and e-commerce risk. For example, Kesharwani and Bisht (2012) indicated that perceived risk has a negative impact on the adoption of and trust in internet banking, and concluded that financial institutions should attend to perceived risk factors to build customers' confidence and trust to retain their business. In a mobile payments acceptance study, Zmijewska, Lawrence, and Steele (2007) found that user acceptance was influenced by perceived ease of use, usefulness, mobility, cost,

trust, and expressiveness of products in existence. In an earlier study Guseva and Rona-Tas (2001) pointed out that institutions should thoroughly analyse applications from potential merchant customers before providing them with payment acceptance solution services. Their study covered costing aspects including transactional fees incurred by the merchant as associated costs. They found that while merchants were not significantly influenced by fees they incurred for accepting the card payments, they were motivated by transactional benefits derived from accepting card payments. Notably the study made no mention of risk management or risk culture.

Hayashi (2006) reported that merchants accept card payments especially when they benefit more from the transaction than the rate they pay, and that card usage fees are not regarded as critical if the benefits to the business offset the card usage fees. He made reference to risks that may be incurred, such as financial losses due to fraud.

### **The card payment acceptance industry**

Financial institutions, such as banks, play an important role in any economy by accepting funds in the form of deposits and investments, providing lending solutions and by facilitating payments. The use of cheques as an alternative to cash for making payments led to the cheque clearance industry. Subsequently, cards became a common payment vehicle in the 1970s, leading to the exponential growth of the card industry (Thomas, 2009). Dang (2015) warns that South Africa's economy could be detrimentally affected by a collapse of the card industry, as more consumers now prefer paying with cards than with cash. Sienkiewicz (2001) indicated that cards have become the preferred means of payment for products such as travel, entertainment and retail purchases.

Reasons for the card industry's growth include the fact that paying with cards is less risky than using cheques or cash, as well as being more flexible and convenient. A recent study on global payment methods projected continuous growth of card payment acceptance for the years 2014 to 2019 and that debit and credit cards would constitute the largest proportion of this growth (WorldPay, 2015). According to Ching and Hayashi (2008), the growth of card payment acceptance can also be attributable to incentives on use, such as rewards, being offered to cardholders by

card issuers. Such growth needs to be informed by solid academic research on risk management and assessments of risk culture in the industry.

The card industry is similar to other industries in the sense that it is impacted by strategic, financial, economic, political, regulatory, technological, competitive and other risks. It is a fast growing sector where new technology and innovative products introduce new challenges. Kjos (2007 ) provides a comprehensive overview of the merchant acquiring side of the card payment industry. A summary of the card payment process is provided in Figure 1. In terms of industry specific risks, a merchant acquiring bank was selected for this study, as it carries the greatest risk in the card payment acceptance process.

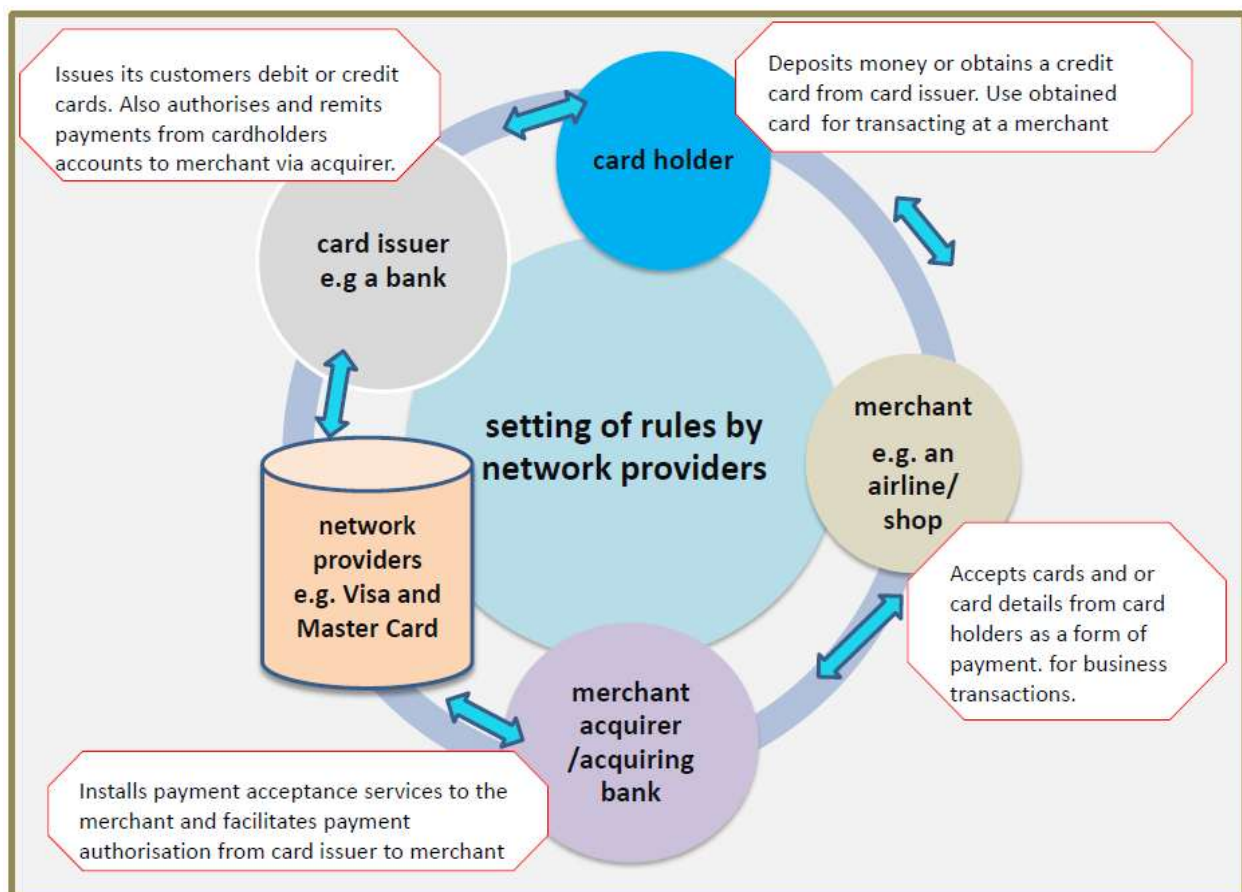


Figure 1: The card payment acceptance cycle

As illustrated in Figure 1, a merchant acquiring bank registers with payment networks such as Visa and MasterCard to provide payment acceptance solutions to merchants. The merchant acquiring bank (the acquirer) installs a card payment

acceptance service (such as point of sale machine) at the premises of the merchant. A card holder with a credit or debit card issued by an issuing bank transacts with the merchant. The merchant requests authorisation of the transaction from the issuing bank via the merchant's acquiring bank and the payment network.

All stakeholders in the process carry risk. The main function of payment networks such as Visa and MasterCard is to set the rules and regulations and they consequently carry minimal risk in the card payment process. The main payment risks lie with the other parties in the transaction. For example, the cardholder is susceptible to fraud risk when a secret pin code and card are illegally used by someone else. The merchant may be liable to losses by releasing goods or services to the wrong person or by processing an illegal transaction due to inadequate security verification systems. The card issuer, in turn, may provide credit facilities to undeserving clients or may allow authorisation of transactions to persons who have insufficient funds in their account (Guseva & Rona-Tas, 2001). The merchant acquiring bank may incur losses when insolvent or dubious merchants fail to meet their obligations after receiving funds from cardholders.

According to Furletti and Smith (2015), the payment networks normally protect the interests of cardholders through chargeback rights, which are entitlements given to cardholders to reverse transactions in the event of a dispute arising from effected transactions on their card accounts. After a chargeback has been raised, the acquirer refunds the cardholder and passes the claim on to the merchant. A chargeback right leads to a non-contractual contingent liability between acquirer and merchant in which the merchant has to pay the acquirer. It becomes difficult for an acquirer to fully recover the amount owed, thereby causing a loss. The merchant acquiring bank therefore carries the most risk in the card payment acceptance process (Office of the Comptroller, 2014).

The risks faced by the merchant acquirer require an effective risk management system supported by a strong risk management culture (Blunden and Thirwell, 2010). It is crucial therefore for such institutions to be able to assess and understand their prevailing risk culture. The following sections provide some literature on risk culture and its applicability to the card payment acceptance.

## **Organisational culture**

Risk culture is a subset of organisational culture, which is defined as the “collective of programming of minds that distinguishes one group or category from the other” (Hofstede, Hofstede, & Minkov, 2010, p. 6). In this definition, the term ‘collective’ refers to the shared beliefs in the organisation. Schein (2010)’s assumptions based approach to organisational culture stresses the role of shared basic underlying assumptions in creating and maintaining the culture of groups in organisations. In this view, any employee will adapt and fit into the prevailing card payment acceptance organisational culture through learning from what is currently being practiced by existing members. Risk culture perceptions are typically shared by staff members belonging to an organisation, business unit or department.

## **Levels of culture and organisational culture**

According to Hofstede et al. (2010, p. 6) culture is made up of unwritten rules of the social game that differentiate a group of people from other groups. For example, a merchant acquiring bank can be expected to share aspects of organisational culture with other acquirers but also to differ in cultural aspects. The same holds for groups inside organisations such as management levels of functional role-based groups. Organisational culture is built through relations among peer employees or between superiors and subordinates (Hofstede et al., 2010, p. 47). Organisational culture also affects the ways in which organisations relate to the outside world and the treatment of the outsiders, therefore organisations need to know what is best for the business and its clients (Hofstede et al., 2010, p. 345).

## Risk Culture

### Definition of risk culture

Table 1 provides risk culture related terms found during the literature search.

**Table 1: Risk culture related terms**

| Definition/Description                                                                                                                                                                                                                                                                                                                                                                                                        | Source                       |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
| Risk culture is a term that describes the values, beliefs, knowledge and understanding about risk shared by a group of people with a common purpose.                                                                                                                                                                                                                                                                          | Protiviti (2012)             |
| Risk culture is a shared philosophy of managing uncertainty that is embedded within an entity.                                                                                                                                                                                                                                                                                                                                | Beaumier (2014)              |
| Risk culture is the behavioural norms of a company's personnel with regard to the risks presented by the strategy execution and business operations.                                                                                                                                                                                                                                                                          | Bingham (2015)               |
| Risk culture refers to how groups of people view and react to uncertain events that could have a negative impact on reaching the group's objectives.<br><br>Organisational risk culture is defined as how groups of people integrate risk when making decisions on uncertain future events that could have a negative impact on reaching the organisation's objectives.                                                       | UARM (Appendix 1)            |
| Risk management as facilitative enabler<br><br>Appropriate risk management practices are used to actively enable meeting the organisation's objectives. Risk management as a function facilitates optimal inclusion of risk in the organisation's decision-making processes.                                                                                                                                                  | Houngbedji and Aurèle (2011) |
| Risk Integration<br><br>Risk forms an active part of all aspects of the management of the organisation. A systemic view of risk, e.g. risk management, is integrated across risk types and not silo based. Integration provides a clear link between risks and the organisation's objectives.                                                                                                                                 | UARM (Appendix 1)            |
| Risk Awareness<br><br>Understanding of risk and the risk management practices in the organisation, including the link between risk management and the organisation's objectives.<br><br>Uncertainty approach and appetite:<br><br>Agreement on how uncertainty should be viewed and managed by different groups in organisations – in terms of risk events, the impact of risk events and understanding risk by stakeholders. | UARM (Appendix 1)            |

The UARM Risk Culture Questionnaire (UARM RCQ-2016) was used for this study. The UARM definition of risk culture is therefore the definition employed in this study.

### **How risk culture originates**

According to Protiviti (2012) four different factors lead to risk culture, namely, personal pre-disposition, personal ethics, behaviours and organisational culture. An individual's predisposition and related personal ethics form the basis of risk culture. Personal ethics relates to personal values, fairness, integrity and honesty. The resultant behaviour of the individual contributes to organisational culture. Risk culture is a subset of organisational culture.

The Institute of Risk Management, IRM (2012) introduced the ABC model of risk culture. ABC stands for Attitude, Behaviour and Culture. Protiviti (2012) stated that attitude shapes behaviour, and repeated behaviour forms the culture. Protiviti (2012) concluded that culture also influences behaviour and attitude. Protiviti (2014) described a strong risk culture as the glue that holds together an organisation's business strategy, performance management, risk management and the organisation's risk appetite.

### **Elements of a strong risk culture**

Elements of a strong risk culture can be classified as tone from the top, accountability, effective challenge and incentives (Walter, 2014). For each of these indicators several questions can be asked when testing them. Table 2 contains Walter's suggested questions that can be used when assessing these elements.

**Table 2: Suggested questions for assessing elements of a risk culture**

| Indicator           | Questions to test for the risk culture indicator                                                                                                                                                                                                                                                                                                              |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Tone from the top   | <ul style="list-style-type: none"><li>- Is the organisation's top management leading by example?</li><li>- Is there a provision for assessing espoused values?</li><li>- Does management ensure a common understanding and awareness of risk?</li><li>- Does the organisation learn from previous risk culture failures?</li></ul>                            |
| Accountability      | <ul style="list-style-type: none"><li>- Is there a platform for the sharing of risk information, roles and responsibilities and for risk ownership across the board?</li><li>- What decision enforcement mechanisms are available to managers for the identified risks?</li><li>- Is there a clear escalation process for all the identified risks?</li></ul> |
| Effective challenge | <ul style="list-style-type: none"><li>- Is management open to dissent?</li><li>- Is there an open door policy when it comes to risk management and challenging of decisions made by senior management?</li></ul>                                                                                                                                              |
| Incentives          | <ul style="list-style-type: none"><li>- Is the current remuneration structure linked to performance and how well can the compensation structure reinforce a positive risk culture?</li><li>- How well are the existing incentives aligned to the organisation's risk appetite?</li></ul>                                                                      |

Source: Walter (2014)

### **Embedding a risk culture**

In order to successfully embed risk culture in card payment acceptance institutions, the management of risk should not only be restricted to employees working in the risk management department. It is vital for the organisation to ensure that every employee appreciates the concept of risk management. The work of Sheedy, Griffin, and Barbour (2015) indicated that a strong risk management culture arises as a result of well-articulated shared values and beliefs in risk management. Risk ownership is an integral part of a strong risk culture. Risk ownership should be supported by clear roles and responsibilities in an organisation's risk management process. There should also be focus on learning from previous mistakes and continuous improvement (Houngbedji & Aurèle, 2011).

Embedding risk culture should start from the top of the organisation. Other useful actions to take into account towards embedding a strong risk culture include the following:

- The implementation of training regimes to cement the risk culture;
- Proper communication and conveying uniform messages; and

- Encouraging open discussions about risk management.

Risk culture should be part of the corporate culture supported by a belief that risk management helps to bring value to the organisation (Blunden & Thirwell, 2010).

According to the IRM (2012), a strong risk culture is characterised by a common purpose, values and ethics. In an organisation with a strong risk culture, there is promotion and encouragement of continuous learning and development. There is also honest and transparent discussion of risk matters and there is a common understanding of the risk vocabulary.

### **Benefits of a strong risk culture**

Table 3 summarises perceived benefits from a strong risk culture found in the literature.

**Table 3: Benefits of a strong risk culture**

| <b>Benefit</b>                                                                                                                                                                                                                                                                                          | <b>Source</b>                     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|
| Having a strong risk culture in the organisation facilitates the effective sharing of information throughout the organisation thereby leading to transparency on how risk is managed.                                                                                                                   | (Houngbedji & Aurèle, 2011)       |
| Enhancement of a strong risk culture leads to good enterprise risk management. Good enterprise risk management discourages a silo approach to managing risks. Risk culture can also lead to the creation of a well communicated risk strategy and appetite.                                             | Farrel and Hoon (2015)            |
| A strong risk culture leads to an effective risk appetite setting and it facilitates informed decision-making. Risk culture facilitates the transformation of a significant shift in the mind set and processes in the organisation. Thus, every employee in the organisation should be a risk manager. | Beaumier (2014); Protiviti (2012) |

Farrel and Hoon (2015) described risk culture as a subsection of risk management that has not received adequate attention from top management of organisations, and yet it is critical for the success of an organisation. They also recommended that senior management should include risk culture as part of total risk management efforts.

FSB (2013) and Young (2013) pointed out that risk culture is important when it comes to the creation of effective risk governance. Young (2013) further stated that firms generally accept the need for strong and effective risk culture. This tends to lead to development of the ability to model acceptable risk taking behaviour in institutions. Good risk governance enhancement can be described as a product of risk culture for a merchant acquiring bank.

Every card payment acceptance institution has a business strategy and facilitates achievement of their strategy through performance management. Business strategy is usually aligned to the organisation's risk appetite. Risk appetite can be controlled through risk management. As described above, risk culture now acts as the glue that helps to hold the above strategic pillars together, thereby making it an important component of effective risk management practice (Protiviti, 2014). Protiviti also recommended that risk culture should be aligned with the risk management framework and practices of an organisation.

### **Conclusions from the literature review**

A definition for risk culture in card payment acceptance was not found in the literature review on risk culture in financial institutions. We therefore concluded that literature sources on organisational risk management culture do not specifically address risk culture in the card payments acceptance industry. Secondly, most of the identified risk culture literature sources are based on consulting work and opinions rather than on published scholarly literature. This study is therefore expected to contribute to the academic literature on risk culture in the card payment acceptance industry.

#### **4. Method**

This section describes the methods used to assess the prevailing risk culture of management and non-managerial employees in a card payment acceptance division of a merchant card acquiring bank ('the acquirer').

##### **Questionnaire**

The research was done using the online UARM RCQ-2016 pilot questionnaire. Participants were assured of confidentiality and anonymity. By employing a survey, we took a quantitative approach towards assessing the risk culture of a merchant acquiring bank. The development and status of the UARM RCQ-2016 is explained in Appendix 1.

##### **Card payment specific research items**

Ten additional card payment acceptance specific items were developed and added to the UARM RCQ-2016. These items were intended to provide further information on the perception of risk management culture in the card payment acceptance division. Appendix 2 provides a list of these additional items.

The standardised Cronbach's alpha was used to test the internal reliability of the UARM RCQ-2016 questionnaire for this sample. The Cronbach's alpha of 0.96, indicated a high internal reliability for the study sample.

##### **Participants**

Data on risk culture were gathered directly from members of staff of a card payment acceptance division of a financial institution. The population for this study consisted of employees working in the merchant acquiring card payment acceptance division. At the time of the study, this unit had 358 employees at management and non-management levels of the organisation. We sent the survey link to the entire population of the division. This provided every employee in the division with an equal opportunity of participation and for his or her views to be heard.

Table 4 provides an overview of the population and the number of participants for this study.

**Table 4: Study population and number of respondents**

| Management Level     | Number of employees | Number of participants | Response rate (%) |
|----------------------|---------------------|------------------------|-------------------|
| Executive Management | 8                   | 2                      | 25                |
| Senior Management    | 52                  | 10                     | 19                |
| Middle Management    | 90                  | 27                     | 30                |
| Non-Management       | 208                 | 58                     | 28                |
| <b>Total</b>         | <b>358</b>          | <b>97</b>              | <b>27</b>         |

Source of numbers of employees at a specific management level: Company employee phone book 2016.

Percentages of respondents were comparable for the management and non-management levels of the organisation. The subsamples may therefore be considered to equally represent the views of the groups they belong to.

## Procedure

The questionnaire was first pilot-tested to assess its suitability for the study. For piloting, we used five randomly selected participants to complete the questionnaire and noted the completion time. The questionnaire was then sent to all the 358 participants from an established internal communication email address. The electronic questionnaire remained open for one month. During this time, reminders were sent once every week to the participants to complete the questionnaire. This led to an adequate total response rate of 27%.

## Analysis

Descriptive and inferential statistical analyses were performed on the survey data using SAS®.

## 5. Results and Discussion

### Biographical

The 97 participants were divided into two groups, namely, management and non-management. The management group consisted of executives (2%), senior management (10%) and middle management (28%). There is currently no junior management group in this institution. The supervisors are mostly regarded as non-management staff members. The proportions of the management and non-management groups in the sample were 40% to 60%, respectively.

Responses received were also classified according to the role performed by the participants in the organisation, and results obtained reflected the following proportions: administration (16%), finance (11%), sales and marketing (25%), operations (22%), risk management (22%) and other (4%). The “other” category comprised participants from information technology and strategy departments. The role-based comparison was not among the planned objectives of the study. However, we were keen to establish if there was a significant difference in the perception of risk management culture between participants whose core function was risk management and participants whose core function was not risk management.

Fifty-six percent of the participants were academically qualified to the level of a first degree or higher. In terms of gender classification, 66% of the participants were female and 34% male.

**Table 5: Age groups of participants**

| Age (years) | Frequency | Percent |
|-------------|-----------|---------|
| 20-29       | 25        | 26      |
| 30-39       | 40        | 41      |
| 40-49       | 20        | 21      |
| 50-59       | 12        | 12      |

Table 5 shows the age group frequency distribution of the participants. Most were older than 30 years. The maturity of participants increased the researchers’

confidence in the quality of the results obtained. This was based on the assumption that the greater the participants' age, the greater the experience acquired.

### **Risk culture findings: General perception**

The UARM RCQ-2016 data obtained were analysed at the 90% and 95% confidence intervals. The 10% level of statistical significance was also considered due to the small population and resultant low sample size. The UARM RCQ-2016 factors scores were as follows:

- a) Factor 1 assessed the perception of risk integration and had a total of 25 items;
- b) Factor 2 was an individual level risk culture diagnostic factor and had a total of 9 questions. This factor was further divided into two sub-factors, namely, 2.1 Risk understanding, and 2.2. Individual responsibility and accountability.

The risk culture factor maturity scores were obtained by calculating the mean of items per factor. The results are presented in Table 6.

**Table 6: UARM RCQ-2016 Mean factor scores**

| <b>Factor Scores</b>    |                 |                       |                       |
|-------------------------|-----------------|-----------------------|-----------------------|
|                         | <b>Factor 1</b> | <b>Sub-factor 2.1</b> | <b>Sub factor-2.2</b> |
| <b>All participants</b> | 4.1             | 4.0                   | 4.4                   |
| <b>Factor Scores</b>    |                 |                       |                       |
| <b>Management level</b> | <b>Factor 1</b> | <b>Sub-factor 2.1</b> | <b>Sub-factor 2.2</b> |
| <b>Management</b>       | 4.1             | 4.1                   | 4.6                   |
| <b>Non management</b>   | 4.1             | 3.9                   | 4.3                   |

A score of greater than or equal to 3.5 and less than 4.5 for Factor 1 shows that risk management is generally viewed as a high integrated enabler of achieving the organisation's objectives by both management and non-management employees. Similar values for sub-factor 2.1 indicate that employees believe on average that they have a high level of understanding of risk in the organisation.

Sub-factor 2.2 (Individual responsibility and accountability) had the highest scores. A score of greater than or equal to 4.5 indicates that management level employees on

average feel completely responsible and accountable for risks connected to their roles, while a score of less than 4.5 and greater than or equal to 3.5 indicates that the non-management participants on average feel a high level of responsibility and accountability for risks connected to their roles.

The high factor scores suggest that the general perception is that risk management culture at this card payment acceptance institution is mature.

### **Risk culture findings: Differences between management and non-management groups**

Inferential statistical analyses were carried out to determine whether there were significant differences on the factor scores between management and non-management groups. The data were not normally distributed. A non-parametric test therefore was used to investigate if the identified items had significant statistical differences. The Wilcoxon scores were used to obtain the Wilcoxon rank sum (Mann-Whitney) test results for two independent groups. These results were used to test if there was a difference between the risk culture maturity levels at management and non-management levels. No significant differences were found at the 5% or 10% significance levels. The null hypothesis that the factor distribution of the two groups is the same could not be rejected for this sample.

Next, significant differences on how individual items were answered by the two management levels were investigated using the chi-square test statistic and corresponding p-values obtained through the Mann-Whitney test. Items with significant differences between the two levels were identified at the 5% significance level. (See Appendix 3.)

As shown in Appendix 3, there are three items that showed statistically significant differences in the way they were answered by management and non-management employees. Detailed information for these three items are shown in Table 7.

**Table 7: Mean Wilcoxon scores for items with statistical significant differences**

| Wilcoxon signed rank test results                                                                                                                 |       |                     |                           |         |                                  |
|---------------------------------------------------------------------------------------------------------------------------------------------------|-------|---------------------|---------------------------|---------|----------------------------------|
| Management level                                                                                                                                  | N     | Mean Wilcoxon Score | Chi-square test statistic | p-value | Significant difference at α=0.05 |
| Factor 1: Risk integration                                                                                                                        |       |                     |                           |         |                                  |
| 25. The organisation provides adequate resources (people, processes, systems, budget) for me to be able to manage the risks connected to my role. |       |                     |                           |         |                                  |
| Management                                                                                                                                        | 39.00 | 40.45               | 4.33                      | 0.04    | Yes                              |
| Non-management                                                                                                                                    | 54.00 | 51.73               |                           |         |                                  |
| 29. The work of the formal risk management functions are appreciated by the other functions in the organisation.                                  |       |                     |                           |         |                                  |
| Management                                                                                                                                        | 39.00 | 40.31               | 5.70                      | 0.02    | Yes                              |
| Non-management                                                                                                                                    | 56.00 | 53.36               |                           |         |                                  |
| Sub-factor 2.1: Individual risk understanding                                                                                                     |       |                     |                           |         |                                  |
| 7. I understand the link between the organisation's risks and objectives.                                                                         |       |                     |                           |         |                                  |
| Management                                                                                                                                        | 39.00 | 55.51               | 4.05                      | 0.04    | Yes                              |
| Non-management                                                                                                                                    | 58.00 | 44.62               |                           |         |                                  |

The response differences on Item 25 indicate that employees at non-management level were more satisfied with the risk management resources provided than the employees at management level.

The responses to item 29 indicate that the non-management employees also believe that the work of the formal risk management functions is more appreciated by the other functions in the organisation. The lower perception levels at management levels could be due to many factors and should be further investigated to get to the root causes of the problem. It may be that the management level employees are closer to the risk management process and have a higher understanding of risk management issues in the organisation. This hypothesis is supported by the result for sub-factor 2.1 where managers were more comfortable than non-managers with their understanding of the link between the organisation's risks and objectives.

This finding could lead to an investigation on the tools required to ensure that there is increased understanding of the link between organisational objectives and

associated risk for non-managers. The differences could arise from the fact that managers participate in setting organisational objectives and risk evaluations while non-managers may not.

### Who owns the risks in the organisation?

The UARM RCQ-2016 included a non-scale item that asked the participants who owns the risk in the organisation. Figure 2 shows that the perception of 36% of the participants was that risk was owned by all employees in the organisation, 26% of the participants indicated that risk was owned by risk, strategy and operations departments, and 6% of the participants were not aware of who owns the risks.

The high percentage of employees who believe that risk and audit managers own risks in the organisation is concerning, as risks should be owned by strategic and operational managers and employees and not by the governance, assurance and risk facilitation functions.



Figure 2: Perception of risk ownership

### What should improve?

Another item asked: 'To improve risk management in the organisation, I believe that we must start with improving risk..... "select one"'. The options provided were communication; accountability and responsibility; management; processes; management systems; data; training; and other.



Figure 3: Perception of what should be improved to enhance risk management

Training had the highest score of 34% obtained from 33 of the participants. The other highly ranked items were accountability and responsibility (24%) and communication (19%). The need for training links to the item level findings that indicate that the non-management employees may be further removed from risk management than the management employees. These recommendations provide further valuable diagnostic information that should be used by the organisation to improve its risk culture.

### Risk management and business functions

Risk culture perceptions of the risk management department and other departments were also compared using the same statistical tests used for the management and non-management participant groups. The aim was to understand the differences in perception between the risk management function and the rest of the business. Table 8 provides the results that were obtained at the 10% significance level.

**Table: 8 Risk culture between business and risk department**

|                  | Factor Scores |                |                |
|------------------|---------------|----------------|----------------|
| Management level | Factor 1      | Sub-factor 2.1 | Sub-factor 2.2 |
| Business         | 4.1           | 3.9            | 4.4            |
| Risk             | 4.0           | 4.1            | 4.3            |

No statistically significant differences were found at  $\alpha=0.10$  for the factor scores between the business and risk management groups. However, six items showed statistically significant differences at the 10% significance level between the business and risk functions.

**Table 9: Test for differences between business and risk**

| Wilcoxon signed rank test                                                                         |    |                     |                           |         |                                 |
|---------------------------------------------------------------------------------------------------|----|---------------------|---------------------------|---------|---------------------------------|
| Management level                                                                                  | n  | Mean Wilcoxon Score | Chi-square test statistic | p-value | Significant difference at α=0.1 |
| Factor 1: Risk Integration                                                                        |    |                     |                           |         |                                 |
| 1. There are clear risk owners for every risk in this organisation.                               |    |                     |                           |         |                                 |
| Business                                                                                          | 74 | 45.24               | 4.25                      | 0.04    | Yes                             |
| Risk                                                                                              | 21 | 57.71               |                           |         |                                 |
| 2. The risk management functions facilitate the management of the organisation's risks.           |    |                     |                           |         |                                 |
| Business                                                                                          | 74 | 45.18               | 4.43                      | 0.04    | Yes                             |
| Risk                                                                                              | 21 | 57.93               |                           |         |                                 |
| 12. Risk management is integrated into the organisation's management processes.                   |    |                     |                           |         |                                 |
| Business                                                                                          | 76 | 46.68               | 2.90                      | 0.09    | Yes                             |
| Risk                                                                                              | 21 | 57,38               |                           |         |                                 |
| 19. My concerns about risks will be taken seriously by executive management.                      |    |                     |                           |         |                                 |
| Business                                                                                          | 69 | 49.05               | 6.07                      | 0.01    | Yes                             |
| Risk                                                                                              | 21 | 33.83               |                           |         |                                 |
| 39. The organisation actively learns from risk events to improve the management of related risks. |    |                     |                           |         |                                 |
| Business                                                                                          | 74 | 50.60               | 3.48                      | 0.06    | Yes                             |
| Risk                                                                                              | 21 | 38.83               |                           |         |                                 |
| Sub-factor 2.1: Risk Understanding                                                                |    |                     |                           |         |                                 |
| 7. I understand the link between the organisation's risks and objectives.                         |    |                     |                           |         |                                 |
| Business                                                                                          | 76 | 46.22               | 3.98                      | 0.05    | Yes                             |
| Risk                                                                                              | 21 | 59.07               |                           |         |                                 |

Members of the risk function were significantly more positive about the existence of clear risk owners for every risk in the organisation; the facilitative role of the risk management functions in the management of the organisation's risks; that risk management is integrated into the organisation's management processes; and

personal understanding of the link between the organisation's risks and objectives. Even though both groups scored high on average on the risk factors, these item based differences are concerning as they indicate that the risk function may be overly optimistic about the actual contribution that risk management makes to the organisation's management processes. These results indicate that the organisation should further investigate business perception about the value of risk management in the organisation.

Business participants were significantly more positive that their concerns about risks will be taken seriously by executive management and that the organisation actively learns from risk events to improve the management of related risks. These results may indicate that the risk managers felt more removed from the business processes than the business managers. This may be expected as long as the risk managers are not seen as risk owners in the organisation.

These preliminary results provide valuable diagnostic pointers to management to improve the risk management culture in the organisation.

### **Additional payment acceptance items**

The risk payment specific additional questions provided further payment acceptance specific information. There were no significant differences in the responses to these items between management and non-management participants. In general results indicate that associated risks arising from payment acceptance were being taken seriously and were well understood throughout the organisation. A summary of the results from card payment acceptance related items is provided in Appendix 4. These results seem linked to findings obtained from the UARM RCQ-2016 in terms of risk culture perception in general, and risk culture with special emphasis on card payment acceptance operations.

Table 10 shows the results of the item on who is responsible for risks in card payment acceptance. There were no significant differences in the responses obtained, as compared to the results that were obtained from the previous item that had asked participants about who was responsible for managing all risks in the organisation. All participants responded to the additional items. Risk and operations departments had the highest proportions.

**Table 10: Who is primarily responsible for risks arising in payment acceptance?**

| Department          | Management (%) | Non-management (%) | Total (%) |
|---------------------|----------------|--------------------|-----------|
| Not completed       | 5              | 2                  | 3         |
| Operations          | 36             | 21                 | 27        |
| Sales and Marketing | 0              | 12                 | 7         |
| Finance             | 3              | 5                  | 4         |
| Administration      | 5              | 0                  | 2         |
| Risk                | 51             | 60                 | 57        |

The general view from this question's comment section for additional information shows that some participants were of the view that risk management in card payment acceptance was specialised and could be complicated, and may need to be managed by specialised experts.

Table 11 provides summary descriptive statistics results obtained when we analysed the responses from items 43, 44 and 45. These items used a five level Likert scale ranging from 1–5 with 1 being the worst and 5 the best. These three items tested the perception of the participants' understanding of the risks associated with payment acceptance; participant's perception as to whether the employees in the payment acceptance division understood the risks that they deal with on a daily basis; and whether the payment acceptance risks were getting full attention at senior management level.

**Table 11: Perception of risk culture in the card payment acceptance**

| <i>43. I understand the risks associated with payment acceptance.</i>                                                   |    |         |        |         |      |         |      |
|-------------------------------------------------------------------------------------------------------------------------|----|---------|--------|---------|------|---------|------|
| Variable                                                                                                                | N  | Minimum | Median | Maximum | Mean | Std Dev | Mode |
| 43                                                                                                                      | 96 | 1       | 4      | 5       | 3.66 | 1.02    | 3    |
| <i>44. Payment acceptance employees in this organisation understand the risks that they deal with on a daily basis.</i> |    |         |        |         |      |         |      |
| 44                                                                                                                      | 87 | 2       | 4      | 5       | 3.76 | 0.86    | 4    |
| <i>45. Payment acceptance risks get full attention at senior management level.</i>                                      |    |         |        |         |      |         |      |
| 45                                                                                                                      | 86 | 1       | 2      | 5       | 1.87 | 0.85    | 2    |

In Table 11, the mean scores suggest that there is an understanding by participants about risks associated with payment acceptance and the risks that they deal with on a daily basis. The score obtained on item 45 suggests that there is a perception that payment acceptance risk is not getting adequate attention at senior management level.

**Table 12: Risk arising from payment acceptance services should be treated like other primary risks facing the organisation**

| Answer         | Management (%) | Non-management (%) | Total (%) |
|----------------|----------------|--------------------|-----------|
| I do not agree | 10             | 12                 | 11        |
| I agree        | 90             | 88                 | 89        |

The results shown in Table 12 indicate that 89% of the total participants agreed that risks arising from payment acceptance should be treated like other risks facing the organisation.

**Table 13: Risks arising in payment acceptance are being given the same treatment priority as the risks arising in other business units**

| Answer         | Management (%) | Non-management (%) | Total (%) |
|----------------|----------------|--------------------|-----------|
| I do not agree | 21             | 28                 | 25        |
| I agree        | 79             | 72                 | 75        |

Table 13 indicates that 75% of the participants agreed that risks arising in payment acceptance were being given the same treatment priority as other risks, while 25% did not.

**Table 14: Risks associated with payment acceptance should be thoroughly assessed at the start of every client relationship with new merchants.**

| Answer         | Management (%) | Non-management (%) | Total (%) |
|----------------|----------------|--------------------|-----------|
| I do not agree | 3              | 7                  | 5         |
| I agree        | 97             | 93                 | 95        |

Table 14 shows that, generally, a very high number of participants agreed that risks associated with payment acceptance should be thoroughly assessed at the start of merchant–client relationships.

These results indicate that the majority of participants agreed on the importance of managing risks in the payment acceptance institutions. Furthermore, there were no significant differences in the responses provided.

The evidence obtained and provided in Tables 12–15, suggests that the majority of the participants (management and non-management employees in the card payment acceptance space) generally agreed that:

- risk arising from payment acceptance services should be treated like other primary risks facing the organisation;
- risks arising in payment acceptance are being given the same treatment priority as the risks arising in other business units; and
- risks associated with payment acceptance should be thoroughly assessed at the start of every client relationship with new merchants.

Findings from the open ended items also suggest that most participants regarded risks in the payment acceptance arena as specialised risks. They recommended that such risks be managed by knowledgeable people in this field. This recommendation further supports the prominence of training in the responses obtained from the UARM RCQ-2016 findings where training was highly recommended for risk management enhancement. The results suggest that employees should be equipped with payment acceptance specific risk knowledge and be made accountable and responsible for their actions.

### **Limitations of the study**

This study did not cover all the employees within the organisation. The entire population was 358. However, only 97 responses were received, resulting in a response rate of 27%. Therefore, generalising the results to the entire population in the organisation is not possible at this stage. These initial results should be further investigated by a more comprehensive study. Secondly, there were two out of eight (25%) executives that participated in the study. A higher percentage of participants among executives could have further enriched the results. The unavailability of risk culture literature in card payment acceptance did not allow comparison for the study findings against other studies in similar organisations. This study may be the first of

its kind in the card payment acceptance space and provides an initial benchmark for further studies in card payment acceptance organisations.

## **Recommendations**

Based on the findings of this study, we recommend the following:

- Senior management should undergo further training on the risks facing card payment acceptance institutions;
- The risk management department should be empowered to play an optimal complementary role to business management and operations;
- There should not be any differences between risk management and business in the understanding of risk given that risk, as a services department, should ensure that proper risk management training and risk awareness creation is afforded to all employees at card payment acceptance institutions;
- There should be awareness creation and campaigns about the risk department's functions, as shared supporting services may assist to improve the perceived contribution of risk management to business;
- In future related studies, executives should be encouraged to participate to show that they take risk culture seriously in the organisation.

## **6. Conclusion**

The aims of this study were to identify and understand the risk management culture of an unexplored card payment acceptance division of a South African financial services institution, and to understand the risk culture perception among management and non-managerial employees at the same merchant acquiring bank. A literature review on risk culture was carried out as a way of understanding the basics of risk culture in card payment acceptance institutions. The findings from the study are supported by the statistics computed to test the validity of the findings and significant differences in the survey data. As shown by the results from the study it can be concluded that in the card payment acceptance institution that was studied, risk culture was mature. There were six items where management and non-management employees differed in their perception of risk culture. However, despite the differences in perception, the results suggest that the risk maturity level at this

card payment acceptance institution is high and acceptable. This was a successful preliminary study in an area where risk culture data have not been reported in the academic literature. It is expected that this research will provide useful pointers and benchmark data for future studies.

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# **REFLECTION**

## **Introduction**

The aim of this study was to identify and understand the risk management culture of an unexplored card payment acceptance division of a South Africa financial services institution. A literature review on risk culture was carried out as a way of understanding the basics of risk culture in institutions.

The UARM RCQ-2016 pilot questionnaire was employed as the research instrument. This questionnaire was developed as part of a bigger project on assessing risk culture. The present study was part of this bigger project. The questionnaire was distributed to a population of 358. The response rate was 27% (97 participants responded). A higher response rate could enrich the results. I feel that the SAS® tools that were utilised in the statistical analysis of the data were ideal for this study.

## **What went well?**

This study had the support of the institution under study. Permission was granted to undertake the study as long as the information is reported without identifying the organisation, and the organisation could determine whether the results should be kept confidential. Participants were encouraged to complete the questionnaire. The lecturers also provided the necessary support in the development of the questionnaire. In addition to the supervisor and co-supervisor who performed the statistical analyses, having a technical advisor proved to be of immense value.

## **Improvement areas**

Working on a mini-dissertation while still studying some modules made this project an interesting challenge and time was one of the most limited resources. It may be helpful to complete the course modules prior to working on the mini-dissertation. A slight delay in the distribution of the questionnaires was experienced due to the need to verify and seek approval of additional questions. The experienced delay in obtaining employer approval was due to the fact that senior management needed to assess the perceived benefits of the study before giving permission to go ahead with the study.

## **Lessons learnt from this project**

This has been a worthy and valuable experience in my life. Although this project officially took off during the final year of the programme, in my view the actual process commenced when I started my first module, given that our assignments took the article format. All the modules covered were building blocks towards the setting up of this main project.

Lessons learnt from this project include the following:

- **Article writing**

Reading an article without knowing or having experienced the actual process of producing an article may lead to a lesser degree of appreciation of the author's efforts. The process of coming up with the area of study, topic formulation, to the final conclusion is an involving process.

- **Maintaining a golden thread in the story line of the article**

The experience gained in writing articles will be of immense value to me personally and I hope to transfer this experience to my current workplace. A number of challenges were experienced during the study. Similarly, a number of new lessons were learnt from this study and will be applied in industry.

- **Expected results are not guaranteed**

Another discovery I made is that, in research studies, the results of the research could be different from the expected results. It is not guaranteed that the expected results will be obtained at the end of the study. Unexpected results could be obtained. This is normal in research studies.

- **Critical reading**

Another lesson learnt from the study was on critical reading. I discovered that one's work can be enhanced if the work is proofread by someone else. Interactions with the supervisors and the technical advisor demonstrated the value of reading the work of other people and the value of constructive critique.

**What can be done differently?**

If there is another opportunity for similar studies, the gathering of the necessary literature in advance could help. I discovered that the gathering of literature is involving and that some of the literature gathered along the way proved to be irrelevant to the study in the later part of the study. From this viewpoint, if a lot of literature is gathered in advance, then it should not be a big challenge as there will be a wider pool of resources.

# **APPENDICES**

## **Appendix 1 UARM RCQ 2016 Summary**

### **UARM Risk Culture Questionnaire Pilot**

#### **UARM RCQ-2016**

#### **Summary**

**Sep 2016**

Hermien Zaaiman (Research project leader)

This document provides a brief overview of the 2016 pilot version of the UARM Risk Culture Questionnaire (UARM RCQ-2016).

#### **1. Aim of UARM RCQ-2016**

The aim of the UARM behavioural risk research programme is to develop tools to assess and improve the integration of formal risk management principles into organisational management. The aim of the UARM risk culture research project is to develop tools that can be used to assess the risk management culture ('risk culture') of organisations and identify possible problem areas related to risk culture.

We distinguish between risk management as a function in the organisation and the use of risk management principles during decision making in the organisation. We expect that participating organisations will have a formal risk management function intended to facilitate and oversee the use of risk management principles at the organisation's strategic and operational management levels. As the specific implementation of risk management tends to differ from organisation to organisation, the UARM risk culture survey has been developed independently of how risk management is implemented in the organisation.

#### **2. Terms**

The term risk culture can have many meanings. This implies that risk culture must be carefully defined to allow for optimally reliable and valid assessment of the perceived risk management culture in an organisation. We took a value of risk management to the organisation based approach in the UARM Risk Culture research project. The terms necessary to understand our definition of risk culture are now defined.

**Risk:** For the purpose of this research project, we define risk as *the negative effect of uncertainty on objectives*. This definition links Hubbard's definitions of risk:

*'Long definition: The probability and magnitude of a loss, disaster, or other undesirable event' or 'Shorter (equivalent) definition: Something bad could happen'* Hubbard (2009, p. 8) to the ISO 31000 definition of risk as *'the effect of uncertainty on objectives'* (ISO, 2009b, p. 1).

**Risk management:** We use the ISO 31000 definition for risk management as *'coordinated activities to direct and control an organization with regards to risk'* (ISO, 2009b, p. 2). Hubbard (2009, p. 10) expands on this in his long definition of risk management: *'The identification, assessment and prioritization of risks followed by coordinated and economical application of resources to minimize, monitor, and control the probability and/or impact of unfortunate events'*.

**Expected value of risk management to organisations:** ISO 31000 recommends that *'organizations develop, implement and continuously improve a framework whose purpose is to integrate the process for managing risk into the organization's overall governance, strategy and planning, management, reporting processes, policies, values and culture'*. Such integration is expected proactively to increase the likelihood of achieving objectives by, in part, establishing a reliable basis for decision making and planning. (ISO, 2009a, pp. v, vi)

Based on this ISO 31000 view of the value of risk management, we view the integration of risk management principles into organisational decision making as an essential enabler for achieving the organisation's objectives. Taking risk into account during decision making at all organisational levels and management processes should contribute to reaching the organisation's objectives.

**Risk Culture:** We used the Hofstede approach to culture as starting point for the development of the UARM Risk Culture Questionnaire (RCQ). Hofstede et al. (2010, p. 516) define culture as the trained unwritten rules of the social game or the *'collective programming of the mind that distinguishes the members of one group or category of people from another'*. An organisation can be seen as a cultural group that consists of subgroups, each with their own subculture.

For this study, we define organisational risk culture as the way in which groups of people use risk management principles when making decisions on uncertain future events that

could have a negative impact on reaching the organisation's objectives. This definition allows for an assessment of the expected value of integrated risk management to achieving the objectives of the organisation.

### **3. UARM RCQ development guidelines**

The UARM risk culture questionnaire and items should:

- Be applicable across organisational sectors, work roles and risk types;
- Have a strong academic theoretical foundation;
- Be applicable in practice, i.e. with relevant and clear items, as briefly expressed as possible.

The RCQ items are based on key practices linked to the integration of risk management into the organisation's management at all levels of the organisation. The main aim of the questionnaire is therefore to assess how respondents view the levels of:

- Integration of risk management principles into the management of the organisation;
- The practice of risk management as an essential enabler for achieving the organisation's objectives.

The questionnaire also includes items that can be used as diagnostic indicators of where further questions should be asked about the risk culture of the organisation. The pilot version of the questionnaire (UARM RCQ-2016) was not intended to be a complete diagnostic tool. Based on the positive results from the questionnaire, we intend to further develop the risk culture diagnostic categories in the next versions of the questionnaire.

### **4. UARM RCQ items, factors and maturity levels**

The pilot UARM RCQ-2016 online questionnaire consists of demographic, risk culture and diagnostic items. It took less than 15 minutes to complete for an initial test sample of respondents, with an average completion time of 10 minutes. This is brief enough to allow for adequately high response rates in the student research studies.

For ethical reasons, the questionnaire requires the participants to confirm that they are older than 18 years, have read the introductory information, and consent to participation on a voluntary basis before being allowed to continue with the questionnaire. Consent to participate is followed by standard and research-project-specific demographic items, such as

age; gender; highest level of formal education completed; level in the organisation (e.g. board, executive, senior and middle management, non-management); function type (e.g. risk management, organisational management, operations); and length of time employed in the organisation.

### **Risk culture items**

Forty risk culture items were devised during workshops with UARM students and research group members. The UARM student and research group members are all fully employed in risk-related roles across industry sectors. This allowed relevant, practical input into the development of the items.

The student research-project data were used to conduct a detailed factor analysis of the responses to the UARM RCQ-2016 version of the UARM Risk Culture Questionnaire. One would expect factors related to risk culture to correlate with each other. Initial exploratory analyses on the individual student data sets supported this expectation by indicating that the factors were not orthogonal, but correlated. The final factor analysis was therefore performed using the principal axis factor method with pro-max rotation and list wise exclusion of responses with missing data, as advised by writers such as Fabrigar, Wegener, MacCallum, and Strahan (1999).

Two factors were identified involving 34 of the original 40 items. The 34 items showed consistent high internal reliability with Cronbach's alpha coefficients of between 0.95 and 0.96 for all seven student research projects. The second factor was divided into two sub-factors based on the results of further factor analyses. The factors were named using the contents of the items per factor and sub-factor:

#### **Factor 1: Risk Integration (25 items)**

#### **Factor 2: Risk Culture Diagnostic: Individual (9 items)**

##### **2.1: Risk Understanding (7 items)**

##### **2.2: Individual Responsibility and Accountability (2 items)**

The items in Factor 1 assess the participant's perception of the integration of risk management principles into decision making with the aim of achieving the organisation's objectives. The items related to the contribution of the formal risk management function(s) to objectives driven decision-making are also included in this factor. These items will be further refined, based on the initial research results to create an even more reliable and valid UARM RCQ to be used for research in 2017 (UARM RCQ-2017).

The items in Factor 2 do not directly measure risk culture as defined for the purposes of this research project. The personal ('I') risk understanding and risk responsibility-accountability items divided into two sub-factors that can be used diagnostically to investigate further underlying aspects of risk culture. More diagnostic items will be developed in further research to allow for a more comprehensive diagnostic set of factors that can be used to evaluate the underlying reasons for participant perceptions of risk culture in organisations.

### **Calculation of factor score**

At this stage in the development of the UARM RCQ, the factor scores per factor are calculated as the average of the means of the items making up the factor. This approach is generally recommended for new questionnaires where the factor loadings have not been confirmed (DiStefano, Zhu, & Mindrila, 2009; Russell, 2002).

The factor scores were calculated for each student's sample data using the items listed in Appendix UARM RCQ-2016 per factor. As the factor score values are calculated by averaging the self-reported perceived status of risk culture in the organisation, they cannot be seen as absolute measures of organisation's prevailing risk culture. The factors provide a summary of the participant's views of risk culture in the organisation. The possible influence of item response biases on the scores (e.g. directional, confirmatory, social desirability and acquiescence biases) should be investigated in further research studies to establish whether the items adequately assess risk culture levels.

We may expect that the organisations in which the student studies of risk culture were done have levels of high risk management maturity as they operate in well-regulated sectors and therefore expect high factor scores for the 2016 student studies. Studies in organisations with lower levels of risk management maturity will also have to be conducted to assess the validity of the questionnaire. Nonetheless, the perceived risk culture factor scores should permit preliminary conclusions about the perceived risk integration, individual understanding of risk and risk responsibility and accountability in the samples studied. Statistically significant differences between item responses of sample subgroups should also provide diagnostic information on risk culture differences between groups within organisations.

### **The UARM risk culture maturity model**

The factors allowed us to define a risk culture maturity model. Maturity levels corresponding to the five level Likert-type answer scales for each factor are provided in Table 1. At this stage, the sample maturity levels may be used as initial indicators of participant perception of the risk management culture in the group studied.

Note: The maturity levels are used for interpreting the results of the questionnaire. This information does not appear in the questionnaire itself and is not seen by the research participants.

## **5. Conclusion**

The 25 UARM RCQ-2016 risk culture items in Factor 1 show promise as a measure of perceived risk culture where the value of risk management is viewed specifically in terms of:

- Integration of risk management principles into the management of the organisation;
- The practice of risk management as an essential enabler for achieving the organisation's objectives.

Based on their nature, the items belonging to Factor 1 can also be seen to assess the perceived risk management tone of the organisation.

The Factor 2 diagnostic items can be used to provide limited additional information on two aspects that may influence risk culture in the organisation. The current items for Factor 2.1 measure the respondent's risk understanding. Factor 2.2 assesses personal responsibility and accountability for risks connected to the person's role. These items, combined with responses on the items in Factor 1 and the diagnostic items 41 (risk ownership) and 42 (what should improve) will be used as the basis for compiling a more comprehensive risk culture diagnostic questionnaire (i.e. what to ask the respondents to be able to diagnose the source of risk culture issues?). This question will be addressed in further UARM research projects.

Note:

The development of the questionnaire will be written up in detail as a separate article.

For more information, please contact Hermien Zaaiman ([hermien.zaaiman@nwu.ac.za](mailto:hermien.zaaiman@nwu.ac.za)). **Table 1. UARM Risk Culture Maturity Model (UARM RCQ-2016)**

| Factor                | Factor Name                                                                                         | Risk Culture Maturity Levels                                                                                  |                                                                                                              |                                                                                                                 |                                                                                                               |                                                                                                                |
|-----------------------|-----------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| <b>Factor 1</b>       | <b>Risk Integration</b>                                                                             | <b>1.0 ≤ FS &lt; 1.5</b><br>RM Not viewed as an integrated enabler of achieving the organisation's objectives | <b>1.5 ≤ FS &lt; 2.5</b><br>RM viewed as a low integrated enabler of achieving the organisation's objectives | <b>2.5 ≤ FS &lt; 3.5</b><br>RM viewed as a medium integrated enabler of achieving the organisation's objectives | <b>3.5 ≤ FS &lt; 4.5</b><br>RM viewed as a high integrated enabler of achieving the organisation's objectives | <b>4.5 ≤ FS &lt; 5.0</b><br>RM viewed as a fully integrated enabler of achieving the organisation's objectives |
| <b>Factor 2</b>       | <b>Risk Culture Diagnostic: Individual</b>                                                          |                                                                                                               |                                                                                                              |                                                                                                                 |                                                                                                               |                                                                                                                |
| <b>Sub-factor 2.1</b> | <b>Risk Understanding</b><br>(Personal assessment of own understanding of risk in the organisation) | <b>1.0 ≤ FS &lt; 1.5</b><br>Do not understand risk in the organisation                                        | <b>1.5 ≤ FS &lt; 2.5</b><br>Low level of understanding of risk in the organisation                           | <b>2.5 ≤ FS &lt; 3.5</b><br>Medium level of understanding of risk in the organisation                           | <b>3.5 ≤ FS &lt; 4.5</b><br>High level of understanding of risk in the organisation                           | <b>4.5 ≤ FS &lt; 5.0</b><br>Completely understand risk in the organisation                                     |
| <b>Sub-factor 2.2</b> | <b>Individual Responsibility and Accountability</b>                                                 | <b>1.0 ≤ FS &lt; 1.5</b><br>Not at all responsible and accountable for risks connected to role                | <b>1.5 ≤ FS &lt; 2.5</b><br>Low level of responsibility and accountability for risks connected to role       | <b>2.5 ≤ FS &lt; 3.5</b><br>Medium level of responsibility and accountability for risks connected to role       | <b>3.5 ≤ FS &lt; 4.5</b><br>High level of responsibility and accountability for risks connected to role       | <b>4.5 ≤ FS &lt; 5.0</b><br>Completely responsible and accountable for risks connected to role                 |

*FS=Factor Score*

## 6. References

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## Appendix 2 Additional Questionnaire Questions

1. I understand the risks associated with payment acceptance.

|                   |                 |                        |             |                  |                       |
|-------------------|-----------------|------------------------|-------------|------------------|-----------------------|
| <b>Not at all</b> | <b>Not well</b> | <b>Moderately well</b> | <b>Well</b> | <b>Perfectly</b> | <b>Not applicable</b> |
|-------------------|-----------------|------------------------|-------------|------------------|-----------------------|

2. Merchant acquiring risk, (i.e risk arising from payment acceptance services) should be treated like other primary risks facing the organisation

|                |                   |
|----------------|-------------------|
| <b>I Agree</b> | <b>I Disagree</b> |
|----------------|-------------------|

3. Risks arising in payment acceptance are being given the same treatment priority as the risks arising in other business units.

|                |                   |
|----------------|-------------------|
| <b>I Agree</b> | <b>I Disagree</b> |
|----------------|-------------------|

4. Payment acceptance employees are well trained to manage risk in their work.

|                |                   |
|----------------|-------------------|
| <b>I Agree</b> | <b>I Disagree</b> |
|----------------|-------------------|

5. Payment acceptance employees understand the risks that they deal with on a daily basis.

|                   |                 |                        |             |                  |                       |
|-------------------|-----------------|------------------------|-------------|------------------|-----------------------|
| <b>Not at all</b> | <b>Not well</b> | <b>Moderately well</b> | <b>Well</b> | <b>Perfectly</b> | <b>Not applicable</b> |
|-------------------|-----------------|------------------------|-------------|------------------|-----------------------|

6. Payment acceptance risks get full attention at senior management level.

|              |                     |                  |                |               |                       |
|--------------|---------------------|------------------|----------------|---------------|-----------------------|
| <b>Never</b> | <b>Infrequently</b> | <b>Sometimes</b> | <b>Usually</b> | <b>Always</b> | <b>Not applicable</b> |
|--------------|---------------------|------------------|----------------|---------------|-----------------------|

7. Payment acceptance associated risks should be thoroughly assessed at the start of every client relationship with new merchants.

|                |                   |
|----------------|-------------------|
| <b>I Agree</b> | <b>I Disagree</b> |
|----------------|-------------------|

8. Which of the following departments do you think should be primarily responsible for risks arising in payment acceptance:

**Operations Department; Sales and marketing; Finance; Administration; Risk;**

9. If you were given an opportunity to change something on the organisation's current risk culture, what will you change and why?

10. In your opinion what do you think the organisation's card payment acceptance division is doing well as far as risk culture is concerned?

### Appendix 3 Test for difference in means of management and non-management employees

| Item                                                                | Chi square test statistic | p-value | Significant difference at $\alpha=0.05$ | Significant difference at $\alpha=0.1$ |
|---------------------------------------------------------------------|---------------------------|---------|-----------------------------------------|----------------------------------------|
| <i>Factor1: Risk Integration</i>                                    |                           |         |                                         |                                        |
| RCQ_1                                                               | 0.95                      | 0.33    |                                         |                                        |
| RCQ_2                                                               | 0.83                      | 0.36    |                                         |                                        |
| RCQ_4                                                               | 0.00                      | 0.97    |                                         |                                        |
| RCQ_5                                                               | 1.42                      | 0.23    |                                         |                                        |
| RCQ_6                                                               | 2.64                      | 0.10    |                                         |                                        |
| RCQ_9                                                               | 0.00                      | 0.97    |                                         |                                        |
| RCQ_10                                                              | 0.59                      | 0.44    |                                         |                                        |
| RCQ_12                                                              | 0.02                      | 0.89    |                                         |                                        |
| RCQ_13                                                              | 0.28                      | 0.60    |                                         |                                        |
| RCQ_15                                                              | 0.01                      | 0.94    |                                         |                                        |
| RCQ_16                                                              | 0.03                      | 0.85    |                                         |                                        |
| RCQ_17                                                              | 0.02                      | 0.88    |                                         |                                        |
| RCQ_18                                                              | 2.26                      | 0.13    |                                         |                                        |
| RCQ_19                                                              | 1.68                      | 0.20    |                                         |                                        |
| RCQ_20                                                              | 0.06                      | 0.81    |                                         |                                        |
| RCQ_21                                                              | 0.06                      | 0.81    |                                         |                                        |
| RCQ_24                                                              | 0.83                      | 0.36    |                                         |                                        |
| RCQ_25                                                              | 4.33                      | 0.04    | **                                      | **                                     |
| RCQ_27                                                              | 0.78                      | 0.38    |                                         |                                        |
| RCQ_29                                                              | 5.70                      | 0.02    | **                                      | **                                     |
| RCQ_31                                                              | 1.45                      | 0.23    |                                         |                                        |
| RCQ_36                                                              | 2.00                      | 0.16    |                                         |                                        |
| RCQ_37                                                              | 0.00                      | 0.95    |                                         |                                        |
| RCQ_39                                                              | 1.47                      | 0.22    |                                         |                                        |
| RCQ_40                                                              | 0.75                      | 0.39    |                                         |                                        |
| <i>Sub-factor 2.1: Risk Understanding</i>                           |                           |         |                                         |                                        |
| RCQ_7                                                               | 4.05                      | 0.04    | **                                      | **                                     |
| RCQ_8                                                               | 0.03                      | 0.86    |                                         |                                        |
| RCQ_11                                                              | 0.76                      | 0.38    |                                         |                                        |
| RCQ_26                                                              | 1.57                      | 0.21    |                                         |                                        |
| RCQ_32                                                              | 0.49                      | 0.48    |                                         |                                        |
| RCQ_34                                                              | 1.16                      | 0.28    |                                         |                                        |
| RCQ_35                                                              | 1.97                      | 0.16    |                                         |                                        |
| <i>Sub-factor 2.2: Individual Responsibility and Accountability</i> |                           |         |                                         |                                        |
| RCQ_22                                                              | 2.27                      | 0.13    |                                         |                                        |
| RCQ_23                                                              | 0.81                      | 0.37    |                                         |                                        |

\*\*Yes

#### Appendix 4 Summarised findings on card payment acceptance questions

| Wilcoxon signed rank test                                                                                                                             |    |                     |                           |         |                                  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|----|---------------------|---------------------------|---------|----------------------------------|
| Management level                                                                                                                                      | n  | Mean Wilcoxon Score | Chi square test statistic | p-value | Significant difference at α=0.05 |
| 43. I understand the risks associated with payment acceptance.                                                                                        |    |                     |                           |         |                                  |
| Management                                                                                                                                            | 39 | 49.92               | 0.19                      | 0.67    | No                               |
| Non-management                                                                                                                                        | 57 | 47.53               |                           |         |                                  |
| 44. Payment acceptance employees in this organisation understand the risks that they deal with on a daily basis.                                      |    |                     |                           |         |                                  |
| Management                                                                                                                                            | 36 | 40.17               | 1.59                      | 0.21    | No                               |
| Non-management                                                                                                                                        | 51 | 46.71               |                           |         |                                  |
| 45. Payment acceptance risks get full attention at senior management level.                                                                           |    |                     |                           |         |                                  |
| Management                                                                                                                                            | 37 | 40.36               | 1.17                      | 0.28    | No                               |
| Non-management                                                                                                                                        | 49 | 45.87               |                           |         |                                  |
| 46. Merchant acquiring risk, (i.e. risk arising from payment acceptance services) should be treated like other primary risks facing the organisation. |    |                     |                           |         |                                  |
| Management                                                                                                                                            | 39 | 49.53               | 0.08                      | 0.78    | No                               |
| Non-management                                                                                                                                        | 58 | 48.65               |                           |         |                                  |
| 47. Risks arising in payment acceptance are being given the same treatment priority as the risks arising in other business units.                     |    |                     |                           |         |                                  |
| Management                                                                                                                                            | 39 | 51.05               | 0.62                      | 0.43    | No                               |
| Non-management                                                                                                                                        | 58 | 47.62               |                           |         |                                  |
| 48. Risks associated with payment acceptance should be thoroughly assessed at the start of every client relationship with new merchants.              |    |                     |                           |         |                                  |
| Management                                                                                                                                            | 39 | 50.26               | 0.89                      | 0.35    | No                               |
| Non-management                                                                                                                                        | 58 | 48.16               |                           |         |                                  |

## **Appendix 5 Letter to the editor of the publishing house**

North West University  
Centre for Applied Risk Management  
UARM  
Vaal Campus  
RSA  
[dvdkalima@gmail.com](mailto:dvdkalima@gmail.com)

09 September 2016

The Editor  
Journal of Business Research

Dear Sir

### **Re: Submission of an article for publication through your Journal**

I would like to submit an article entitled "Risk culture in card payment acceptance: a case study" through your journal. This article is original and has not been published elsewhere.

This article is based on the study that I carried out on in one of the financial institutions that currently provides card payment acceptance services. I assessed the risk management culture perception of management and non-managerial employees in this organisation. It is my belief that this article will help academics, professionals in any industry and interested employees within the card payment acceptance universe on gaining more knowledge on risk management culture.

Accompanying this letter is a copy of the article for your perusal and reference. Should you require any clarification, please do not hesitate to contact me.

Yours faithfully  
David Kalima