



FAKULTÄT II - INFORMATIK, WIRTSCHAFTS- UND RECHTSWISSENSCHAFTEN

**Adoption of Green E-Business Applications for Sustainable  
Tourism Development in Developing Countries  
The Case of Tanzania**

**Dissertation**

Submitted in Fulfillment of the Requirement for the Title of **Doktor der  
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Submitted by

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Juma James Masele

University of Oldenburg, 2013

## ZUSAMMENFASSUNG

Nachhaltigkeitsprobleme des Wirtschaftens in der Tourismusbranche in sogenannten Entwicklungsländern stehen im Mittelpunkt dieser Studie. *Grüne* Geschäftsanwendungen sollen nicht nur helfen, Kosten zu senken, sondern auch die Belastung der Umwelt durch Treibhausgasemissionen und Abfälle zu minimieren. Während sich E-Business-Strategien auch in kleinen und mittleren Unternehmen der Tourismusbranche (SMTE) von Entwicklungsländern durchgesetzt haben, fehlt bislang ein Modell für die Einführung und Aneignung eines *grünen* E-Business.

Die Arbeit befasst sich dazu mit der übergeordneten Fragestellung: Was begünstigt die Einführung energieeffizienter, grüner *E-Business Applications* in SMTEs? Zur Beantwortung dieser zentralen Forschungsfrage muss zunächst einmal festgestellt werden, in welchem Grad solche grünen Geschäftsanwendungen überhaupt in der Tourismusbranche zum Einsatz kommen, welche Einflussfaktoren in Frage kommen, und mit welchem Gewicht diese Faktoren die Einführung grüner *Business Applications* determinieren, allgemein gesprochen müssen also günstige Umgebungen für die Einführung solcher Systeme untersucht werden.

Dafür wurde ein Green E-Business Adoption Model (GEBAM) formuliert. Das Konzept umfasst insgesamt 12 Beziehungen zwischen organisationalen, managementbezogenen, technologischen und Umweltfaktoren, die die Einführung grüner E-Business-Anwendungen betreffen könnten. Nach einer quantitativen Befragung von 148 SMTEs in Dar es Salaam, Zanzibar, Kilimanjaro und Arusha wurde unter Verwendung eines Strukturgleichungsmodells eine konfirmative Faktorenanalyse durchgeführt. Zur Absicherung kausaler Zusammenhänge wurde die Untersuchung durch einen qualitativen Part ergänzt. Dafür wurden diverse Stakeholder der Branche interviewt, und zwar Vertreter aus Behörden, Systemhäusern, Veranstaltern, Entsorgungsfirmen im Bereich der Elektronik und NGOs sowie Touristen.

Von den 12 formulierten Hypothesen erwiesen sich sieben als signifikant. Nutzerfreundlichkeit erhöht das Selbstvertrauen der Anwender und begünstigt somit eine Entscheidung zur Einführung einer grünen Anwendung. Trainingsmaßnahmen und eine klare Darstellung der Funktionsweise solcher Anwendungen helfen den prospektiven Nutzern, die ökonomischen und umweltbezogenen Vorteile besser zu verstehen.

Günstige Bedingungen werden als wichtig angesehen, um neue Nutzer zu gewinnen. Daneben kann normativer Druck die Bereitschaft zum Einsatz grüner E-Business Anwendungen verstärken. Angesichts des entscheidenden wirtschaftlichen Beitrags, den kleine und mittlere Unternehmen erbringen, aber auch ihres Ressourcenbedarfs, scheint die Entwicklung einer nationalen politischen Strategie, die diese Akteure bei der Einführung grüner Geschäftsanwendungen unterstützt und führt, geboten. Allerdings sind auch die Unternehmen selbst gefragt, entsprechende Kompetenzen aufzubauen, um die Potenziale einer nachhaltigeren Wirtschaftsweise zu heben. Dazu müssen sie grüne Strategien entwickeln; die Beteiligung an einschlägigen Netzwerken kann ihnen dabei helfen, den Anschluss an technologische Entwicklungen zu halten und Förderprogramme zu nutzen. Von größter Bedeutung ist dabei die Verfügbarkeit von einschlägigem technischen Know-how, das entweder unternehmensintern oder durch externe Beratung bereitgestellt werden kann.

## ABSTRACT

Concerns on emerging sustainability issues in doing business were the epicentre of this study. In ensuring that each of business applications is actually green, it is imperative to save not only companies' operational costs, but also the environment by reducing IT induced Greenhouse gas emissions and resultant chemicals that fill the land, hence, enhancing companies' Corporate Social Responsibility (CSR). Although E-Business has recently turned to be a way of doing business and a strategic tool for competition, there exists no comprehensive model to explain Green E-Business adoption among Small and Medium Tourism Enterprises (SMTEs) in developing countries.

This study was designed in order to answer the main research question, "What is it that makes some SMTEs adopt and use energy efficient as well as Green E-Business applications and not others?" Specifically, it sought to determine the extent to which E-Business applications in use are ecologically and energy efficient (green) for sustainable tourism development; to examine the pull and push factors towards energy and Green E-Business applications among SMTEs; to examine the relative importance of determinant factors involved in adoption of Green E-Business application in SMTEs; and, to examine the environment suitable for SMTEs' adoption for Green E-Business applications. In order to execute these objectives, a conceptualized Green E-Business Adoption Model (GEBAM) was formulated along with three adoption models, namely; Unified Theory of Acceptance and Use of Technology (UTAUT), Technology-Organizational-Environmental (TOE) model, and Institutional Theory. The conceptualized model hypothesized 12 relationships among organizational, managerial, technological and external-environmental factors to affect Green E-Business adoption including use. A survey employing a 5 point Likert Scale (from 1-Strongly Disagree to 5-Strongly Agree) was used to collect data among 148 cases of SMTEs in Dar es Salaam, Zanzibar, Kilimanjaro and Arusha – Tanzania. Using SEM, a Confirmatory Factor Analysis was tested through Statistical Package for Social Sciences – Analysis of Moment Structure 20 version (SPSS-AMOS 20) to validate the model and test the hypothesized relationships. The quantitative part was followed by qualitative face to face in-depth interviews conducted in the revealed Green E-Business adoption stakeholders including regulatory/authoritative bodies, computer sellers, tour operators, e-waste collectors, tourists and NGOs, so as to get word of mouth explanations, for strongly featuring quantitative aspects.

From the SMTEs in developing countries' contexts, the findings demonstrated that although all hypotheses indicated a positive influence, only seven out of the twelve hypothesized relationships were revealed significant. The study concluded that if a firm is to adopt Green E-Business, the technology behind it has to be easy to use, something which may inculcate an individual's self- efficacy to use Green E-Business drivers which altogether influence Intention to Use. Clear information coupled up with training will increase an understanding about Green E-Business including its accrued benefits both to the environment and the firm. On the other hand, presence of facilitating conditions is regarded important to persuade new adopters, while existence of coercive pressures is emphasized in order to reinforce Green E-Business behaviors. In so doing, it will raise Intention to Use, a precursor which will stimulate commitment for actual Green E-Business adoption and use for sustainable tourism development. Given their number and pivotal role they play in the economy and their resource as well as information poor characteristics, need for national policies and other interventions to effectively guide and empower SMEs for Green E-Business adoption arises so as to make development sustainable. On the other hand, firms need to equip themselves with Green E-Business skills, knowledge and insights in order to accrue benefits. Formulation of own relevant green policies, and staying in green network will keep firms updated for new programs, invention and interventions. Of utmost importance is having required technical knowhow, be it through sourcing, or in-house made.

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