

Ergonomics >

Volume 47, 2004 - [Issue 13](#)

2,093 Views | 147 CrossRef citations to date | 0 Altmetric

Original Articles

# Standing at a kiosk: Effects of key size and spacing on touch screen numeric keypad performance and user preference

Herbert A Colle & Keith J Hiszem

Pages 1406-1423 | Published online: 20 Feb 2007

🗨️ Cite this article <https://doi.org/10.1080/00140130410001724228>

Sample our  
Economics, Finance,  
Business & Industry Journals  
>> [Sign in here](#) to start your access  
to the latest two volumes for 14 days

📄 Full Article   📊 Figures & data   📖 References   🗨️ Citations   📊 Metrics

📄 Reprints & Permissions

Read this article

🔗 Share

## Abstract

Touch screen input keys compete with other information for limited screen space. The present study estimated the smallest key size that would not degrade performance or user satisfaction. Twenty participants used finger touches to enter one, four or 10 digits in a numeric keypad displayed on a capacitive touch screen, while standing in front of a touch screen kiosk. Key size (10, 15, 20, 25 mm square) and edge-to-edge key spacing (1, 3 mm) were factorially combined. Performance was evaluated with response time and errors, and user preferences were obtained. Spacing had no measurable effects. Entry times were longer and errors were higher for smaller key sizes, but no significant differences were found between key sizes of 20 and 25 mm. Participants also preferred 20 mm keys to smaller keys, and they were indifferent between 20 and 25 mm keys. Therefore, a key size of 20 mm was found to be sufficiently large for land-on key entry.

## Keywords:

[Touch screens](#)[Keypads](#)[Key size](#)[Key spacing](#)[Kiosks](#)[Keyboards](#)[Human-computer interaction](#)

## Acknowledgements

We thank Mark Hoffman, CTO, Jackie Huffman and Sally Cohen for suggestions and comments, and NCR Corp. for providing the kiosk. We thank Mark Lee for sharing his keyboard software and for his advice about it and the kiosk, and Brian Porter for writing the new kiosk programmes.

### Related Research Data

[Investigating touchscreen typing: the effect of keyboard size on typing speed](#)

Source: Behaviour and Information Technology

[A model for movement time on data-entry keyboards](#)

Source: Ergonomics

[Person-Computer Interface using Touch Screen Devices](#)

Source: Proceedings of the Human Factors Society Annual Meeting

[Designing Touch Screen Numeric Keypads: Effects of Finger Size, Key Size, and Key Spacing](#)

Source: Proceedings of the Human Factors and Ergonomics Society Annual Meeting

[Fitts' Law as a Research and Design Tool in Human-Computer Interaction](#)

Source: Human-Computer Interaction

[Effects Of Touch Key Size And Separation On Menu-Selection Accuracy](#)

Source: Unknown Repository

[Configuring a numeric keypad for a touch screen](#)

Source: Ergonomics

## Related research

People also read

Recommended articles

Cited by  
147

[Fitts' law on the flight deck: evaluating touchscreens for aircraft tasks in actual flight scenarios](#) >

---

Yubin Xie et al.

Ergonomics

Published online: 13 Jul 2022

---

[Application of SHERPA to Identify and Prevent Human Errors in Control Units of Petrochemical Industry >](#)

---

Mehdi Ghasemi et al.

International Journal of Occupational Safety and Ergonomics

Published online: 8 Jan 2015

---

[Investigating touchscreen typing: the effect of keyboard size on typing speed >](#)

---

ANDREW SEARS et al.

Behaviour & Information Technology

Published online: 27 Apr 2007

---

[View more](#)

## Information for

[Authors](#)

[R&D professionals](#)

[Editors](#)

[Librarians](#)

[Societies](#)

## Opportunities

[Reprints and e-prints](#)

[Advertising solutions](#)

[Accelerated publication](#)

[Corporate access solutions](#)

## Open access

[Overview](#)

[Open journals](#)

[Open Select](#)

[Dove Medical Press](#)

[F1000Research](#)

## Help and information

[Help and contact](#)

[Newsroom](#)

[All journals](#)

[Books](#)

## Keep up to date

Register to receive personalised research and resources by email



Sign me up



Copyright © 2026 Informa UK Limited [Privacy policy](#)

[Cookies](#) [Terms & conditions](#) [Accessibility](#)

Registered in England & Wales No. 01072954  
5 Howick Place | London | SW1P 1WG

 Taylor and Francis  
Group