

Contextualising case study methodology: e-commerce adoption by SMMEs.

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ABSTRACT

Case study is a research strategy supporting this requirement being an empirical inquiry that facilitates the investigation of a phenomenon within its real-life context. The strength of case studies lies in fostering a strong association with research subjects to gain in-depth insight. Replication and generalising are two key issues to resolve within the context of case study research, where the former is not a requirement for case study research. The research process using case studies in business includes, understanding how businesses operate, what problems they face, what mistakes they have made, and challenges they encountered. The evidence includes e-commerce adoption barriers, trends and mitigating factors to promote e-commerce adoption. It is evident that many researchers concentrated mostly on external factors such as benefits, opportunities and others, stating that e-commerce evolved from a technology-driven environment. In order to facilitate these issues, the researcher used a post-positivism research design. This paper reports on using case studies methodology for the adoption of e-commerce by SMMEs in South Africa. The stated research problem alludes to lacking formalised adoption strategies available to SMMEs. The researcher developed a case study protocol. This is to manage the research process of evidence collection and recording using a framework to guide the research process. The research question formulated posed a challenge to develop a scientifically based e-commerce adoption model. The scope of this paper excludes the details of the development of the model. However, the case study methodology research methods used for the process is discussed. The paper concludes leaving the reader with a clear notion of how a problem in a real world situation could be identified, formulated and resolved using case studies.

Keywords: case study, methodology, e-commerce, adoption, model, online trading.

1. BACKGROUND

Businesses have to contend with many e-commerce adoption challenges. This spans from technical and business factors, to external factors including cultural, political, legislative and environmental issues [19][12][11]. E-commerce adoption is not merely signing up with Internet Service Providers (ISPs) to start trading, but barriers and risks impede adoption. Unanswered questions with respect to the adoption of e-commerce initiatives are a hurdle to overcome [2]. Some unanswered questions are: How important are customer relations? What are the main product selection criteria? What is the impact of security and trust issues? New online business systems need to be managed correctly [15]. A number of authors have been proponents of integrating the internet and web-related technologies into business strategies and goals

[18]. SMMEs¹ are often oblivious of the impact not to integrate web-based technologies into their business strategies [3]. One such impact is the absence of suitable e-commerce adoption models. Well grounded theoretical guidance for a holistic approach pertaining to e-commerce adoption by SMMEs is not available. For example, Rodgers, Yen and Chou warn "... every firm that seeks to be successful in the future is striving for the implementation of a successful e-business strategy" [22]. Business models are playing a more prominent role in the *new economy*². e-Commerce evolved from rudimentary websites to more sophisticated web-based customer-service systems. The literature highlights the importance of adopting e-commerce governed by managerial and business requirements. Using the Web as an *add-on* feature to augment traditional business channels such as direct selling, marketing and supply chains does not offer business more value unless it becomes an integrated channel of the business. In South Africa, SMMEs are businesses that employ fewer than 200 people, in a number of business sectors [24]. SMMEs are significant contributors to the national economy. The importance of small businesses is regularly emphasised; this is also evident in other parts of the world.

2. MODELS

The goal of this paper is to report on using case study methodology to create an e-commerce adoption model for SMMEs. To understand this challenge, a brief overview of models follows to reveal some scientific requirements of models in context to real world business problems. This understanding is essential to solve real world problems. Cleland and King state "... a model is a representation of something else" [5]. The definition they use of a model refer to the *something else* as some observable system or phenomenon that exists in the real world. Models can be viewed as a representation or an abstraction of an object or a particular real world phenomenon [7]. Yet another aspect of a model is "... given that a model plays a central role in ongoing actions (i.e. the bridge between action and expected outcome), how can we put science to work to improve the models that we have available to us in managing organisations?" [6]. A model is an observable system or phenomenon that exists in the real world. One could summarise a models as manifesting in the *action* and *expected outcome*. It is also quite common for errors to occur in model development. Expanding the scope of a model is flexible, considering a wider range of information other than numerical data, where they can be adapted to new situations or

¹ Small Medium and Micro Enterprises used in South Africa [24].

² A dynamic system of interactions between a nation's citizens, business and government that can capitalise upon online technology to achieve a social or economic good.

altered as new information becomes available[25]. Furthermore, mental models are viewed as filters through which experiences are interpreted, plans evaluated, and choices made for course of action. Mental models could be seen as the dominant thinking paradigm in most of the Western world [21]. It is evident that business models draw on a multitude of business subjects, including economics, entrepreneurship, finance, marketing, operations and strategy to name a few [4]. A typical definition of a business model:

“... A conceptual tool containing a set of elements and their relationships and allows expressing the business logic of a specific firm. It is a description of the value a company offers to one or several segments of customers and of the architecture of the firm and its network of partners for creating, marketing, and delivering this value and relationship capital, to generate profitable and sustainable revenue streams”[17].

Evolving business models over five stages [28]:

- Stage 1** Retail businesses traditionally defined as brick-and-mortar storefronts including inventory stores- high overhead cost to businesses, which customers inevitably have to absorb.
- Stage 2** Mail order retailers emerged and replaced the storefront concept to a great extent, but not necessarily inventory stores.
- Stage 3** Just-in-time inventory systems appeared, heralded as a significant innovation (e.g. Wal-Mart).
- Stage 4** Internet and Web becoming more viable as a business option, the introduction of *virtual retailing* or *virtual reality* (e.g. Comp-U-Card).
- Stage 5** The virtual reality model changed to a more focused niche market concept.

The requirements to design an applicable model within a particular context, case study methodology, is an ideal mechanism to research such a real world phenomenon. This phenomenon could lead to guiding SMMEs putting certain conditions and factors in place to adopt e-commerce. The researcher acknowledges the various approaches and the process of systematic model development based on *theory, fact and logic*. This, the researcher keeps in mind as well as the design aspect of models against set objectives. Subsequently, the model developed needs to be validated to ascertain if it is ideal (not idealistic) for the targeted use by SMMEs. To reiterate, the scope of this paper is not to cover specifics about the model, but on the case study methodology used.

3. RESEARCH DESIGN

Authoritative authors find at the most elementary level, “... the design is the logical sequence that connects the empirical data to a study’s initial research questions and, ultimately, to its conclusions”[30]. Furthermore, research design is usually an idealised roadmap to support the investigator how to conceptualise each design step [10].

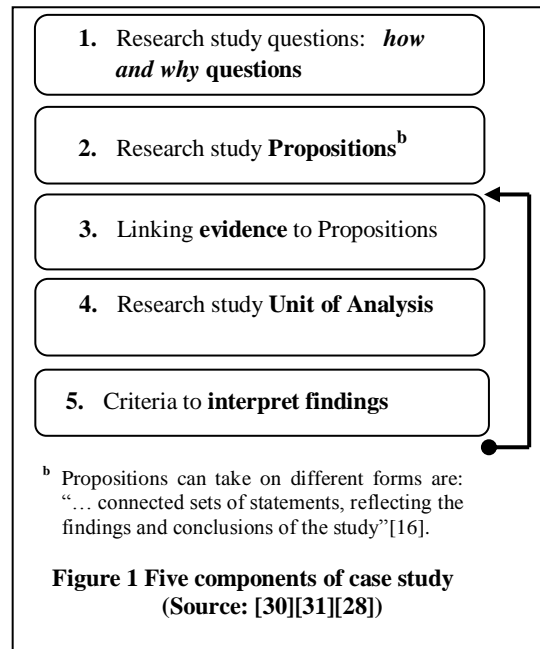
3.1 Case study research

Where the phenomenon under investigation is not readily distinguishable from its context, *how* and *why* type questions are preferable to attempt to understand the phenomenon. Case study research is an empirical inquiry that investigates a contemporary phenomenon within a real life context [30][31]. A case study is set in a particular context [23]. In the context of the dynamic global business world, the new economy is fuelling the desire to increase networking, form new relationships and

enhance communication. The rising importance of the internet and the widespread use of web-based technologies have led to developments such as e-commerce, e-learning, e-banking and others. Distribution channels and the ability to reach a wider audience than using traditional brick-and mortar models have become fundamental attributes of online trading. It is within this context that this research aims to understand real issues and barriers to offer appropriate solutions. Case studies are interactive in nature. Therefore, it is suggested to use multiperspective analysis - this allows the researcher to consider the relevant participants as they are trading [27]. The strength of case study methodology is in establishing a strong rapport with research subjects leading to in-depth insight. Furthermore, interaction between groups also provides valuable in-depth knowledge noting that conducting case study research requires a rich³ theoretical framework [30]. A chosen theoretical framework later becomes the vehicle for generalising to other new cases, used similarly in cross-experiment designs [30].

3.2 Case study design

Case study research is not a set of sequential steps, but rather an evolving process and refine or change propositions as the investigation progresses. A multiple-case design is preferable over single-cases [31]. For researchers having problems contextualising what is part of a design and what not, Figure 1 is a representation of the five components of a case study [30][31]. These components reveal graphically the stages of a case study process including inter component relationships. The feedback arrow in Figure 1 provides a mechanism to adapt the methodology as and when, new findings become available. This approach is unlike experiments that start and end with no deviations of the process. Finally, Figure 1 highlights the prominence of the *unit of analysis* in case study research. The unit of analysis allows researchers the option of feeding evidence back into the process in an organised way via the propositions that may require modification, while maintaining its narrow focus.



³ *rich* refers to a well-defined theoretical framework stating conditions a particular phenomenon likely [22].

Number of cases - There is no rule to determine the number of cases [30]. The logic underlying the use of multiple-case studies indicates that the researcher should select each case with care in order for it either, to predict similar results (a literal replication) or to predict contrasting results for predictable reasons (a theoretical replication). There are similarities between multiple-case studies and conducting the same number of experiments on related topics. Two to three cases would be literal replications, whereas a few additional cases, possibly four to six, may pursue two different patterns of theoretical replications [30]. The author used five online SMME cases. They were: a low cost airline start-up, backpackers, electronic component supplier, luggage and travel goods supplier and pre-paid electricity supplier.

Qualitative method - Qualitative research is a research mechanism to assist researchers finding evidence inaccessible by statistical procedures or other means of quantification [26]. In such cases, hermeneutic approaches are preferable to analyse findings [20]. The role of the qualitative community is "... The qualitative research community... are groups of globally dispersed persons who are attempting to implement interpretive approaches to assist them and others make sense of events or conditions that define daily life" [8]. Qualitative enquiry provides in-depth mechanisms to understand, for example, business managers' actions and reveals insight into the social and management aspects they encounter. The author conducted more than thirty in-depth interviews, all tape recorded for analyses later.

3.2.1 Case study protocol

Case study protocol consists of the instrument (interview schedule or question sheet) as well as the procedures involved in conducting this research. A field protocol used in case study research describes the activities relating to fieldwork. The researcher adapted a *research protocol* to investigate e-commerce adoption issues in the context of SMME trading online [13][14][20]:

- Initial telephonic contact made with each SMME and in most instances, resulted in the contact person becoming the trusted intermediary.
- Respondents are identified in consultation with the trusted intermediary, in each of the SMMEs. The researcher approached each respondent for an interview. This process also complied with the suggestion of collecting evidence from multiple sources.
- In some of the smaller SMMEs, the researcher only interviewed owner-managers.
- In larger SMMEs, at least two of the respondents were at senior management level. Further interviews were with available staff.
- The researcher collected available documentary evidence from SMMEs, for example, website information, advertisements, brochures, press reports and business or company documents such as, system block diagrams and management structure charts.
- All interviews were tape recorded, by prior arrangement with management.
- The researcher conducted face-to face interviews at respondents' offices.
- The researcher had to provide only one signed letter of non-disclosure.

Interview structure - The interview structure adopted for this research consisted of two parts:

Part 1 – Demographic Information – Evidence about the interviewee and the SMME in general.

Part 2 – Interview Topic guide - The researcher created this interview topic guide to guide the case study interviews. Five items are randomly used to ensure free flowing discussions during interviews. They are:

- **Organisation** - Strategic objectives and reasons adopting e-commerce in business.
- **Internal issues**- Human resources, impact of e-commerce, customer demand and service, reduced transaction costs and critical success factors.
- **External aspects** – Competition, customers and partners.
- **E-commerce adoption** - Operational issues of e-commerce and adoption of ICT systems.
- **Environment** – Technical and market environments.

Fieldwork guidelines - Fieldwork requires careful planning to make the evidence collected meaningful, manageable and relevant needed for analysis. The essence of case study research is to adhere to proposed interview protocols, but also to have an open-minded approach to check if the research is on the right track during the interviewing and data collecting phases. Extracting evidence occurs from "... various levels of details" and a mountain of evidence becomes a near impossibility – the accuracy of interpretation in such a situation may even become problematic [16].

3.2.2 Interview topic coding approach

The emphasis on qualitative research using in-depth interviews and collecting data (evidence) from various sources, requires detailed analysis, both "... early analysis", and after the interviews [16]. *Early analysis* assists the researcher to cycle back and forth, and considering the evidence collected. This allows the generation of new strategies for collecting new evidence. This, the researcher manages by the feedback arrow in Figure 1. There are different ways of analysing evidence collected: manually, semi-automated (word processor /electronic spreadsheet) or using specialised computer software. In all of these methods, some form of coding is required to keep track of the plethora of data. Three classes of codes are defined [16]:

Descriptive – These require little interpretation as this is a phenomenon linked to a segment of text.

Interpretive – These codes are similar to descriptive codes but are extended to another level, to be distinguished between various options (categories) of a particular phenomenon.

Pattern – These are more explanatory where patterns or themes start emerging.

The approach to interpret the evidence for case studies in a purely qualitative way is often thematic. A list of initial themes is identified, and all evidence collected categorised according to these themes. For his paper, this method is applied and manifests in the form of headings used in a number of tables. These tables in turn, were subject to proposition testing, culminating in a structure resembling a model. The initial chosen themes can be expanded and strengthened or weakened, as the case study progresses.

3.2.3 Case study research bias

Case study research is not always free from bias, as interviewers and interviewees may not remain objective during interviews [1]. Three bias-related contributing problems are:

- **Difficulty by individuals** (interviewees) remembering and giving accurate information.
- **Unwillingness of individuals** to disclose information.
- **Concern about the consequences** of breaching trust and confidentiality after revealing information.

These problems can be minimised by ensuring the researcher applies triangulation obtaining evidence from multiple sources, ensuring the evidence is not only from one source or respondent [20][30][31].

An acceptable qualitative researcher should comply with these four attributes [16].

- To be familiar with the phenomenon and the setting under study.
- Have a strong conceptual interest.
- To use a multidisciplinary approach, as opposed to a narrow grounding or focus in a single discipline.
- To possess acceptable investigative skills, mainly to ward off premature closure.

4. RESEARCH PROCESS

The researcher formulated a 7-step research design process for this research acknowledging that case study research needs to adopt a systematic procedure [31]. The overall aim is to develop an e-commerce adoption model to support the research problem. To this end, an organised and scientific process is required consisting of these steps.

Step 1- In-depth literature review: The literature review process revealed the exploration of business models, frameworks and strategies and highlighted the importance of these topics. The online business environment revealed aspects from the literature pertaining to e-commerce adoption and its associated challenges.

Step 2- Formulating the research problem and questions: The researcher explores stated questions, barriers and issues to form the background to formulate the following research problem:

Formalised strategies are lacking to maximise SMME e-commerce adoption.

A suitable research question is formulated as: (Note: no sub-question is discussed in this paper).

What scientific approach can be utilised by SMMEs to maximise their success of e-commerce adoption?

Step 3 - Conduct case studies to collect evidence from respondents: Interviews with respondents commenced after introducing the research goal and discussing the model development process. The researcher interviewed five SMMEs.

Step 4 - Returning to literature to refine research sub-questions: This step is not applicable to this paper. (Note: no sub-question are discussed in this paper).

Step 5 - Develop an e-commerce adoption model: Feedback obtained from respondents was analysed and used to develop a draft e-commerce adoption model. A framework assisted to guide the development of the model. This step required extensive work where mappings from the literature were superimposed on the findings.

Step 6 – Validating and refining the e-commerce adoption model: Additional interviews are conducted to validate the model to solicit feedback from respondents. The five original SMMEs are invited, although one declined to continue. Five new cases are used. One of the new cases had to be eliminated after repeatedly cancelling appointments. In the end, eight cases are used to validate the model.

Step 7- Finalising the e-commerce adoption model: E-commerce adoption factors contained in the model are analysed, refined and improved. Thereafter, the factors are ranked and checked to determine to what extent they were valid and applicable for incorporation into the final e-commerce adoption model.

5. FINDINGS

From the outset, the researcher planned to develop a scientifically based e-commerce adoption model. This includes formalising an approach for e-commerce adoption within the ambit of the formulated research problem and research questions. To this end, e-commerce adoption factors are analysed. A framework had to be created (mentioned in Step 5 above) to guide the development process of the model - using case study methodology. A framework is an essential mechanism to keep track of the research progress and data analysis. Although the adoption model is developed systematically and subject to the various procedural checks and balances, it nevertheless, had to be validated and refined to make it an acceptable model. This proved to be an additional intervention, but necessary in the end. The close link fostered with respondents during interviews keeps the evidence real and relevant. According to the respondents, the strength of this model lies in its ability to explore and map a business's e-commerce adoption aspects.

6. CONCLUSION

In this paper, the researcher aims to contextualise a real world problem using case study methodology. Although this research does not report on details of the e-commerce adoption model, contextualising case study methodology as a research method is the focus. The researcher discusses case study theory in the context of e-commerce SMMEs trading online. A research problem and research question are formulated based on findings from the literature. The words *formalised* and *scientific* contained in the respective research statements, indicate a deep level of enquiry. The researcher finds firstly, the literature plays an over arching and significant role in exploring business models, definitions of business models, web-based business models, strategies, frameworks, the development of the online business environments and e-commerce adoption. Secondly, the researcher places the field of e-commerce and online trading in context of case study methodology research. The ensuing application is an excellent method to conduct research of this

nature. Although this contextualisation focuses on a specific field, case study methodology is available to most fields and can provide acceptable results. If approached in a similar way, other fields are contenders. Readers are encouraged to consider this research process of contextualising case study methodology in a similar way, although fields of concern may be different.

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