

Consumer preferences and willingness to pay for edible insects as food in Kenya: the case of termites

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Abstract The world, and in particular developing countries and emerging economies, is witnessing a rapidly increasing demand for food, especially in terms of animal protein. On one hand, access to animal protein is limited due to high prices and reduced production of livestock as a consequence of adverse effects of climate change in many developing countries. On the other hand, the increasing population coupled with the rise in income and living standards in some developing countries leads to a huge increase in the demand for animal protein, which is not a very sustainable source of protein. As a result, other sources of protein may need to be introduced as food in order to meet this rising demand, and in this regard, insects can play a significant role in terms of serving as a vital source of protein (FAO, 2013). Insects are already being consumed in some parts of the world. However, they are typically harvested in the wild and in most cases no formal insect food sector is present. Currently there is a focus on the supply side to establish insect production systems for food and feed, and in this regard different projects are emerging. Notwithstanding this, the ultimate goal of introducing insects as food is subject to end users' demand, thus, knowledge on acceptability and marketability of edible insects as food is vital to support the agenda of developing an insect production sector. In this paper, we aim to give a first insight into the potential demand for edible insects as food in Kenya. We assess the demand in terms of consumer preference and willingness to pay for termite-based food products, and in particular we focus on how the termites should be processed and introduced in a typical daily meal in order to increase consumer acceptance. Using face-to-face interviewing, we conducted a discrete choice experiment (CE) on a representative sample of 611 consumers from rural and urban areas. Respondents answered questions concerning their familiarity and experience with edible insect consumption as well as attitudes toward edible insects as food, and they were also subjected to a sequence of CE questions. The CE involved choices between two experimentally designed alternatives

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and a 'none of these' option. Each respondent processed twelve choice tasks in which six choice tasks concerned meal alternatives with whole termites that had been fried and salted, while the remaining six meal choice tasks involved termites that had been dried and grinded to a powder. The alternative meals in the choice tasks are described by five attributes, namely *nutritional value*, *food safety control*, *recommendation*, *shopping location* and *price*. Preliminary analyses of our data based on a latent class (LC) model show that there are five segments of consumers according to their sensitivity to the different attributes. This suggests that there is heterogeneity in consumer preferences, and the sources of the heterogeneity can be traced using the LC model. While some consumers have positive preferences towards the nutritional value and food safety control attributes, others put more weight on the recommendation and shopping location attributes. A small portion of the sample appears to be very reluctant to accepting insects as food since they have a disproportional tendency to choose the 'none of these' option as indicated by the positive sign of the estimated parameter for this alternative. Overall, consumers in Kenya are positive towards edible insects as food, and they actually prefer – and are willing to pay more for – termite-based products characterized by high nutritional value and a high level of food safety control. This implies that there is a great potential for introducing insects as food as the demand is present.

Keywords: *Demand . Discrete choice experiment . Food . Insects . Kenya . Protein . Willingness to pay*